51. Integration and Implementation in Action at Mistra-Urban Futures: A transdisciplinary centre for sustainable urban development

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The framework presented in this book, with three domains (knowledge synthesis, managing unknowns and integrated policy support) and five focus areas (aims and beneficiaries, knowledge needs, methods, context and outcomes), lays the foundation for an overall approach to a new discipline for Integration and Implementation Sciences (I2S). As noted repeatedly, there are many examples of research projects, educational programs and research centres around the world that are working with developing similar types of collaborative knowledge production and educational skills that can contribute to solving complex social and environmental problems. This commentary will present one such example that grapples with similar issues regarding the identification and integration of different types of knowledge, from both research and practice, and how they can be tailored and translated to optimise policy support and implementation. The example presented is the work being done at a transdisciplinary[2] centre for sustainable urban development in Göteborg, Sweden: Mistra-Urban Futures. This centre is co-owned and managed by seven organisations: three research and educational institutions and four public bodies.[3] It was started in 2010, and has just completed its second year of establishment. This commentary will present the methodological work that has been accomplished thus far on integrating and implementing different sources of knowledge and expertise for sustainable urban futures.

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1   Merritt Polk was invited as a 'senior researcher who grapples with complex real-world problems requiring research integration and implementation. Your comments on whether the ideas in this book could enhance your ability to undertake such research would be very pertinent.'

2   While transdisciplinarity is used in different ways, at Mistra-Urban Futures it refers to a strategic approach to knowledge production that combines scientific perspectives with other types of knowledge sources such as knowledge and experiences from practice, decision making, and business and community life—in other words, joint knowledge production between different types of practitioners and researchers. This approach draws upon a wealth of different disciplines and research areas from within the science and policy discussion, including: action research, post-normal science, triple-helix, Mode 2, sustainability science, research by design, Integration and Implementation Sciences, and interdisciplinary studies.

3   City of Gothenburg, Göteborg Region Association of Local Authorities, Region Västra Götaland, County Administration Board, the University of Gothenburg, IVL Swedish Environmental Research Institute and Chalmers University of Technology.

The Transdisciplinary Context: Achieving sustainable urban futures

Urbanisation is a manifest and growing trend worldwide. The importance of cities for economic development and social cohesion is widely acknowledged; however, problems such as global risks and resource constraints, poverty, poor health and diseases, and social tensions and inequalities all pose significant challenges to the efforts of cities and urban areas to achieve long-term sustainable development. Furthermore, contemporary urban transitions and their implications for sustainable development are poorly understood. There is a great need for sound advice and recommendations for urban policy and visions. There is also a great need for improved institutional and human capacities for urban governance, and for support in harnessing and guiding the economic, material and human resources required for positive urban transformation. Currently responses are not designed to match such needs in an integrated and holistic manner. Most issues and problems in sustainable urban development are addressed within traditional disciplinary and sector boundaries as well as through existing organisational structures that rarely facilitate the necessary collaboration between practice and research. It is therefore urgent to create new cross-sector and interdisciplinary capacities for change among organisations and individuals. The complexity of urban challenges calls for the use of novel approaches in the production of new knowledge, in the building of required capacities, in the coordination of diverse actors and in the implementation and management of innovative urban solutions. The vision of Mistra-Urban Futures is to increase capacities to transform current, unsustainable urban development pathways to more sustainable urban futures in the global South and North, through integrative and collaborative processes for joint knowledge production.

The Challenges: Multiple framings, knowledge diversity, broader legitimacy

Three characteristics of urban problems have been targeted as especially challenging for addressing the complexity of urban areas: the multiple framings of sustainable development promoted by different urban actors, the diversity of knowledge and know-how that exists in urban areas, and the need for broad, legitimate platforms for sustainable urban change. These challenges point to the need for a revised and developed approach to transdisciplinary knowledge production and problem solving.

Multiple Framings

Sustainable development and sustainability are vague and ambiguous terms. They can be used to refer to many different approaches along a continuum from short-term, local economic growth to long-term, global environmental conservation and social justice. While sustainable development is often defined following the classic Brundtland definition,[4] it is a highly contested and debated term the world over. The way that sustainable development is applied is continually adapted and revised to fit the needs and underlying world views of the involved stakeholders, be they politicians, researchers, representatives from community-based organisations or business owners. To be viable over a longer period, any attempt to realise urban development must be tailored to meet this diversity of values and needs from a variety of interest groups and be able to negotiate often contradictory and incommensurable definitions and positions. The first methodological challenge for our project is to capture the diversity of world views, priorities and values that exists within different contexts and actors. With regard to *multiple framings* of sustainable urban futures, the first methodological focus is to create arenas where this diversity of different understandings and approaches to sustainable urban futures can meet and interact agonistically,[5] constructively and creatively with each other.

Knowledge Diversity

Sustainable urban futures cannot be achieved without tapping into the broad base of experience and expertise that exists within different actor and interest groups in the urban field. This need for *knowledge diversity* is a direct consequence of the number and variety of actors combined with the multifaceted social challenges and environmental constraints that exist in urban areas. The specific complexity of current urban areas creates novel needs for knowledge exchange, synthesis, integration and co-production. To meet such needs, new types of knowledge production and problem solving need to combine the theoretical and cumulative foundations of scientific knowledge with other types of knowledge, such as know-how and practical expertise from residents, businesses, community organisations, planners, administrators and politicians. Not only do different values and world views result in different framings of sustainable development, different framings also determine what are seen as valid sources of knowledge and expertise. The second methodological challenge for Mistra-Urban Futures is to harness a broad base of knowledge and expertise. The second methodological focus therefore concerns how different types of scientific and practice-based

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4   See <http://www.un-documents.net/ocf-02.htm> (accessed 15 December 2011).
5   Since consensus is not always possible or desirable, agonism is used to capture the need for constructive conflicts where opposing positions exist side by side in non-antagonistic disagreement (Mouffe 2005).

knowledge and expertise can be identified and encouraged to interact creatively and innovatively. The focus on multiple framings and knowledge diversity sets the stage for the more effective achievement of the context sensitivity that is necessary for creating robust city systems.

Broad Legitimacy

Dealing with extreme power differentials is one of the main challenges for urban development. The fact that sustainable urban development itself is a highly contested term is foundational to the political discussions and visioning processes taking place in urban areas today. One of the main problems in creating robust and liveable city spaces the world over is the ability to set the agenda for sustainable urban development in the context of scarce resources and extreme power asymmetries. Who controls the agenda for sustainable urban development? What framings of urban futures are seen as the most legitimate? What types of knowledge are seen as most relevant for creating solutions? Issues of legitimacy are central when decisions are made regarding what framings of sustainable urban futures are chosen and what types of knowledge are seen as most feasible for creating viable solutions. One way of addressing the extreme power differentials in urban areas is to create meaningful, long-term inclusive processes where not only disenfranchised groups, but also a broader plurality of actors can gain influence and visibility, thereby increasing the legitimacy of alternative framings, knowledge and impact.

Our third methodological focus is therefore to create conditions or spaces where a broader combination of framings and knowledge for sustainable urban futures can gain real *legitimacy*, and, through this, visibility and influence. There are two main issues regarding legitimacy that need to be addressed. The first is *internal legitimacy*, which refers to how the partners who make up Mistra-Urban Futures are included in and entitled to the activities at the centre, both organisationally and in practice. The methodological challenge of internal legitimacy is to create arenas where representatives from different groups are mobilised and entitled to interactive and integrative processes of joint problem framing and problem solving around sustainable urban futures. The methodological focus is on designing processes and activities for joint knowledge production and problem solving, and ensuring that they are jointly developed and carried out. The second issue is *external legitimacy*. Mistra-Urban Futures' reputation for inclusive and effective knowledge production and problem solving within different urban issues must be linked to effective impacts in the specific local contexts of the participating international partners. The work being done at Mistra-Urban Futures needs to be tightly anchored in and linked to the decision-making processes and interest groups both within and outside the consortium partners in the different local contexts.

These challenges are summarised in Table 51.1.

Table 51.1 Addressing the Methodological Challenges of Urban Change

The challenges	What is the challenge?	What are the methodological issues?	Guidelines for addressing these issues
Multiple framings	A diverse group of urban actors and framings of sustainable urban futures	Identifying actors and capturing the needed world views, values and perspectives for each substantive issue	Joint problem formulation and project design
Knowledge diversity	Broad and diverse base of applicable experience, knowledge and expertise within urban areas	Identifying knowledge needs, integrating different sectors, disciplines and approaches in knowledge production and problem solving	Co-generation of information, joint analysis and implementation of solutions
Broader legitimacy	The need for a broad agenda for sustainable urban futures that legitimises a variety of actors and approaches	Identifying and reconciling the different demands and conditions for excellence and effectiveness for both research and practice	Ongoing evaluation of both internal and external processes and impacts

Guidelines and Qualities for Supporting Joint Knowledge Production and Problem Solving in Urban Areas

The goal of joint knowledge production and problem solving at Mistra-Urban Futures is to establish a neutral arena for new knowledge production and problem solving. This arena subsumes a combination of both different disciplines (interdisciplinary) and non-academic knowledge sources such as practical and professional knowledge, know-how and expertise from different types of urban actors, and breaks up the linear relationship that often exists between research and practice in more applied research and consultancy contexts. The goal at Mistra-Urban Futures is to develop an open knowledge-production process, where traditional types of linear knowledge production are replaced with co-owned, co-led and co-produced processes based on continual and in-depth collaboration between different urban actors. This open approach allows a continual re-contextualisation of both practical and scientific/technical contexts throughout the entire knowledge-production and problem-solving process.

The three methodological challenges noted above form the basis of guidelines that have been developed to support joint knowledge production and problem solving. These guidelines are not formal requirements. They should instead be seen as *guiding principles*, which can be used to improve the quality and effectiveness of collaboration. They have been designed to ensure that multiple framings, knowledge diversity and broad legitimacy are promoted in all of the projects at Mistra-Urban Futures. The goal of the methodology development is to continually refine these guidelines so that they give a maximum amount of freedom to the participants to create and carry out their projects in ways that are most effective for their specific context and problem area. Overall, the structure of knowledge-producing processes should be envisioned as a scaffold, as setting up certain guidelines while leaving the spaces within the scaffold empty and undefined. It is this project space that is autonomous, open, unpredictable, dynamic and jointly filled with meaning and activities by the participating actors in interactive and dialogical processes. The guidelines are summarised in Table 51.2.

'*Formulate*' focuses on capturing the multiple framings of sustainable urban development by ensuring that the joint problem formulation and project design are actually inclusive and collaborative, with the involved actor groups feeling engaged and being entitled to and/or owning the process. *Formulate* consists of two parts. The first, '*Initiation*', focuses on generating and collecting project ideas from a variety of actors, both within and outside the consortium. The goal of *Initiation* is to form a project idea that fulfils the ambition of optimal ambiguity. What this means is that the embryo of a project idea must be formulated with an optimal amount of ambiguity that attracts different stakeholders from practice and research so that they feel entitled and motivated to engage in the project. This embryo is then developed in the second part, '*Revise and revisit*'. Here the aim is that the project co-evolves through collaboration between interested stakeholder framings and knowledge needs. The result is a joint problem description including the project formulation, staff, planning, design and budget, as well as communication, implementation and evaluation plans for the entire project process.

'*Generate*' encompasses all of the work done with knowledge production, problem solving, analysis, output dissemination and implementation. In order to fulfil the mission of the centre, all projects are required to produce results that can have an actual impact in practice and research. Here, a variety of methods and processes is used to harness the knowledge that is needed to fulfil the centre's and project's goals. The form and content of the results must be tailored to the specific substantive issues and constellations of involved actors—for example, in different types of policy input such as for visioning and policy processes, and results such as scientific articles and books. The goal of *Generate*

is to support and promote integrative, innovative and creative processes that can capture a diversity of different sources of knowledge and expertise and effectively integrate and transform them into concrete policy input and the skills and expertise needed for capacity building.

Evaluate occurs continually throughout the process. Formative process evaluations focus on ensuring the internal legitimacy of the processes as they are carried out. This includes ongoing evaluation tools that focus on the centre's goals for inclusive, collaborative and integrative processes. This also includes periodic review of the communication and implementation plans so that they are updated for the specific problem context and actors. Summative process evaluations will also be carried out at the end of each project. Impact evaluations focus on the form and effectiveness of the project outputs and on identifying medium and long-term project outcomes.

Table 51.2 Guidelines for Joint Knowledge Production and Problem Solving

The challenges	Central parts of joint knowledge production and problem solving
Multiple framings a ⟳ b	**Formulate**: joint problem formulation and project design a) **Initiation**: generating and collecting project ideas b) **Revise and revisit**: co-evolution of understanding, in-depth mapping of stakeholders and knowledge needs, alignment of goals, problem formulation, project planning and design
Knowledge diversity a ⟳ b c	**Generate**: co-generation of knowledge and solutions a) **Information collection**: joint design and collection of information and data, integration with specialised expertise when needed b) **Innovation and analysis**: creating joint solutions, products and conclusions c) **Implementation and communication**: application in policy and practice, test cases, scientific publications
Limited legitimacy a ⟳ b	**Evaluate**: ongoing evaluation of process and impacts a) **Process**: formative and summative evaluations, internal legitimacy b) **Impact**: formative and summative evaluations, assessment of the external legitimacy of output, outcomes, results

Along with these guidelines, five qualities or attributes of joint problem-solving processes have also been identified based on experiences of collaboration and the challenges of urban complexity. These have been the initial focus of research regarding the development of a transdisciplinary methodology. These qualities are: inclusion, collaboration, integration, usability and co-reflection. Inclusion, collaboration and integration refer to activities that are closely entwined in practice, and in some instances inseparable. There is, however, an analytical distinction between *inclusion* (the identification, engagement and entitlement of different groups), *collaboration* (the processes and methods for participating as

well as the quality and degree of the participation) and *integration* (the degree of assimilation, combination, synthesis or merging of different perspectives and approaches to problem solving). *Usability* refers to the applicability of the results in actual ongoing policy and implementation processes. *Co-reflection* embodies the explicit attention to learning and self- and mutual reflection that are central for achieving success within such processes.

At present, transdisciplinary research is under way to investigate these different qualities and their applicability and effectiveness for promoting the types of joint processes that are the goal of the centre. This research includes experiences with the processes, their impact on practical and scientific outputs, and the organisational needs of these types of activities. These qualities are summarised in Table 51.3.

Table 51.3 Qualities for Transdisciplinary Knowledge Production and Problem Solving

The challenges	Guidelines	Key topics	Qualities
Multiple framings	Formulate • Initiate • Revise and revisit	Representation Entitlement In-depth collaboration Negotiation	Inclusion Collaboration Usability
Knowledge diversity	Generate • Information collection • Innovation and analysis • Implementation • Communication	Mapping knowledge needs Knowledge integration Joint analysis In-depth collaboration	Collaboration Integration
Limited legitimacy	Evaluate • Process • Impact	Transparency Accountability Co-reflection Assessing impact	Usability Co-reflection

Concluding Comments

This commentary is one example of how integrative and implementation research can be applied within a concrete context such as sustainable urban development. As we can see from this example, the work presented in this book reflects crucial concerns of researchers and practitioners who are grappling with complex social and environmental problems. While the guidelines and qualities outlined above are in a different form from those presented in this book, the overall issues and goals are the same—namely the need for effective processes that can identify, harness and motivate collaboration and integration for knowledge production and problem solving that can support policy and implementation for more sustainable futures. Educational curricula that provide researchers with the skills to participate in such processes are fundamental

to their success. At Mistra-Urban Futures, a great deal of time and energy is currently being put into supporting the joint knowledge-production processes themselves. This occurs in the form of different types of support activities for participants so that they can effectively deal with the difficulties that such processes entail. The creation of an Integration and Implementation Sciences discipline, as outlined in this book, could greatly contribute to producing researchers and practitioners with the skills needed to undertake the challenges involved in addressing current social and environmental problems.

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Reference

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Brief Biography

Merritt Polk is an Associate Professor in Human Ecology at the University of Gothenburg School of Global Studies in Sweden. She is currently working at Mistra-Urban Futures, where she is responsible for developing a transdisciplinary methodology for joint knowledge production and capacity building between university, private, semi-private and public organisations. Since the 1990s she has worked extensively with practitioners in the field of gender mainstreaming and transport with a focus on travel patterns, attitudes and policy, and applied this work to the interactions between gender equality, sustainable transportation and climate change. She has taught diverse courses such as sustainable cities, sustainable development and conflicts, as well as interdisciplinary and transdisciplinary methods in Human Ecology. More recently she has done research on urban planning with a focus on multilevel stakeholder processes and the framing and implementation of sustainable development. For the past six years, she has worked on developing transdisciplinary methods for sustainable urban development, with a focus on combining interdisciplinary and cross-sector approaches in urban and transport planning.