Transdisciplinary Research in Social Polis

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Social polis European Agenda for Research on Cities and Social Cohesion

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Introduction

This paper discusses the trandisciplinary methodology which was applied in the European Platform Social Polis. Transdisciplinary research involves different types of actors, ranging from academic researchers to day-to-day users of particular opportunities in society. It requires specific governance that mobilises different types of knowledge to identify relevant societal problems and to contribute to their solution. Trandisciplinary methodology, therefore, is a research strategy that crosses disciplinary boundaries to develop a holistic approach, often involving researchers, practitioners and other non-academics in the production of knowledge, which can actively contribute to solving crucial societal problems.

European learning event in Brussels. Presentation.

This paper is addressed to researchers interested in exploring the transdisciplinary approach, to local, national, European and supranational institutions engaged in promoting participatory decision making processes and to European and international research bodies or institutions willing to fund transdisciplinary research.

Social Polis is a European Platform funded under the 7th Framework Programme of the European Commission, which aimed at the elaboration of a European Research Agenda on 'Cities and Social Cohesion'. In so doing, it developed a transdisciplinary methodology to draw upon the combined experience, knowledge and views of urban practitioners and researchers who work on strengthening cohesion, integration, and inclusion in both European cities and cities in other continents. When its EC funding (2007-2010) came to an end, Social Polis continued in a 'light' version, focusing on promoting the development of methodologies for transdisciplinary research in urban studies.

Till today Social Polis is the largest international transdisciplinary social platform which has dealt with the complex problé-

matique of social cohesion, involving over 300 stakeholders with different background. They were brought into a multilayered and plural debate, including researchers, EU, UN, national government and local authority representatives, as well as local NGOs, private-for-profit and community organisations of deprived citizens and migrants, and civil society organizations, involved in combating social exclusion in different domains in cities in Europe, South and North America, Africa, Asia and Australia.

The peculiar Social Polis approach tries to take the multidimensionality of social cohesion into account by envisaging the city as a whole. It links micro and macro-studies and analyses with different levels of complexity within a joint-up user-driven problematisation process and shared methodological framework. In this sense it is properly holistic (Ramstadt, 1986).

The first chapter presents arguments in favour of transdisciplinarity in selected fields, and then discusses concrete practical issues and an 'ideal' structure of a possible transdisciplinary research approach. The second chapter explains why the Social Polis project adopted a transdisciplinary methodology and how it was applied. This chapter also examines how the social platform addressed the different problems and difficulties arising within the transdisciplinary undertaking, relating the Social Polis experience to the existing literature and drawing lessons learned from Social Polis. The third chapter attempts to draw out some future perspectives for transdisciplinary research and to identify the challenges and the opportunities for transdisciplinarity in the next few years.

Trandisciplinary Symposium in Vienna.

1. What is transdisciplinary research?

1.1 Definitions and Explanations

In the last two decades, there has been a growing interest in the practice of transdisciplinary research in the social sciences in particular. Although a clear definition of transdisciplinarity is lacking, in order to develop a holistic approach most researchers involved in the subject area apply a research strategy which is dedicated to relevant societal issues and crosses disciplinary boundaries. This often involves researchers, practitioners and other non-academics in the co-production of knowledge.

From the 1970s onwards, criticism of what was considered to be 'normal' positivist science increased. Transdisciplinarity was introduced as an innovative form of relevant research alongside systems analysis, critical realism and postmodernism (Hirsch Hadorn et al., 2008a).

Following Jean Piaget's use of the term in 1970, transdisciplinarity has evolved within the scientific world to bring different theoretical and practical viewpoints and methodologies to bear on research problems. Transdisciplinary research addresses the complexity of problems, their diversity of perception, their underpinnings together with what might be done about them.

In 1987 CIRET, the International Centre for Transdisciplinary Research Studies, formulated the aims of transdisciplinarity as:

- Fighting the compartmentalization of knowledge;
- Narrowing the gap between research and decision-making pertaining to social life;
- Studying similarities between different realms of knowledge (Ramadier, 2004) .

CIRET distinguishes *transdisciplinary* research from cross-disciplinary, multidisciplinary, *pluridisciplinary* and *interdisciplinary* research; the transfer of methods across disciplines is implied whilst the overall research remains within disciplinary boundaries. Examples would include ethnographic methods used within neurological research, and cybernetic modelling used within strategic spatial planning

For Godemann, "transdisciplinary research refers to problems outside the scientific world which may only be solved by scientists in co-operation with experts in possession of practical experience from outside the academic World" (Godemann, 2006). The Network for Transdisciplinary Research (td-net) also defines transdisciplinary research as "characterised by a variety of disciplines and various practitioners in professional fields outside academia" (www.transdisciplinarity.ch).

As with the interdisciplinary approach which aims to create knowledge overcoming the disciplinary boundaries and to integrate methodologies from different disciplines, the transdisciplinary approach aims both to create knowledge beyond disciplinary borders and to acknowledge the separation between researchers and social actors. Therefore transdisciplinary research includes interdisciplinary reflections and methodologies, but goes further.

Transdisciplinary research, therefore, complements applied research in fields characterised by complexity and uncertainty. As Pohl and Hirsch Hadorn (2007) write: 'there is a need for transdisciplinary research when knowledge about a socially relevant problem field is uncertain, when the concrete nature of problems is disrupted, and when there is a great deal at stake for those concerned by problems and involved in dealing with them', such as poverty, health, migration, cultural transformation, climate change, bio engineering of new crops, etc.

Examples of transdisciplinary projects

HIV prevention in Mumbai – This was a large scale, multi-year HIV/STD prevention project directed towards married men in urban poor communities in Mumbai (Bombay), India, based on the collaborative relationships among U.S. and Indian anthropologists, psychologists, demographers, epidemiologists, physicians and representatives of other fields and sectors. The aim was to test a transdisciplinary conceptual model with community-based formative research and to utilize the results in the development and implementation of a multi-level (community, provider and patient) intervention.

Diversity of Cultures - Unequal City – This transdisciplinary and international project explores cultural and socioeconomic diversity and inequality by analyzing the spatial, social, and gender-related strategies of everyday life of girls and boys from an urban milieu characterized by experiences of migration. The interconnections between social, gender-related, and cultural dimensions of diversity and inequality and the chances for, and blocks on, development of children and youth are researched through activating explorative and interactive methods in different contexts, schools and countries. The research process is interactive because the experiential knowledge of the children and youth is the starting point for this investigation; then, in a future separate process of abstraction, project assistants and graduating students will identify structures and institutions, which enhance or constrain different aspects of diversity and inequality.

Sources: Schensul et al., 2006; http://www.sparklingscience.at

A transdisciplinary research project may therefore integrate a variety of approaches and epistemologies and include several disciplines, which can range from the natural to the social sciences. The range of disciplines and approaches involved depends of the scope and the focus of the project and the actors participating in it. Scientific knowledge is not the only type included; other forms of knowledge, such as local knowledge, may also play a role. Transdisciplinary methodologies have been used in the fields of participative planning (Antrop, Roggea, 2006; Halla, 2002), policy making (Wiek, Walter, 2009; Frasera et al, 2005), design (Hirsch Hadorn et al., 2008), health care (Schensul, Nastasi, Verma, 2006; Hirsch Hadorn et al., 2008), environmental assessment (Thompson Klein et al., 2001; Hirsch Hadorn et al., 2008), technology assessment (Thompson Klein et al., 2001).

Participatory research is vital to good transdisciplinary research (Pohl, Hirsch Hadorn, 2007). Its very essence implies that the nature of the problem to be addressed is not predetermined and needs to be negotiated cooperatively by actors from both science and the life-world. We can identify several areas in which transdisciplinary research is effectively or potentially utilised.

According to several authors (Thompson Klein et al., 2001, Hirsch Hadorn et al., 2008), transdisciplinary research seeks to achieve integration of knowledge of different types. Some means of integration listed by different authors are: theoretical concepts (transfer and adaptation of concepts, bridge concepts), cooperative creation of models, mutual understanding, collaborative production of outcomes. Any mix of these integration tools may be used in a concrete situation:

- Mutual understanding may require mutual explanation of specific disciplinary or professional language or definition of a common language;

- Another group of integration tools comprises theoretical notions, which can be developed by transferring concepts between fields, mutually adapting disciplinary concepts or by creating new concepts bridging disciplinary perspectives;

- Jointly constructed models may be used to draw future scenarios and to support decision-making. They should deal with different aspects of the *problématique* and therefore have to integrate different fields of knowledge and different approaches;

- Integration can also range across different types of project; they can be medical treatments, development plans, regulations, research outputs or research agendas (as it is the case for Social Polis). Integration can be undertaken using different forms of collaboration: common group learning, deliberation among experts, integration by a subgroup or individual.

Thompson Klein (2001) collocates transdisciplinary integration/synthesis in the epistemic layer between basic and intuitive understanding of the word (based on empathy, representation and intuitive comprehension) and the causal explanation by propositional logic (prototypically provided by natural sciences). This middle level is the conceptual model of the real world. It represents the shift from an holistic real world perspective to a system or model level at which synthesis is achieved through methods of knowledge integration. The author addresses the positioning at this middle level as one of the epistemological foundations of transdisciplinarity.

European learning event in Brussels. World Café.

According to previous authors transdisciplinarity mainly *integrates* different knowledge and disciplines. But Adger et al. (2003) take a different perspective and consider transdisciplinarity as a *unification* at the metaphysical level. For these authors interdisciplinarity and transdisciplinarity involve the formulation of a shared or common methodology as well as "cooperation within a common framework shared by the disciplines involved". "Transdisciplinarity [in turn] involves unification of the involved disciplines at the paradigmatic (metaphysical) level". They envision an interdisciplinary approach that would not remain a crude combination of disciplinary perspectives but would become a synthetic approach amalgamating aspects and concepts from different disciplines so as to enable interdisciplinary research at both the individual and the team level (Adger et al., 2003).

Complex societal problems

The crucial difference between transdisciplinary and other forms of research is that it aims to solve real world problems. Therefore, it also involves "interdisciplinary" research. The traditional scientific approach has proved insufficient to address complex, interdependent and politically relevant issues which are not reserved to particular sectors or disciplines. Such issues are emergent phenomena with non-linear dynamics, uncertainties, and high political stakes in decision-making. Transdisciplinarity gains importance as a problem-solving approach which starts from the concrete need of dealing with a problem, analysing it and trying to tackle it using different approaches, contributions and layers of interpretation rather than starting from a single disciplinary viewpoint. This approach is especially interesting for fields in which social, technical and economic developments interact with elements of value and culture, including ageing, energy, health care, nutrition, sustainable development, landscape, housing and architecture, and urban land and waste management (Klein 2001). The Federal Institute of Technology of Switzerland underlines that one of the three pillars of the transdisciplinary approach is to build science production starting from relevant, complex societal problems. Complex societal problems call on interdisciplinarity, and also for the involvement of different stakeholders because complex social problems affect (and are influenced by) a multiplicity of different human and non-human actors in society.

Transdisciplinarity links theory and practice in various ways in order to help solve existing problems of social exclusion. This requires willingness to *experiment with new forms of thought and action – socially creative strategies* - because problems usually get pigeonholed according to responsibilities, competences and disciplines. Participants in transdisciplinary dialogues are designated to *discover new interconnections* between allegedly different dimensions of social exclusion. Through the collective cogitation of people with diverse experience and different expertise it becomes possible to enhance, support and facilitate certain processes identified as desirable (Novy, Bernstein, 2009; García Cabeza et al., 2009; MacCallum et al., 2009, Moulaert et al., 2010).

Transdisciplinary research attempts to:

- Grasp the complexity of problems;
- Take into account the diversity of life-worlds and scientific perceptions of problems;
- Link abstract and case-specific knowledge;
- Develop knowledge and practices that promote what is perceived to be the common good.

Source: http://www.transdisciplinarity.ch

Participative strategic spatial planning

Urban participative planning is one of the fields in which transdisciplinarity is explored as is shown by the extensive planning bibliography on these issues. Interest in participatory processes in planning arises from critique of technocratic and rationalist planning approaches, which consider the planner as a neutral agent able to achieve the common good through a top-down decision making process (Healey, 1997 and 2007; Gonzalez, Healey, 2005; Hillier, 1999; Balducci, 2010; Friedmann, 1987 and 1992). Questioning the neutrality of planning rationality means admitting that planning practice is influenced by hegemonic discourses and by more powerful actors (therefore actors with more political power, capital or/and symbolical capital), therefore marginalizing weaker and non-hegemonic actors who would prefer alternative approaches to problem solution but do not have the resources for this purpose. The development of participatory processes to include stakeholders in planning decisions has increasingly interested practitioners and scientists as a way to address these dynamics, e.g. with regard to issues of climate change and sustainability (Hirsch Hadorn et al., 2008a; Thompson Klein et al., 2001; Frasera et al., 2005).

Suistanability and transdisciplinary: some examples

Sustainable river basin management in Kenya. This project is based on 25 years of continuous research in the upper Ewaso Ng'iro North basin. Using projections of the long term implications of changes in ecological processes and socio-economic and institutional dynamics on water availability, research activities were embedded in a mutlilevel, multistakeholder transfer strategy to ensure the integration of scientific and local knowledge systems and long-term ownership of preferred interventions.

Green electricity standards, ökostrom. This project was launched in Switzerland in 1998 by a team of social and natural scientists, in order to develop an Eco-label for Green Hydropower plants, combining professional interdisciplinary research with a regard for political and economic realities and necessities. For this reason, the team carried out extensive interviews and discussions with hydropower operators, government officials and environmentalists.

Source: Thompson Klein et al., 2001; Hirsch Hadorn et al., 2008.

Democratization of society

Interest in transdisciplinarity also arises from different stakeholder pressures on science: social movements (peace, environmental, women's movements etc.), trade unions, welfare state concerns and professional occupation groups, which participated in the establishment of new academic teaching programmes and new areas of scientific expertise (such as development studies, peace and conflict research, social work research…). They legitimized their participation in academic knowledge production by referring to the lack of knowledge on relevant issues of crucial importance for society. Democratic and inclusive societies need a form of knowledge production which benefits the whole population. This cannot be achieved without the active integration of different and competing perspectives in the research process right from the beginning.

A relevant approach is the critical pedagogy of Paulo Freire (Freire, 2004). This approach should be positioned in the framework of a pedagogy which seeks to empower and raise awareness among the excluded and the weakest, stimulating their autonomy and putting them at the heart of the learning process. Paulo Freire's vision of transdisciplinarity has a strong political goal, which is to empower weak actors and change power relations through democratization of knowledge teaching and production. The weak and the oppressed who suffer from social exclusion have relevant knowledge for creative strategies to overcome exclusion. Their own experiences with social exclusion have sharpened their understanding of main problem areas and have led to an accumulation of knowledge on how (not) to deal with it (Novy, Bernstein, 2009). Homeless people,

migrants, feminist action groups or workers are examples of actors and organisations which experience exclusion and fight for inclusion. But they often have difficulties in getting heard. For them, participation in transdisciplinary research may provide an arena for channeling their concerns into policy circles. Therefore, the setting of research has to be given due importance in the inclusion of peripheral groups. This means over-coming an apparently neutral understanding of knowledge production and pro-actively empowering subaltern interests of class, gender and ethnicity. This calls for settings that embrace written and oral forms of exchange as well as artistic and multi-visual repre-sentations of problems.

Postmodern epistemologies

Involvement of stakeholders in the production of scientific knowledge also relies on many epistemological justifications, especially those linked to the post-modern critique of objective external scientific rationality. This critique emphasises that methodologies not only describe but also produce the realities that they 'understand' (Law, 2004). It is now generally accepted that there exist different levels of reality, accessible to human knowledge through different levels of perception inherent in different subjects. Moreo-ver, such different practices construct not only different perspectives, but also different realities. For instance, it is particular networks of practices which have politicised issues such as poverty, anti-social behaviour and so on. Different networks of practice would con-struct different 'issues' from the same data or would collect the data in different ways.

Research 'problems' there-fore do not exist by them-selves. They are assembled and enacted within transdisciplinary research itself, in a practice for knowing, 'which recognises

European learning event in Brussels.

that entities are being endlessly enacted and (as a part of this) are being differently enacted in different locations and in different contexts' (Law, 2004). As Law writes, "there *is* no general world and there *are* no general rules. Instead there are only specific and enacted overlaps between provisionally congealed realities that have to be crafted in a way that responds to and produces particular versions of the good that can only travel so far" (Law, 2004, emphasis in original).

So there is a need for a way of thinking that is "capable of establishing feedback loops in terms of concepts such as whole/part, order/disorder, observer/observed, system/eco-system, in such a way that they remain simultaneously complementary and antagonist" (Max-Neef, 2005; Ramadier, 2004) and, above all, dynamic.

Transdisciplinary research involves generating an appropriate assemblage (an episte-mology and technologies [1]) of methodological elements which are not fixed in shape and do not belong to a predetermined list, but are constructed by the participating actors. This is in line with the Greek phronesis (prudence), a form of practical knowledge acquisition (Bernstein, 1983; Flyvbjerg, 2001). There can be no fixed formulae or general rules for determining transdisciplinary research methods which both grow from and create their 'disciplinary' hinterlands and which are themselves dynamic (Law, 2004).

Transdisciplinarity and Social Innovation research

Because of the often multidimensional role of social innovation researchers – with ques-tions about the links or boundaries between scientific analysis, political activism, move-ment organization, advocacy planning - looking at concrete experiences through case-studies is a critical aspect of the methodology-building process. Central to this build-ing process is the joint or social learning process in which different Social Innovation agents share their perspectives, expectations and experiences. Because of the thematic focus of social innovation research on changing the social relations in society and the role of change agency, there is a need for a transdisciplinary steering of epistemology and methodology. Social innovation research is about improving social relations and tackling social problems or meeting social needs. In all of these, concerned people are at the center of interaction and should ideally be the ones who express their needs and set research priorities, both thematically and chronologically. The possible roles which stakeholders, practitioners, etc. can take in Social innovation research include:

- Setting and clarifying the research questions, the kind of answers they expect as well as their expectations concerning the impact of research process and results on collective action;

- Contributing to the development of transdisciplinary research methods;

- Active participation in the research, maybe in particular stages of the research process;

- Give feedback on research outcomes;

- Give advice on how to implement research results in collective action and policy practice

(Novy et al., 2012 in press; Moulaert et al., 2010).

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1 We draw here a distinction between episteme – knowledge - and techne or technologies – related to the field of doing or practising.

KATARSIS: transdisciplinary research on Social Innovation

KATARSIS was a coordination action funded by the EU's Framework Programme 6 which lasted four years and included 19 scholarly institutions, with the purpose of bringing together theorists, researchers and practitioners interested in the causes and consequences of inequality, giving particular emphasis to the (collective and individual) strategies through which people respond to social exclusion. Through an iterative series of research packages, meetings and conferences, KATARSIS members built up a rich set of case studies and theoretical/methodological perspectives into a strong network and research programme.

Transdisciplinary methodology was considered crucial for approaching social innovation for several reasons:

- Social innovation research is about improving social relations and tackling social problems or meeting social needs. In all of these, concerned people are at the interactive centre and should ideally be the ones who reveal their needs, and set research priorities both thematically and chronologically.

- These stakeholders should also play a role in clarifying the research questions, the kind of answers they expect, the expected impact on collective action, etc. This means that stakeholders hold an integral role in setting the epistemology of the research and that they can become involved in the selection of relevant theories.

- Together with the professional researchers they explore the available research methods, and reconstruct in a transdisciplinary way methodologies and research instruments that fit the social innovation interactive logics (needs-means, agency-process, empowering human development resources, etc.). Various types of action research and sociology of knowledge frameworks are relevant here.

Source: http://katarsis.ncl.ac.uk/

1.2 Critical issues in trandisciplinary research

1.2.1 Aspects of transdisciplinary research

Applications of transdisciplinary methodologies have to deal with several practical concerns: participation, development of a coordinating team, cross-sectoral and cross actor integration.

The Handbook of Transdisciplinary Research (Hirsch et al., 2008) cites an idealised research project as including the following aspects:

- Problem identification;
- Problem analysis;
- Implementation of the results.

In *problem identification* the aim is to take into account the state of knowledge that exists in the relevant disciplines and among actors in society, figure out important aspects, decide upon the research questions, and determine who should be involved in the research process. Participants are engaged in jointly framing and structuring the issues in a problem field. The aspect of problem identification can be very resource demanding because it cannot be built on one specific knowledge base, but requires collaborative dialogue between actors from various disciplines, who are *able and willing to transgress disciplinary boundaries*. A broad range of participants has to be involved in discussion of the ontologies and epistemologies at stake.

In *problem analysis* the issue is to determine what forms of collaboration and organization are possible in order to take into account different interests and circumstances.

Trandisciplinary Symposium in Vienna.

Understanding is needed of the ways in which the diverse perspectives and realities are, and may be, connected, integrated and adapted.

Implementation relies upon the synthesis of knowledge and the translation of that knowledge. This takes into account the context of the actors involved in transforming practices of promoting what is perceived to be the common good. Because of uncertain empirical knowledge, contested purposes and habits relating to existing practices, it is important that practitioners learn about the strengths and weakness of problem-solving strategies and develop competences for implementing and monitoring progress in order to be able to adapt strategies and purposes.

Further definitions of methodological concepts

Ontology: or view of (the state) of the world. In a transdisciplinary research project this view of the world is coproduced by all participants, on the basis of existent analyses, shared opinions, etc. Example: the contemporary city is part of the global capitalist world, governed according to principles of democratic control and power-games by financial and other corporate institutions and lobbies, etc. Quite often confusion exists between the view of the existent world, to world to come and the desired world. This leads us to the peer concept of ontology, i.e.

Ontogenesis: or genesis of the vision of the existent or the desired future. Genesis thus stress the evolutionary and purposeful making of [visions of] the existent or the future. Important here is the process: how have views of the world been developed? Who decided on them? Were they based on shared expertise or on hegemonic principles? And how will be decided on the design of the future? Obviously these questions are highly relevant within transdisciplinary research.

Epistemology*: not as a doctrine of scientific knowledge creation but as an inquiry into and a negotiated consensus on the way to develop knowledge; an interactively, unrolled manual on how to connect questions about social change to scientific interrogation (*problématique*), how to lead this interrogation and to decide on the relative 'verity' or 'truth' of the answers.

Source: Van Dyck, Moulaert, 2012 forthcoming.

This ideal structure of transdisciplinary research as defined by the handbook of transdisciplinary research may be too schematic, and does not necessary fit all the different experiences of transdisciplinary research, which may have very different structures. For instance Social Polis has a quite specific structure. Following the previous discussion on aspects of transdisciplinarity, one can say that the core of the project is problem identification, including the identification of the methodologies and future developments as regards what the handbook defined as the phase of problem analysis. We may also argue that the relation between problem identification and problem analysis is recursive and not linear in Social Polis, as new issues and research questions were introduced throughout the platform's lifespan and had an impact on revisiting previously selected issues and the way they should be addressed. It is also worth noting one very important difference between the ideal structure proposed by the handbook and the Social Polis structure: in the handbook model the participants are defined from the beginning; however in Social Polis the extension of the actors network take place during all phases of the project; new stakeholders were also included in the platform in later phases of the project.

1.2.2 Roles of stakeholders and the coordinating team

The roles of stakeholders and of practitioners in transdisciplinary research
Participation of practitioners in transdisciplinary research and individuation of stake-holders can vary depending on the focus and goals of a project. Participation can take different forms, involve different actors and different roles, take real or virtual forms, be effective or token or symbolic. Practitioners may be involved in a transdisciplinary project as stakeholders, but can also be part of the scientific core or the coordinating team of a transdisciplinary project.

A broad and generic definition of a stakeholder is any person or organization, who is affected by the social context and effects of the research project, or who can contribute to the process of knowledge production. The stakeholders involved in a project may have different degrees of involvement, but generally are participating in the project with a lower degree of involvement than those in the scientific core. The stakeholders involved in a transdisciplinary project can include professional practitioners, NGOs, policy makers, activists and academics, but in general any type of user of the research results and methodologies of the project.

Also as is the case in some projects, we should not make sharp the distinctions between coordinating team/stakeholders, and academic/practitioners. On the one hand, practitioners can be strongly involved from the beginning in the coordination team of the project, and on the other, scientists can also be involved as stakeholders, as it is the case in Social Polis.

Presentation: some stakeholder contributions.

Stakeholders from the practice community can play a variegated role in the field of urban studies and in trandisciplinary research projects.

First of all, practitioners can help to define the main focus of the research and the most relevant problems. The stakeholders who take part in the definition phase of the project have the opportunity to influence the setting of the research. Actors in this phase can be academics, practitioners and lay people. It is important that the problems identified have both a scientific relevance and a practical interest (Tress et al., 2003).

Second, stakeholders are a source of specific information and therefore important actors to be consulted in order to achieve a deeper understanding of the issue. As in the former case, stakeholders can be whoever is concerned with the issue, mainly organizations which have theoretical knowledge of the topic (research institutions), organizations with practical experience of the topic, or representation of an interest that should be taken in account for urban social research.

Third, stakeholders can, and should, be joint researchers in the project in several ways. They may carry out specific research activities or play a part through more participative research methodologies, such as action research.

Coordinating team

The management of transdisciplinary research requires specific skills and means. Of special importance is the capacity to cross boundaries, to create synergies, develop skills and implement the necessary tools (Hollaender et al., 2008). Therefore, instead of a laissez-faire type of leadership, an active coordination/management team is required for the functioning of a transdisciplinary project. The coordination, which can be pursued by a small team of delegated actors or distributed among the project team members, involves:

- Identification and clear delimitation of expected tasks, and reasonable time frames for pursuing them, as well as for publication and dissemination of results;

- Management of communication between participants, which should be intensive and continuous, and, for this purpose, requires constant monitoring and an active role of coordinators in overcoming problems and blocks;

- Management of the tension between heterogeneity and effectiveness, which is difficult to overcome in highly complex networks. Specific tasks of the coordination team in this respect involve conflict resolution, building of mutual trust and commitment, and promotion of joint goals. Transparency and reflexivity are also key factors here;

- Cognitive integration of knowledge – research outputs and policy solutions - to enhance application of transdisciplinary results in real world situations.

Micronomics festival, organized by Citymine(d).

2. The Social Polis experience of transdisciplinary research

2.1 Why use transdisciplinary research in Social Polis?

Overall objective

Social Polis is one of the many transdisciplinary projects undertaken in the last decade, certainly in urban studies. Its size and ambitions are unique. Social Polis is an open social platform for dialogue between scientific and policy communities and civil society practice networks, which has developed a research agenda concerning the role of cities in social cohesion and key related policy questions.

The research agenda, which was proposed to the seventh EU Research Framework Programme and to other funding agencies, is a result of critical analysis of research to date undertaken by Social Polis researchers from different social sciences disciplines on the one hand, and of information gathering, open dialogue, and collaborative agenda-setting within a multi-stakeholder makers on the other. This research agenda has been built in two steps. First a broader research agenda listing high priority topics for research on urban social exclusion and cohesion was developed. The second step led to a Focused Research Agenda comprising 2 major societal challenges and 5 specific topics. The research agenda was collectively formulated, discussed, and reworked by individuals, groups, and institutions of academic, civil society and policy backgrounds with great knowledge of real-life problems concerning social cohesion in the cities.

Social cohesion as a problématique

Problem identification as well as ongoing problem reformulation have been crucial in Social Polis. Grasping the inherent contradictions in constructing social cohesion was a milestone in the collective learning process. Instead of defining social cohesion (once and for all), Social Polis participants perceived social cohesion as a multidimensional and multiscalar problématique 'in construction'. Cohesion concerns such diverse issues as the sense of belonging, citizenship and social inclusion – and all this at various scales, in the neighbourhood, the city and society at large. Therefore, it is an issue for transdisciplinary research: "Transdisciplinary research is needed when knowledge about a societally relevant problem field is uncertain, when the concrete nature of problems is disputed, and when there is a great deal at stake for those concerned by problems and involved in dealing with them" (Hirsch Hadorn et al., 2008a). As a first proxy, 'social cohesion' is understood in the transdiciplinary endeavour of Social Polis "in its general sense of the cohesion of society as a whole, and not simply as a problem of the poor and excluded" (Novy et al., 2012 in press).

Conceptual discussion of social cohesion and its importance for particular urban spheres and the city as a whole was very prolific and filled an important gap in contemporary urban studies. An innovative conceptual approach to social cohesion in cities was developed, taking the multidimensionality of the problématique into consideration, overcoming fragmented analyses and strategies in the cultural, social and economic domain. The discussion of the concept of social cohesion with local, European and global networks

of stakeholders has been particularly fruitful as it allowed actors to acknowledge the different interpretations of the concept for 12 specific urban Existential Fields, including local welfare systems, housing or urban labour markets.

But social cohesion as a scientific theme and policy issue must not be limited to one or other compartment, be it a discipline, a policy field or an existential field. Social cohesion is only tackled correctly and coherently, if it is seen and approached from different perspectives. The failure of existing integrative mechanisms and the deepening of processes of differentiation and individualization in contemporary societies have led to a broad range of problématiques, regarding different layers of society but interconnected by the same political processes that generated them. The perceived systemic failure to hold society together by the labour market, the family and public institutions is at the root of political and academic reflections on social cohesion and studies meant to define policies that may repair the backlashes of capitalist modernisation.

Social Polis "shows the complexity and multidimensionality of social cohesion as a *problématique*, a discursive field dwelling on the paradox of apparently opposite aspirations of belonging and differentiation. It systematises social cohesion as an 'open concept', distinguishing between its socioeconomic, cultural, ecological and political dimensions" (Novy et al., 2012 forthcoming). As a problématique, social cohesion escapes the simple problem-solving strategies usually linked to conventional policy domains, but re-orders problems and therefore solutions according to logics negotiated across stakeholders and researchers.

The experience of social cohesion under threat in the one's own city and the need to know how to tackle this problem field, was the other common need that led to this innovative project. Opening up social cohesion as a *problématique* opens up a variety of perspectives and ways of tackling an issue which can never be definitively solved, as people want to belong to a community, but at the same time desire to be unique and independent (Novy et al., 2012 forthcoming). This paradox of human conviviality is deepened in capitalist market economies, characterised by ongoing "creative destruction", thereby undermining the desire

European learning event in Brussels. Presentation.

for social stability, belonging and security. Researchers who define social cohesion in a unilateral way and identify clear problems ignore this *problématique* and are victims of a fragmented logic and policy approach, simplifying the problem and avoiding a comprehensive understanding and effective solutions. Either they fall into the culturalist

trap and embrace multiculturalism or promote law and order, or they reduce cohesion to a social issue to be solved within the traditional national welfare container. Different from these fragmented approaches, to problematise the challenge of creating social cohesion in the city means to acknowledge the multidimensionality and multiscalarity of cohesion and the necessity to link issues of cultural diversity with social citizenship and political participation in order to find context-sensitive ways of organising neighbourhoods and cities, which allow people to live together, enjoy equal access, rights and opportunities and acknowledge their differences. These theoretical reflections have profound implications for policy making and political activism (Novy et al., 2012 forthcoming).

Social cohesion is a problématique with a strong urban dimension. The city has been an agora, a market place, a territory of collective consumption, the core of division

From the Social Polis monthly newsletter.

of labour as well as a political space of public deliberation. It is the place where the desire for individualization interacts with the need for social cohesion. For this reason the interest in finding political solutions for fostering social cohesion in the city has arisen. Therefore it is crucial to involve "stakeholders from the city" level in practice-oriented or –based research on social cohesion, as the city is the place where the strongest social inequalities and segregation mechanisms are concentrated and where actors have more room for developing socially innovative strategies. Furthermore, urban stakeholders usually have a wide experience of the issue of social inequalities and strategies facing them, at least in Europe.

By focusing on social cohesion in cities, a multiscalar approach can be very useful for including some important aspects of reality in the research. For example cohesion at one level might result in disintegration at another level. Social cohesion integrates individual aspirations of self-realisation with overall societal and collective needs of reproduction containing a micro, a meso and a macro perspective. Individual aspirations certainly concern interpersonal relations, such as with family, friends, neighbours; but they are also mediated at the level of intermediary associations and organisations, like clubs, firms, political parties, while also being affected by the macro-dynamics of societal institutions.
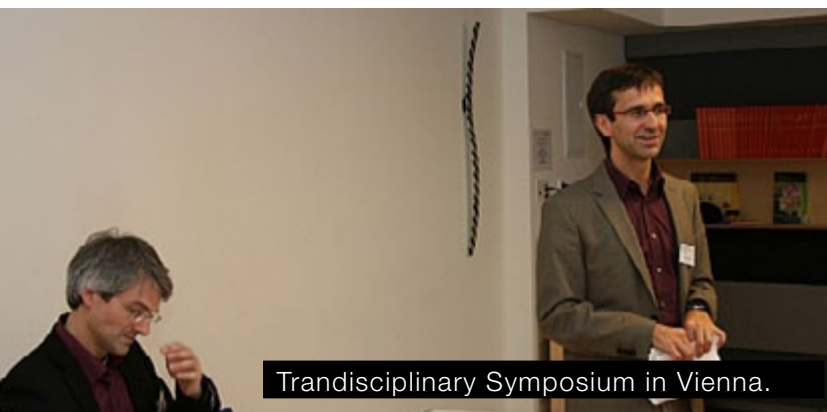
The challenge of stakeholder involvement in Social Polis

The same reasons supporting participative approaches in urban planning are valid for transdisciplinarity in the field of urban studies and social cohesion. Production of urban knowledge is indeed a way to influence the decision making process and to shape institutional procedures, and therefore involvement of stakeholders in research on such a topic as social cohesion is a way to empower actors and to promote interests which are marginalized by current policies.

Social Polis has involved a large scientific community (a scientific core composed of 11 institutions plus a broader researchers' network), and a very broad practice and policy community, involving more than 200 stakeholders. The composition of stakeholder networks participating in the project is very heterogeneous, ranging from NGOs, local and regional institutions, European networks, supranational institutions, research bodies and other actors, coming from different parts of Europe (and including many extra European stakeholders as well). Considering the size of the project and the width of the field covered, the challenge of stakeholder involvement as a problématique is very ambitious, as many of the problems reported in the literature on transdisciplinary research could (and did) occur, thus creating obstacles to the project.

In Social Polis the common objectives were contextualised and adapted to the different working realities by the actors involved. For community-based organisations, it was a tool to obtain small funding for their own projects in the field of social cohesion and to access researchers together with their explanations of social cohesion and the lack of it. For researchers it was a unique opportunity to cross academic boundaries, to learn about practitioners' knowledge and try out new methods. The integration of representatives of city administrations was more difficult because they are used to contracting applied research in order to solve certain, clearly definable problems. Transdisciplinarity, however, problematises problem fields and poses questions in a different way, due to multiple perspectives and the valorization of diverging interests. This needs time and willing-

Trandisciplinary Symposium in Vienna.

ness for reflection and for questioning the assumptions about the world that have been guiding actions (Moulaert et al., 2012 forthcoming).

The most relevant problems concerning stakeholder cooperation can be listed briefly: heterogeneity of participants (institutions, NGOs, research bodies, with different approaches, different goals and different time frames), physical distance between them, abstractness/broadness of the research topic (which can be a hindrance if stakeholders do not see a concrete gain from the participation process), communication barriers, unequal distribution of resources…

2.2 How is transdisciplinary research organized in Social Polis?

Overall structure of the platform and the logic of stakeholder involvement
The social platform has a coordination team comprising 11 Lead Partners, and includes several subcontractors and over 200 stakeholders from various sectors – NGO, community actors, policy makers, private for-profit – as well as an interdisciplinary community of researchers in Europe, South and North America, Africa, Asia, and Australia. The focus of the collaboration is Cities and Social Cohesion.

The network includes participants from all over the world, but is mainly based in Europe. Social cohesion is a global issue, therefore a worldwide network is appropriate. As the literature stresses, the geographical structure of the network should be as close as possible to the spatiality of the phenomena - also crossing institutional boundaries when relevant (Frasera et al., 2005) and combining different spatial scales (Novy et al., 2012 forthcoming).

The organizational concept for the Social Polis platform started from the 'scientific community', which *unrolled* its relations and fields of interest to other communities (communities of practice, policy communities, etc). The practice and policy community (or Stakeholders, as they are referred to) have become involved with Social Polis in four main structured forms:

- 1st form - Stakeholders Network 1: the stakeholders with whom the core partners had traditionally worked through joint research, action oriented research, policy analysis, consulting, etc. The Stakeholders Network 1 includes members from different sectors, concerned with a range of themes and operating within various institutional/governance frameworks. Stakeholders Network 1 involved the users known to the Scientific Core through experienced research cooperation (privileged witnesses, policy makers and evaluators, policy panel members, grassroots representatives).

- 2nd form - Stakeholders Network 2: stakeholders of the same type as above in Stakeholders Network 1 but who had had a looser relationship with the Scientific Core before the project started or/and were involved through indirect contacts of the Researchers Network and the Stakeholders Network 1. Stakeholders Network 2 were identified after the Social Polis Launching Conference in Brussels (May 27-28, 2008) on the basis of recommendations by Stakeholders Network 1 members, participation in local and international Social Polis workshops, and various expressions of interest of all members of practice and policy communities who work towards greater urban social cohesion.

- 3rd form - Inner Circle stakeholder: a group of Social Polis stakeholders which consisted of active stakeholders from different sectors - community civil society, policy, government and private - concerned with a range of themes operating within various institutional/governance frameworks relevant for cities and social cohesion. Amongst others, it included leaders and influential participants of various networks within their sectors, and representatives of European and worldwide umbrella organizations (e.g. EUKN, CECODHAS, and UN-HABITAT) and representatives of the European Commission. This was the most important collaborative network which realized a complementarity between the skills of the scientific community and those of the 'practice' and 'policy' community.

- 4th form - Practice and policy subcontractors of Social Polis: members of Stakeholders Networks 1 & 2 who organized workshops or delivered papers, reports, educational resources, and produced audiovisual materials under Social Polis grants.

To facilitate the analysis of the highly interlinked dynamics of urban social cohesion, 12 urban Existential Fields affecting people's existence were identified and focused upon: welfare and social services; labour markets and economic development; built environment, housing and health; mobility, telecommunications and security; urban ecology and environment; governance; education and training; urban and regional inequalities; diversity and identity; creativity and innovation; neighbourhood development and grassroots initiatives; and social cohesion and the city as a whole. Each of the Social Polis Lead Partners was responsible for involvement of stakeholders – locally and internationally – in identifying and clarifying debates in particular Existential Fields.

From the Blog Understanding Social Science, http://understandingsocialscience.wordpress.com

Social Polis is not only an FP7-financed project to elaborate a research programme and to organize a social platform, but also has its proper history. The research partnership which culminated in Social Polis has lasted for more than 20 years and has been based on joint research programmes about social polarisation and social innovation (URSPIC, http://www.eukn.org/E_library/Social_Inclusion_Integration/Social_Inclusion/URSPIC, and SINGOCOM, http://users.skynet.be/bk368453/singocom) as well as on socially creative strategies to combat social exclusion (KATARSIS, http://katarsis.ncl.ac.uk/). It can be described as an international knowledge alliance with strong local roots, due to the sustainable relationship of researchers and practitioners. This permitted trust building and cooperation locally and internationally (Novy, Habersack, 2010).

Methodology of transdisciplinary research

The cooperation between these different networks, which was aimed at elaboration of the research agenda and consolidation of the social platform, took the form of local, national and international workshops, large scale stakeholder conferences, and a number of small meetings. In addition to the normal consortium interactions, communication was promoted through the interactive Social Polis website www.socialpolis.eu, blogs, a newsletter, mailing lists, and personal e-mail communication. Later on, dissemination of results was supported by different pedagogical tools (Stigendal, 2010).

The logic and dynamics of unrolling stakeholder networks and later the institutionalisation of the social platform were intertwined with the transdisciplinary process of elaboration of the research agenda.

The first phase of the project, when Stakeholder Networks 1 and 2 were being activated, served for initial brainstorming and expression of the variety of research needs arising from different communities of practice and geo-regions, and resulted in the production of a draft research agenda consisting of a long list of topics. Organisation of a large-scale workshop and intensive use of broadcasting-like modes of on-line communication at that time helped to broaden both the stakeholder networks and map out the scope of research problems to be taken into account in the agenda.

Conversely, the communication with the stakeholders in the second phase, which had been thought as a time for focusing the research agenda and institutionalisation of the platform, comprised small-scale stakeholder workshops, meetings in small groups, and personal e-mail communication. The Inner Circle of Stakeholders played a key role in this phase, acting as a sounding board for new initiatives and a panel responsible for refining research themes. A significant amount of time was also devoted to discussion in small groups at the large international conferences as the Stakeholder Conference in Vienna (May 11-12, 2009), where all plenary sessions were followed by discussion round tables for exchange of ideas and experiences organised in the World Café format, which enabled spontaneous formation of discussion groups, democratic exchange of ideas of all participants, and further integration of stakeholder networks through focused discussions in small boards. Last but not least, local stakeholder workshops offered an opportunity for refining the research agenda, enriching conceptual debates on social cohesion and linking reflection on different urban Existential Fields, but also strengthening local networks, and discussing local problems and connecting them to Europe-wide issues. For instance, the Latin-American Workshop in Santiago de Chili (Nov 25-26, 2008) was important for rethinking the concept of social cohesion from a different perspective, involving equity, gender, aboriginal, youth and democracy issues, and the Barcelona Workshop (Jan 29-30, 2009) drawing upon experiences of migrant women in Catalonia discussed the interplay between labour markets, welfare provision and diversity in Catalonia. Nevertheless, it should be noted that the participation of stakeholders

in the process of themes selection and priorities setting was less intensive than their involvement in expressing research needs in the first phase. In other words, stakeholders were much more active and interested in proposing topics than in prioritizing them.

The third phase focused on strengthening bonds within the platform and collaborative production of the challenges and topics which were later to be proposed to the European Commission as potential calls for the 7th Framework Programme. Up to now one challenge and one topic have been integrated into the call programme of FP7, SSH. The collaborative writing process, which involved less than 20 stakeholders, was organised in small transdisciplinary groups; these groups have prepared transversal challenges and topics on urban social cohesion drawing upon research needs which had previously been expressed (phase 1) and then refined (phase 2) by the wider community of stakeholders. This phase secured more focused work on actual editing of the topics by the most strategic stakeholders of Social Polis and specialists on relevant issues, but also served as a means for strengthening internal bonds within the platform, and for the formation of transsectoral teams which might build new consortia to respond to the future FP7 calls relating to 'Cities and Social Cohesion'.

World Café: an innovative tool for dialogue on equal footing

The idea of the World Café is to create an atmosphere, which fosters discussion and critical analysis of important questions at conferences, meetings, workshops, etc.

It enables interaction between people from different backgrounds.

It offers a hospitable setting, through a host, who facilitates the discussion and clear formulation of topics. Randomly mixed groups of people sit at one table each and have a limited amount of time to discuss previously formulated questions that matter.

In the world café everybody is an expert and everyone's opinion is valuable and appreciated. It is a tool that highlights the richness of collective knowledge.

COLLECTIVE INTELLIGENCE

Living Network PATTERN

Café Conversational PROCESS

Integrated Design PRINCIPLES

WORLD CAFÉ

Source:http://www.theworldcafe.com/twc.htm

This approach was used because the Social Polis consortium strongly believes in a need for constant interplay between the dynamics of social interaction within transdisciplinary networks and research activities. The recursive 'path dependency' of a transdisciplinary research process embraces the definition of future research, but also offers a continuous learning process in which researchers and practitioners communities play significant roles (Thompson Klein, 2001 and 2004a).

Large scale stakeholder conference . Presentation.

This path-dependency approach has enabled the mobilisation of existing links, shared languages and communication practices over a short time, thus allowing Social Polis to organise workshops and conferences, and to write working documents in a very short time.

Focus of the project

The focus of the project was defined at the start by the scientific core of Social Polis. It was refined in the first phase of consulting with the stakeholders. Some observers pointed out how there can be a trade-off between openness of participation and functioning of the project: if participants who joined the project later re-discuss the focus of the project, previous achievements can be questioned. Participants who joined the platform at a later stage had less impact on the final structure of the project. However, Social Polis shows how the structure of a transdisciplinary project may evolve over time. If the project started with a directive structure, it became more open and inclusionary afterwards through redistribution of decision making power. Many stakeholders gained more responsibility in the second part of the project, for instance through the constitution of an inner circle of stakeholders. Furthermore, some stakeholders became more involved through new collaboration with research teams. Some who participated very actively in the proceedings of the platform, applied jointly with some Social Polis scientific partners to some European calls, namely two 2010 European Commission FP7 calls.

Coordination

The presence of an active coordinating team, as stressed by the literature, is important in making the project work and for overcoming the communication and coordination problems typical of a transdisciplinary project. The Handbook of Transdisciplinary Research (Hirsch Hadorn et al., 2008) defines the main role of the management in transdisciplinary research as managing the tension between heterogeneity and effectiveness - a difficult task in a project with a high level of complexity.

Different parts of the project have a tendency to diverge, and their final integration is difficult. It is important to have a managing group aiming to keep the different parts of the project together. The roles of the coordinating team are: conflict resolution, integration, consensus building within teams, motivation of partners, reporting on process of communication and consensus-building.

There are several issues the team should carefully take into account:

- The appointment of a (professional) moderator who facilitates team processes and conflict resolution and who acts as a bridge person between the diverse interests and backgrounds (Karl-Trummer et al., 2007; Thompson Klein, 2001);

- Considerable time and space have to be reserved for the observation and management of team-building and team processes, as well as for conflict management (Karl-Trummer et al., 2007). Only a genuine team, which is more than a coincidental gathering of specialists, will achieve the new insights a transdisciplinary process can nurture (Häberli et al., 2001);

- Careful attention should be paid to the continuous involvement of all partners. In order to attain this goal it must be ensured that everybody profits from the project. The interests of all involved parties have to be taken into account (Häberli et al., 2001). It is important to choose adequate communication strategies, via conventional media, dialogue fora and platforms for joint learning or other means of dissemination of new knowledge.

Micronomics festival, organized by Citymine(d).

The Social Polis coordinating team tried to adjust the functioning of the project to the needs emerging during the project (see the section on the structure of the platform at the outset of 2.2).

Often transdisciplinarity leads to very elaborate project structures, whose complexity may hinder mutual learning and goal adjustment if the organization becomes too complicated. Due to their scale and complexity, these structures generally need written agreements in which decision making routines are formalized. This requires sometimes a more formal and at times bureaucratic form of research management. In Social Polis, the research management modes were kept quite flexible, allowing stakeholders to change their level of involvement and rearrange means of participation during the project. This often allowed for satisfactory ad hoc solutions to problems that emerged 'along the road'.

Local stakeholder workshop in Lisbon.

The management should try to organize some form of controlled confrontation of partial results, for preventing fragmentation of final outcomes (e.g. focusing solely on the cultural or the social dimension of social cohesion while omitting the political) instead of a joint outcome. A fragmented division of labour which minimizes overlaps and disagreements should be avoided. But a clear division of labour is necessary because the aim is not for the researcher to become an activist and the activist a researcher. The knowledge, abilities and skills as well as the interests and potentials of each participant have to be identified and valued in such collaboration (Moulaert et al., 2012 forthcoming). Ways of organizing this kind of controlled confrontation range from comparison of outputs of different working groups to a formalized form of integration into a systemic model. For this reason collective opportunities for re-discussion of working group outcomes (as at the Vienna conference) were scheduled in the project.

2.3 What problems affecting the process were experienced during the unrolling of the platform? And which solutions found?

Scepticism on the benefits of being involved in the project

Transdisciplinarity literatures stress the need for clear communication of research goals, in order to prevent false or unclear expectations of stakeholders, and thus help in averting disappointments. An overly broad scope of project interests (as in the case of Social Polis) may not always be clear to all parties involved. In order to avoid practice community disaffection, research questions of a project should not only be theoretically interesting, but also clear and relevant for policy and practice (Hollaender, 2003; Antrop, Roggea, 2006; Pui Hang, 2006).

The practice community involved with Social Polis did not always have a clear idea about the benefits from the collaboration with the academic world and the European Commission DG Research for the elaboration of a Research Agenda for the European Commission. Although the ideas, goals and expected outcomes of Social Polis were clear to the stakeholders, the final purpose and the actual use of the Research Agenda needed further clarification. As many stakeholders were not familiar with the scientific Framework Programmes of the European Commission, many doubts arose, relating to relevance of their contributions to the Research Agenda, and, in turn, to the political relevance of the Agenda. The underlying problem was that stakeholders – small organisations in the 1st phase of the project in particular - were more concerned with immediate issues and daily practices than with a long-term research perspective which they sometimes perceived as too abstract and too distant from concrete local concerns of their organisations.

Literature also points out how a project can have an influence on policy practice communities because these may loose interest if their aims are not sufficiently addressed in the policy-orientation (Tress et al., 2003). In Social Polis, there was a commitment from DG Research, but other departments of the EC were reluctant to become involved in a research initiative which seemed to focus on problem identification instead of solutions. "Transdisciplinary projects can empower stakeholders and enhance their knowledge, but this requires effective and relatively *fast* political influence of the outcome of the participation process" (indeed the absence of short-term benefit for stakeholders could represent a demotivating factor) (Hage et al., 2005; Frasera et al., 2005). To counter this problem it is important to provide strong organizational incentives (Stokols et al., 2008) and intermediate advantages, as well as to address key social issues and applications in local settings. Differences between a more local and a more global focus can create problems, and it is important for local stakeholders in broad projects such as Social Polis to see the link with their practical problems (Hage et al., 2005). Transdisciplinary projects require clear goal setting. Any hidden agenda has the potential to disturb the process significantly. Transparency is crucial for successful transdisciplinary cooperation. The

tasks and responsibilities of each partner have to be made clear, and everybody has to know what will be expected of him/her and what he/she can expect from others (Häberli et al., 2001).

In line with the above arguments, the consortium took the incentive to deliver some intermediate results and to clarify the project's goals, activities and implications to the stakeholders. The decision to fund workshops genuinely organized by stakeholders and to commission some practitioners to produce short papers on specific themes was much appreciated by the stakeholders. The workshops, which provided an arena for face-to-face discussion of the proceedings of Social Polis, not only became a motivational factor, but also played a key role in making the complex Research Agenda more comprehensible to practitioners.

The literature on transdisciplinarity shows how time helps to develop trust and synergies, to accommodate to different work styles and personalities, and to integrate disciplinary perspectives with methodologies. Indeed transdisciplinarity works better with long-term professional relationships and collaborative experiences (Hage et al., 2005; Frasera et al., 2005).

Trandisciplinary Symposium in Vienna.

Time was indeed a very significant factor also for Social Polis, crucial both for building mutual trust within the platform and for the understanding of expected project outcomes. In addition, after the publication of the first FP7 call on local welfare systems emerging from their work in Social Polis, it became clearer to stakeholders how several of the themes to which they had contributed would be picked up by the European Commission in the future. Furthermore, both participation and trust increased since clear opportunities arose for the stakeholders to become involved in a subsequent platform and in consortia responding to upcoming FP7 calls.

Problems related to language
The transdisciplinarity literature also points out how language problems can represent a problem in transdisciplinary research (Winder, 2003; Antrop, Roggeaa, 2005; Schensul et al., 2006). According to Nick Winder, scientific jargon may be a barrier to reciprocal understanding between different actors, but the dimension of the group may help: a smaller group requires less linguistic efforts. The main communication problem is usually between the research team and local stakeholders. Schensul et al. (2006) pointed out how long-term collaborations tend to reduce this problem. Another common com-

munication problem in transdisciplinary and interdisciplinary research is related to the diversity of language between researchers with different backgrounds: different disciplinary jargons may cause misunderstanding and communication problems.

In Social Polis language use was sometimes sometimes problematic, especially after the engagement of stakeholders moved from the local to the international level, with the Vienna conference and the subsequent finalisation of the research agenda as milestones. To the stakeholders who decided to participate in these activities it was necessary to offer strong organisational support, with translations of papers and presentations both from and into English. The Social Polis consortium tried to mitigate this problem through detailed discussion of the Research Agenda at several local language workshops, providing stakeholders with French, Italian, Portuguese and Spanish translations of strategic documents as appropriate, organising translation services and sessions in Spanish at major events, and delivering educational resources avoiding academic jargon in Spanish, German and Czech. Dissemination through summaries and training sessions for stakeholders and production of educational tools in national languages both for practitioners and for the larger public will remain a challenge for future international transdisciplinary research. Future transdisciplinary networks should ensure that command of English is not an implicit selection criterion as it may lead to privileging certain stakeholders and partners, especially organisations from Northern Europe, Brussels-based international networks or stakeholders from North America, and, as such, exclude protagonists of certain local agendas, ideas, and interests that are not always successfully captured by international umbrella organisations or by an Anglo-Saxon understanding of how the world functions.

Micronomics festival, organized by Citymine(d).

Communication

Some relevant reflections on communication in a large transdisciplinary project can be learned from the KATARSIS final report.

With regard to team-building and the establishment of trust relationships between the different project partners regular meetings and occasions for *informal gatherings* (e.g. social dinners etc.) are vital. Examples of other helpful communication tools might be the creation of an *interactive website,* an *intranet,* small *publications in native languages* accessible to regional stakeholders, the *translation* of the executive summaries of deliverables of particular practical relevance as well as the establishment of a stakeholder friendly database in order to keep stakeholders regularly informed about

research progress. This way of working does not sit easily with traditional academic hierarchies. Researchers should not regard practitioners as mere users of their research results. Knowledge produced in transdisciplinary research will be used not only by practitioners, but also by researchers. Therefore, the whole logic of dissemination as a linear process has to be abandoned and substituted by a *cumulative-circular approach of mutual learning* (Moulaert et al., 2012 forthcoming).

Although the website, the newsletter and the mailing lists proved to be efficient tools for broadcasting news about Social Polis, as well as for circulation and publication of intermediate working documents, they have not worked very well as "spaces of discussion". The more individuals, groups and organisations are involved in a multilingual and pluri-professional community of stakeholders, the more difficult non-customized communication becomes, along with growing numbers of misunderstandings and unwanted messages being widely circulated. Although online tools are crucial to internal network communication among project partners and the most active stakeholders, the practice of Social Polis proves that face-to-face communication and local events are more effective in actively involving broader networks of practitioners.

Face-to-face communication is important for effective collaboration, but there are basic limitations, relating to time and costs in particular. Antrop and Roggea (2006) point to a risk of decline in the quality of communication resulting from time constraints and suggest appointing professional facilitators to optimize the use of time during network meetings.

Educational resources produced by stakeholders

The Social Polis platform financed stakeholders to produce 4 different multimedia educational resources, aimed at popularizing the outcome of the project.

Blog Understanding Social Science – The blog has been created for disseminating some results of the Social Polis scientific activity. This blog tries to make Social Science easy to understand for everyone. Understanding Social Science contains information and pedagogical materials on social polarisation, labour markets, economic restructuring in Europe from an urban perspective, housing policies, social cohesion and environmental politics in cities. The contents of this blog are based on three original survey papers produced in the framework of the project Social Polis. The blog was realized by Nuria Francoli and Mar Camarasa, from the stakeholder SURT foundation.
Link: http://understandingsocialscience.wordpress.com/

Pop Report – The report, Cities and Social Cohesion, popularizes the results of Social Polis with regard to the theme "Cohesion of the city as a whole". The report presents Social Polis as part of the current re-contextualisation of science where science and society have started to "reach out" to one another. The relationship between the researchers and the stakeholders serves as a red thread throughout the report. The report was written by stakeholder Mikael Stigendal, a researcher from Malmö University with a lot of experience in the field of transdisciplinary research and action.
Link: http://www.socialpolis.eu/pop-report/pop-report/

VIDA – VIDA consists of 8 short videos on urban problematiques identified in the Czech Republic. The videos were made in the Czech language to translate the outcomes of Social Polis to local stakeholders in Eastern Europe. VIDA stands for "Audio-visual education on Czech urban issues". These videos were developed and shot by the stakeholder IURS - Institut pro udržitelný rozvoj sídel o.s. / Institute for Sustainable Development of Settlements.
Link: http://www.urbaninfo.cz/iurs-filmy/

FAQs on social cohesion – For their educational resource "Practical experience meets Science meets Administration" Kon-text organised 5 workshops with the urban renewal offices, representatives of the city administration and researchers (many of them local stakeholders from Social Polis) in Vienna. They work collectively on formulating and then answering Frequently Asked Questions (FAQ) about social cohesion in the city. These frequently asked questions and the outcomes from the workshops are available online.
Link: http://socialpolis.wordpress.com/

Source: http://www.socialpolis.eu/

Micronomics festival, organized by Citymine(d).

3. 'Prospective' for Transdisciplinarity

Time, organizational and financial constraints

Resource constraints play a key role in participation; the stakeholders were not equally committed for that reason. Small NGOs, which operate under strict financial and time constraints, have to deploy their resources in the first place where urgent issues for their clients arise. Broad debates on European research agendas are only of secondary importance to them. Most stakeholders simply have no budgets for such networking activities, and they had to devote time and work to their engagement in the Social Platform without any remuneration. It is absolutely necessary to make sure that non-academic stakeholders, small organisations from the NGO sector in particular, receive funding going far beyond reimbursement of travel costs for collaborating in the platform. Social Polis addressed this issue through a substantial increase of the initial budget for stakeholder projects – workshops, papers and audiovisual materials, and educational resources – realized by stakeholders under the Social Polis small grants schemes. These schemes were really successful and greatly appreciated by stakeholders, but future transdisciplinary research projects should find more solid forms of remuneration and valorisation of such initiatives.

Heterogeneity

The heterogeneity of actors is a crucial issue in transdisciplinary research. The richness of a transdisciplinary project lies in the opportunity of working with different actors. However, high heterogeneity, as pointed out in the literature, also makes the project more difficult to coordinate.

The cooperation of partners from different backgrounds usually brings conflict with it (Thompson Klein, 2001). The bigger the differences, the greater the risk of irreconcilable differing perspectives, and thus the greater the risk of failing, of not being able to cooperate successfully. A good knowledge management structure can help in dealing with these risks.
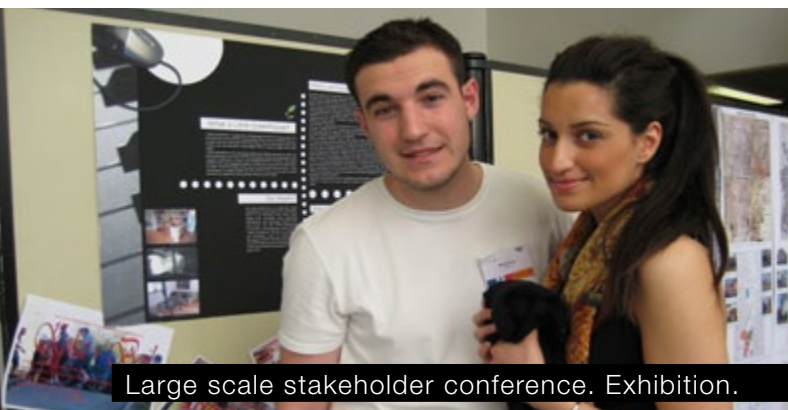
Large scale stakeholder conference. Exhibition.

The heterogeneity can relate to dimensions, resources, time horizons, perspectives, theories, methodologies, disciplinary training, types of activity, mission and organizational structure of the actors. Walter and Sholtz (2007) argue that although a high number of involved heterogeneous participants support the success of a project (e.g. by bringing different resources, such as specific knowledge, finance or authority), too much diversity could lead to negative effects because of coordination problems. Other publications point out how heterogeneity may be a reason for conflict, for problems in mediation and for the lack of common ground.

Transdisciplinary research is an attempt to avoid this trap. It tries to integrate knowledge from different scientific and non-scientific backgrounds (Beinstein, 2008; Novy, 2008) to create common understanding of issues, their problematisation and research.

To sum up, the growing complexity of present urban realities and the uncertainty of possible futures, wherein social problems and challenges are too multidimensional and ill-defined to "be dealt with by a single discipline or profession" (Thompson Klein, 2004b), create both a need and an opportunity for transdisciplinary research and practice. The increasing prominence of ideas of sustainability that are put at the heart of political agendas calls for a transdisciplinary address to environmental, social and economic dimensions. Burning societal issues such as poverty, uneven development, malnutrition, ageing, environmental injustice or restructuring of healthcare systems can be only addressed by broad cooperation between social, economic, natural, and technical sciences, and international policy and practice communities. The research on urban social cohesion has a particular role to play in this transdisciplinary endeavour, by advocating greater socio-economic and environmental justice and social integration, and thus ensuring that 'green' issues (like climate change) do not supplant 'red' issues (like justice and equality) in sustainable development policy and practice. Opportunities to challenge dominant values of what 'economy' is and what its socio-spatial manifestations are, arose during the recent economic crisis (Hamdouch, 2009). However these opportunities got lost in particular interpretations and responses to the fiscal and financial crisis. The real social crisis, which is yet to come as a result of new neo-liberal restructuring in major European states, will bring a new opportunity and necessity for transdisciplinary research on social cohesion in Europe. It is to be expected from our analysis of social cohesion as a problématique that the unleashing of market forces, the loosening of social security mechanisms and the increase in social inequality will radicalise the inherent instability of capitalist market economies. If "all that is solid, melts in the air" remains the modernist paradox (Berman, 1988), Marx and Schumpeter remain key references to acquiring a grasp on the dynamics of "creative destruction" at work in cities. Although overseas experiences show the possibility of virtuous circles for urban development (Fernandes, Novy, 2010), the European embrace of financial and real estate capital further undermines social cohesion.

Another opportunity for transdisciplinary research arises with the major reorientation of research funding for social sciences in Europe, both from the European Commission and national research councils, which moves increasingly from sponsoring fundamental (predominantly disciplinary) research towards applied research addressing major societal challenges. First, given the complexity of these challenges and a need for immediate and proxy - and thus cheaper - translation of research findings into policies, transdisciplinary networks, involving a number of disciplines and practitioners, are being given preference. Second, a focus on large rather than small scale projects, wherein a large part of the administration is transferred from sponsors to research networks, favours large, transdisciplinary research consortia.

Thompson Klein's (2004a) so-called *problem solution* approach to social science which calls for transdisciplinary research while stressing the importance of societal implications and the policy applicability of science, at the same time introduces challenges for transdisciplinarity.

First, we are mindful that many 'problems' do not exist by themselves, but are constructed and enacted through particular (ideological) viewpoints or lenses. Similarly, there has been a tendency, in some research, for preferred solutions to define the problems. It should be recognised that problems are never 'solved' once and for all, but are provisionally reformulated. Problems, therefore, are not obstacles to be removed, but points around which new ways of thinking can take shape (Rajchman, 2000). There is no one truth because "a problem is a series of tensions that must be met with a constructive act" (Williams, 2003).

Second, the inclusiveness of transdisciplinary networks should not be conflated with the ability to produce uncontested knowledge. Transdisciplinary research is a major step forward in the examination of new potentialities arising from inclusive negotiation, social differences and conflicts (Albrechts, 2003), doing so in the spirit of inclusionary ethics (Healey, 1997 and 2002), as well as seeking to conciliate bottom-up institutional dynamics with the (transformed) enabling institutions needed to implement particular solutions (Alexander, 2005; Moulaert, Mehmood, 2009). However, the society of stakeholders is very broad, and – as the practice of Social Polis shows – the possibilities of both equal involvement of everyone in the research process and inclusion of all expressed research priorities are limited. The final prioritisation of topics, research strategies and policy solutions will always depend on negotiations influenced by power relations and particular preferences related to values, and thus may be socially contested. Hence, a search for progressive solutions to social problems and societal challenges in transdisciplinary research, where making ethical choices is inevitable, should always be accompanied not only by careful coordination ensuring that as many as possible voices – and the weak ones in particular - are heard and taken into account, but also by meta-ethical reflection on values and imaginative speculation upon other possible ethical choices relating to different values.

Third, and linked to the previous points, search for imaginative and socially inclusive responses to societal problems in transdisciplinary research should depart from linear constructions of time and belief in the existence of certain causality between intentions and events (Madanipour, 2010). This, in more pragmatic terms, requires imagining alternative futures (Hillier, 2008) on the one hand, and finding a balance between immediate, intermediate, and long-term research outcomes and proposed policy directions on the other. Such an approach is necessary not only for securing involvement of those engaged in a research process but who are often skeptical about the benefits from this involvement; it also enables development of 'Plan Bs' as responses to less obvious, but still possible, futures.

Fourth, a focus on societal challenges in transdisciplinary research should not repress methodological reflection on the transdisciplinary methodologies used to bring different people together in trans-sectoral networks and the knowledge enacted in transdisciplinary research processes and outputs. Enlightenment-based, positivist, scientific, 19th-century disciplines have developed strong traditions of auto-reflexive strategies aimed at moving towards greater theoretical and methodological robustness. The search for transdisciplinary excellence will require intensive attention on how to confront these traditions (Ramadier, 2004) and make creative use of them.

Fifth, transdisciplinary research will have only limited results without the presence of a clear strategy with respect to policy making. The translation of transdisciplinary research outcomes into visible policy results that can be communicated to involved members of practice communities and lay-people is a *conditio sine qua non* of successful transdisciplinary endeavour. This is much easier said than done as the logic of horizontal transdisciplinary networks contradicts the hierarchical logic of bureaucratic organizations, wherein civil servants tend to report to their senior colleagues rather than to trans-sectoral partners. Whilst a major change in bureaucratic systems is unlikely to happen, involvement of more senior members of the policy communities in transdisciplinary networks would help in securing the applicability of research results.

Transdisciplinary networks, which are successful in involving senior members of the policy community and delivering policy solutions, may with time transform into think-tanks or knowledge alliances for alternative development strategies, like Euromemorandum. Given that there are limits to the inclusiveness of such networks, which become less manoeuvrable as high numbers of new members grow, there is a risk that they will be appropriated by the most powerful members and turn into exclusive hegemonic think-tanks. To avoid this requires constant monitoring of inclusiveness, democracy and openness to weak voices within transdisciplinary research, policy and practice communities.

Last but not least, due to limited sources of funding there is a tension between the need for establishing greater sustainability of existing transdisciplinary networks and the formation of new networks. Time is absolutely crucial for building mutual trust and capitalizing on evolving social bonds and synergies. Short-term funding for social platforms brings a risk of loss of invested financial and social resources, whilst these networks – such as the social platform of Social Polis - often reach their end at the time when they start gaining momentum. Hence, sustainability of transdisciplinary networks and longer time-frames of action are needed to secure deliverability of research and policy outcomes.

Definitions of research styles

Cross-disciplinary research – Research outside the scope of one's own discipline but which uses the methodologies of one's own discipline. An example would be a cultural planner researching public art. There is no transfer of methodology or cooperation between the disciplines.

Multidisciplinary research – A self-contained, non-integrative mixture of disciplines in which each discipline retains its methodologies and assumptions. Cooperation between researchers is mutual, but not interactive (Augsburg, 2005). For instance, in the field of healthcare, specialists in different aspects of health may work together on one patient.

Pluridisciplinary research – It is concerned with studying a research topic in several disciplines at the same time. For example, a Picasso Cubist painting studied by an art historian, a theologist, a mathematician, a philosopher, etc.

Interdisciplinary research – Originally used to describe research which interactively uses methodologies from several established disciplines. There is transfer of methods between disciplines. For instance, substandard housing may be examined in one project using the methodologies of construction, public health, spatial planning, politics, geography, sociology, community development, etc. *Today interdisciplinary research mainly refers to research that has developed a shared methodology across disciplines.*

Transdisciplinary research – This literally means research between, across and beyond disciplinary boundaries. It recognises the dynamics of similarities across disciplinary knowledge (e.g. community development, social work, social planning). And disciplines here refer not only to scientific disciplines, but equally to practice fields also. Its goal is the holistic understanding of the world through the connections and unity of knowledge (Nicolescu, 2002). In other words, researchers *modify* or *adapt* their approaches to make them more appropriate to the issues studied. Sometimes, a new 'discipline' may emerge, e.g. political ecology, cultural geography, complexity (physics, philosophy, cybernetics). Essential to transdisciplinary research is cooperation between scientists and those practitioners working outside academic communities.

Recursiveness - A general principle of transdisciplinary research involving iterative procedures which allow concepts and methods to be tested repeatedly*,* enabling the restructuring of problems, the correction of assumptions and adjustment of the project focus if any are found to be inadequate. This process is grounded in the knowledge uncertainty surrounding the problems; it generates a continuous movement back and forth between the actors involved in the project and its outcome.

Post–normal science – A concept developed by Silvio Funtowicz and Jerome Ravetz in attempting to define a methodology of inquiry appropriate to cases where "facts are uncertain, values in dispute, stakes high and decisions urgent" (Funtowicz, Ravetz, 1991). It is applied primarily in the context of long-term issues where there is less information available than is desired by stakeholders. Because of this, advocates of post-normal science suggest that there must be an "extended peer community" consisting of all those affected by an issue who are prepared to enter into dialogue concerning it.

Post-disciplinarity – This term usually refers to the broad spectrum research approaches which step outside traditional disciplinary boundaries. The rise of post-disciplinary commitment is reflected in growing critical interest in the history of the social sciences, their grounding in Enlightenment thought and their differential articulation with modernity. It is linked to increasing interest in such issues and perspectives as the situatedness of social science knowledge; post-colonialism as both topic and method; and the challenges to established paradigms from 'post-modernity' (Jessop, Sum, 2003).

Proto-disciplinarity – The development of new ideas, methods, approaches and theories at disciplinary borderlands, which may lead to mapping out the borders of a new discipline or sub-discipline. Proto-disciplinarity is not itself critical of disciplinarity, and the focus of this form of disciplinarity is primarily academic; it is not necessarily driven by an engagement with problems outside the academy.

Sources:
Jessop, Sum, 2003; Funtowicz, Ravetz, 1991; Nicolescu, 2002; Augsburg, 2005.

Bibliography

Achterkamp M.C., Vos J.F.J. (2008) Investigating the use of the stakeholder notion in project management literature, a meta-analysis, *International Journal of Project Management, 26(7),* 749-757.

Adger N., Brown K., Fairbrass J., Jordan A., Paavola J., Rosendo S., Seyfang G. (2003) Governance for sustainability: towards a 'thick' analysis of environmental decisionmaking, *Environment and Planning A*, *35*, 1095-1110.

Albrechts L. (2003) Planning and power: towards an emancipatory planning approach, *Environment and Planning C: Government and Policy, 21*, 905-924.

Alexander J. (2005) Institutional transformation and planning: from institutionalisation theory to institutional design, *Planning Theory, 4(3),* 209-223.

Antrop M., Roggea E. (2006) Evaluation of the process of integration in a transdisciplinary landscape study in the Pajottenland (Flanders, Belgium), *Landscape and urban planning, 77(4),* 382-392.

Augsburg T. (2005) *Becoming Interdisciplinary*, Dubuque, Kendall Hunt.

Balducci A. (2010) Strategic Planning as a Field of Practices, in: Cerreta M. et al. (eds.) *Making Strategies in Spatial Planning Knowledge and Values (Urban and Landscape Perspectives), 9(1)*. Dordrecht, Heidelberg, London and New York, Springer.

Bammer G. (2005) Integration and Implementation Sciences: building a new specialization, *Ecology and Society 10(2),* on-line.

Berger-Schmitt R. (2000) Social Cohesion as an Aspect of the Quality of Societies: Concept and Measurement, *EuReporting Working Paper No. 14.*

Berman M. (1988) *All that is solid melts into air,* New York, Penguin Books.

Bernstein R. (1983) *Beyond Objectivism and Relativism,* Oxford, Basil Blackwell.

Bickerstaff K., Gordon W. P. (2005) Shared Visions, Unholy Alliances: Power, Governance and Deliberative Processes in Local Transport Planning, *Urban Studies, 42(12),* 2123–2144.

Brughai R., Varvasovszky Z. (2000) Stakeholder analysis: a review, *Health Policy and Planning, 15(3),* 239-246.

Collins H. M., Evans R. (2002) The third wave of science studies, *Social Studies of Science 32(2)*, 235-96.

Curriea R. R., Seaton S., Wesley F. (2008) Determining stakeholders for feasibility analysis, *Annals of Tourism Research,36,* 41-63.

Del Rosario V., Han Goh K. (2008) Community Stakeholder Management in Wind Energy development Projects, *Student thesis,* Umeå University, Faculty of Social Sciences, Umeå School of Business.

Del Rosario V., Han Goh K. (2009) What To Do When Stakeholders Matter: A Guide to Stakeholder Identification and Analysis Techniques, *Master thesis,* Umeå University, Faculty of Social Sciences, Umeå School of Business.

Fernandes A. C., Novy, A. (2010) Reflections on the unique response of Brazil to the financial crisis and its urban impact, *International Journal of Urban and Regional Research, 34 (4),* 15.

Flyvbjerg, B. (2001) *Making Social Science Matter,* Cambridge, Cambridge University Press.

Frasera E. D. G., Dougilla A. J., Mabeeb W. E., Reeda M., McAlpine P. (2005) Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management, *Journal of Environmental Management, 78(2)*, 114-127.

Freire, P. (2004) *Pedagogy of indignation*, Boulder, Paradigm.

Friedmann J. (1987) *Planning in the Public Domain: From Knowledge to Action,* Princeton, Princeton University Press.

Friedmann J. (1992) *Empowerment. The Politics of Alternative Development,* Cambridge, Blackwell.

Friedman M. T., Mason D. S. (2009) Stakeholder management and the public subsidization of Nashville Coliseum, *Journal of urban affairs, 27,* 93-118.

Funtowicz S.O., Ravetz J. R. (1991) A New Scientific Methodology for Global Environmental Issues, in: Costanza R. (ed.) *Ecological Economics: The Science and Management of Sustainability*, New York, Columbia University Press.

García M., Pradel M., Eizaguirre Anglada S. (2009) Citizens' creative strategies facing social exclusion: towards innovation in local governance?, *Paper presented at Regional Studies Association Annual Conference 2009 'Understanding and Shaping Regions: Spatial, Social and Economic Futures',* April 6-8, 2009, Leuven.

Gercheva D. (2003) *Draft Manual for a local sustainable development strategy formulation,* UNDP, http://www.undp.org/capacity/publications.shtml.

Godemann J. (2006) Promotion of interdisciplinary competence as a challenge for Higher Education, *Journal of Social Science Education, 5(2),*51-61.

Gonzalez S., Healey P. (2005) A sociological institutionalist approach to the study of innovation in governance capacity, *Urban Studies, 42(11)*, 2055-2069.

Googins B., Rochlin S. (2005) Creating the Partnership Society: Understanding the Rhetoric and Reality of Cross-Sectoral Partnerships, *Business and Society Review, 105(1),* 127–144.

Häberli R., Bill A., Grossenbacher-Mansuy W., Thompson Klein J., Scholz R. W., Welti M. (2001) Synthesis, in: Thompson Klein J. et al. (eds.) *Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society. An Effective Way for Managing Complexity*, Basel, Birkhäuser.

Hage M., Leroy P., Willems E. (2005). Participatory approaches in governance and in knowledge production: What makes the difference?, *Paper presented at the International Sociology Association Conference: 'Environment, knowledge and democracy',* 6-7 July 2005, Marseille, France.

Halla F. (2002) Preparation and implementation of a general planning scheme in Tanzania: Kahama strategic urban development planning framework, *Habitat International, 26(2)*, 281-293.

Hamdouch A. (2009) Transdisciplinarity: Innovative solutions during economic crisis, *author's manuscript*, Lille.

Haugaard Jakobsen C., Hels T., McLaughlin W. J. (2004) Barriers and facilitators to integration among scientists in transdisciplinary landscape analyses: a cross-country comparison, *Forest Policy and Economics, 6(1),* 15-31.

Healey P. (1997) *Collaborative Planning - Shaping places in fragmented societies*, London, MacMillan.

Healey P. (2002) Planning in Relational Space and Time: Responding to New Urban Realities, in: Bridge G., Watson S. (eds.) *Companion to the City*, Chicester, Blackwell Publishing.

Healey P. (2007) *Urban Complexity and Spatial Strategies. Towards a relational planning for our times*, London and New York, Routledge.

Hillier J. (1999) Going round the back? Complex networks and informal action in local planning processes, *Environment and Planning A, 32,* 33-54.

Hillier J. (2008) Plan(e) Speaking: a Multiplanar Theory of Spatial Planning, *Planning Theory 7(1)*, 24-50.

Hirsch Hadorn G., Hoffmann-Riem H., Biber-Klemm S., Grossenbacher-Mansuy W., Joye D., Pohl C., Wiesmann U., Zemp E. (eds.) (2008) *Handbook of Transdisciplinary Research,* Springer.

Hirsch Hadorn G. et al. (2008a) The emergence of transdisciplinarity as a form of research, in: Hirsch Hadorn G. et al. (eds.), *Handbook of Transdisciplinary research,* Springer, 19-42.

Hollaender K. (2003) Success factors in interdisciplinary and transdisciplinary research: Selected results from the program Urban Ecology, in: Tress B. et al. (eds.) *Interdisciplinary and Transdisciplinary Landscape Studies: Potential and Limitations*, Wageningen, Delta Series 2.

Hollaender K., Loibl M. C., Wilts A. (2008) Management, in: Hirsch Hadorn G. et al. (eds.), *Handbook of transdisciplinary research,* Springer.

Jessop B., Sum N.L. (2003) On Pre- and Post-Disciplinarity in (Cultural) Political Economy, Économie et société-*Cahiers de l'ISMEA*, *39(6)*, 993-1015.

Karl-Trummer U., Novak-Zezula S., Schmied H. (2007) *Projektmanagement im transdisziplinaren Kontext Ein Manual zur Förderung der Lust am transdisziplinären Arbeiten*. Wien.

Law J. (2004) *After Method*, London, Routledge.

Maasen S., Lieven O. (2006) Transdisciplinarity, a new mode of governing, *Science and Public Policy, 33(6),* 399–410.

MacCallum D., Moulaert F., Hillier J. and Vicari Haddock S. (eds.) (2009) *Social Innovation and Territorial Development*, Farnham, Ashgate.

Madanipour A. (2010) Connectivity and contingency in planning, *Planning Theory 9(4),* 351-368.

Max-Neef M. A. (2005) Foundations of transdisciplinarity, *Ecological economics, 53(1),* 5-16.

Moulaert F., Cabaret K. (2006) Planning, Networks and Power Relations: is Democratic Planning Under Capitalism Possible?, *Planning Theory, 5,* 51-70.

Moulaert F., Mehmood A. (2009) Spatial planning and institutional design: what can they expect from transition cost economics, in: Geyer M. (ed.) *Urban Policy Handbook, 2*, London, Edward Elgar.

Moulaert F., MacCallum D., Mehmood A., Hamdouch A. (eds.)(2012 forthcoming) *International Handbook on Social Innovation: Collective action, social learning and transdisciplinary research,* London, Edward Elgar.

Moulaert F., Swyngedouw E., Martinelli F., Gonzalez S. (eds.) (2010) *Can Neighbourhoods Save the City? Community Development and Social Innovation,* London and New York, Routledge.

Nicolescu B. (2002) *Manifesto of transdisciplinarity [Trans. K-C. Voss]*, New York, SUNY Press.

Novy A., Bernstein B. (2009) Transdisciplinarity and Social Innovation Research, *SRE Discussion Papers, 2009/01*, Vienna, Institut für Regional und Umweltwirtschaft, University of Economics and Business.

Novy A., Habersack S., Bernstein B. (2012 forthcoming) Innovating our way of knowing and acting: Transdisciplinarity and Knowledge Alliances, in: Moulaert F. et al. (2012 forthcoming) *International Handbook on Social Innovation: Collective action, social learning and transdisciplinary research,* London, Edward Elgar.

Novy A., Habersack S. (2010) 'Wissensallianzen für "Eine Stadt für Alle in ihrer Verschiedenheit"', *Dérive - Zeitschrift für Stadtforschung, 40/41*, 178-83.

Novy A., Coimbra S. D., Moulaert F. (2012 in press) Social cohesion: a conceptual and political elucidation, *Urban Studies.*

Petts J., Owens S., Bulkeley H. (2008) Crossing boundaries: Interdisciplinarity in the context of urban environments, *Geoforum, 39(2),* 593-601.

Pohl C., Hirsch Hadorn G. (2007) *Principles for Designing Transdisciplinary Research*, Munich, Oekum Verlag.

Pui Hang H. (2006) Public Participation in urban renewal in Hong Kong, *Master thesis,* University of Hong Kong.

Rajchman J. (2000) *The Deleuze Connections*, Cambridge, MIT Press.

Ramadier T. (2004) Transdisciplinarity and its challenges: the case of urban studies, *Futures, 36(4),* 423-439.

Ramstadt Y. (1986) A pragmatist's quest for holistic knowledge: the scientific methodology of John R. Commons, *Journal of Economic Issues, 20*,1067–105.

Reed M.S., Graves A., Dandy N., Posthumus H., Hubacek K., Morris J., Prell C., Quinn C. H., Stringer L. (2009) Who's in and why? A typology of stakeholder analysis methods for natural resource management, *Journal of Environmental Management, 5,* 1933-49.

Schensul S. L., Nastasi B. K., Verma R. K. (2006) Community-Based Research in India: A Case Example of International and Transdisciplinary Collaboration, *American journal of community psychology, 38(1-2)*, 95-111.

Scholz R. W., Lang D. J., Wiek A., Walter A. I., Stauffacher M. (2006) Transdisciplinary and case study method, *International Journal of Sustainability in Higher Education, 7(3),* 226-251.

Sheikh K., Rao S. (2007) Participatory city planning in Chhattisgarh: a civil society initiative, *Environment and Urbanization, 19(2),* 3-17.

Social Polis, 12+1 survey papers related to 12 Existential field: soon published in an urban studies special issues (2012 forthcoming).

Social Polis, final report (2011) http://www.socialpolis.eu

Social Polis, technical annex (2008).

Starkl M., Brunner N., Flogl W., Wimmer J. (2009) Design of an institutional decision-making process, The case of urban water management, *Journal of Environmental Management, 90(2),* 1030-42.

Stigendal M. (2010) *Cities and social cohesion - Popularizing the results of Social Polis*, Mapius, Malmö, Malmö University.

Stokols D., Misra S., Moser R. P., Hall K., Taylor B. (2008) The Ecology of Team Science: Understanding Contextual Influences on Transdisciplinary Collaboration, *American Journal of Preventive Medicine, 35 (2),* 96-115.

Thabrewa L., Wiekb A., and Riesa R. (2009) Environmental decision making in multi-stakeholder contexts: applicability of life cycle thinking in development planning and implementation, *Journal of Cleaner Production, 17(1),* 67-76.

Thompson Klein J., Grossenbacher-Mansuy W., Häberli R., Bill A., Scholz R.W., Welti M.(eds.) (2001) *Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society. An Effective Way for Managing Complexity*, Basel, Birkhäuser.

Thompson Klein J. (2004b) Interdisciplinarity and complexity: An evolving relationship, *ECO Special Double Issue, 6(1-2)*, 2-10.

Thompson Klein. J. (2001) The Dialogue Sessions, in: Thompson Klein J. et al. (eds.) *Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society. An Effective Way for Managing Complexity*, Basel, Birkhäuser.

Thompson Klein J. (2004a) Prospects for transdisciplinarity, *Futures 36(4),* 515-526.

Tress B., Tress G., Van der Valk A., Fry G. (eds.) (2003) *Interdisciplinary and Transdisciplinary Landscape Studies: Potential and Limitations*, Wageningen, Delta Series 2.

Van Dyck B. and Moulaert F. (2012 fortcoming) Framing social innovation research: a Sociology of Knowledge (SoK) Perspective, Chapter 7.4 in: Moulaert F. et al. (eds.) *International Handbook on Social Innovation: Collective action, social learning and Transdisciplinary research,* London, Edward Elgar.

Walter A. I. and Scholz R. W. (2007) Critical success conditions of collaborative methods: a comparative evaluation of transport planning projects, *Transportation, 34(2),* 195-212.

Ward D. (2001) Stakeholder involvement in transport planning: participation and power, *Impact Assessment and Project Appraisal,19(4)*, 119-130.

Wiek A., Walter I. A.(2009) A transdisciplinary approach for formalized integrated planning and decision-making in complex systems, *European Journal of Operational Research*, *197(1)*, 360-370.

Williams J. (2003) *Gilles Deleuze's "Difference and Repetition": a critical introduction and guide*, Edinburgh, Edinburgh University Press.

Winder N. (2003) Successes and problems when conducting interdisciplinary or transdisciplinary (= integrative) research, in: Tress B. et al. (eds.) *Interdisciplinary and Transdisciplinary Landscape Studies: Potential and Limitations,* Wageningen, Delta Series 2.

Web sites

http://katarsis.ncl.ac.uk/

http://socialpolis.wordpress.com/

http://understandingsocialscience.wordpress.com/

http://www.urbaninfo.cz/iurs-filmy/

http://www.socialpolis.eu

http://www.sparklingscience.at

http://www.transdisciplinarity.ch