30. Specialising in I2S

One purpose of this book is to demonstrate that there are many specialist concepts, methods and skills to assist integrative applied research teams enhance their effectiveness. I also argue that these cannot simply be add-ons to other disciplinary expertise, but require a dedicated discipline of their own. As a consequence there will be I2S disciplinary specialists. Nevertheless, other members of integrative applied research teams also require at least a basic understanding of I2S, with team leaders having specific I2S roles to fulfil. Finally, it is also beneficial for policy makers and practitioners who are likely to interact with integrative applied research teams to have some understanding of what I2S offers. Let me therefore draw together and build on the discussions from earlier chapters about the four broad categories of I2S specialisation—namely

1. I2S for team leaders

2. I2S disciplinary specialists

3. I2S appreciation for other integrative applied research team members

4. I2S appreciation for policy makers and practitioners.

I2S for Team Leaders

Team leaders have responsibility for their projects as a whole, which includes providing appropriate orientation to I2S and guiding a range of I2S-related decisions, as described in Box 30.1.

Box 30.1 Specific I2S Responsibilities for Integrative Applied Research Team Leaders

Team leaders must have adequate knowledge about I2S and strive to ensure the following.

- All three domains are considered,[a] the balance between them is appropriate, and interactions and congruence are taken into account.

- The five questions are systematically worked through and there is the wherewithal to do so—in other words, that their teams include appropriate I2S disciplinary specialists.[b]

- There is an openness to considering (and selecting the best among) options, appreciating that there are no perfect solutions for any I2S tasks—like taking a systems view, boundary setting or managing organisational barriers—but that each concept or method has strengths and weaknesses; nevertheless, some options will be more appropriate for the tasks at hand than others.

- Their teams understand that formulaic processes are not realistic, but that iteration is essential and that understandings will evolve as the project progresses. Further there needs to be enough vagueness and flexibility to allow creativity to flourish. On the other hand, the process must not be allowed to bog down, but rather should lead to pragmatic, defensible decisions being made efficiently.

- Team members understand their roles in decision making about and action on knowledge synthesis, understanding and managing diverse unknowns and providing integrated research support for policy and practice change; some teams will operate in a way that gives everyone a say in these tasks, some will give selected team members more say than others, some will rely on most decisions being made by team leaders—many variations are possible; the issue is that expectations should be clear.

- Their teams maintain research integrity.

- All the relevant issues for the aims and beneficiaries of integrative applied research are thought through, including that: a) the methodology is in line with the intended aims and beneficiaries, and b) conflicts between the domains are identified and resolved.

- Differences in the team are appropriately harnessed or managed.

- Sources of authorisation are understood, along with their implications for the integrative applied research, especially identifying and managing costs to research independence and integrity, as well as resolving any conflicting ramifications from different sources of legitimisation across the three domains.

- Facilitators and barriers in terms of organisational structure and culture are appreciated, both in the researchers' home institutions and in the target policy and practice establishments; in addition, this involves determining how facilitators can be exploited and barriers managed, as well as acting on synergies and conflicts between facilitators and barriers in the three domains.

- There is a commitment to contributing to the further development of I2S concepts, methods and case examples, as well as guides to relevant knowledge from outside I2S.

a. The aim is to avoid 'business as usual' and to grapple with new ways of undertaking knowledge synthesis, understanding and managing diverse unknowns and providing integrated research support for policy and practice change.

b. I have deliberately glossed over how integrative applied research projects begin and the role of I2S specialists both in starting and in leading such projects. At one end of the continuum, I2S specialists may be the originators and leaders of the project and may have full control over choosing the other team members, determining the problem parameters, and so on. At the other end, I2S specialists may be brought in as an afterthought to help an already established team work together more effectively. The concepts and methods described in this book apply regardless, although the ability to implement them may vary depending on how and when the I2S specialist becomes involved in the integrative applied research.

I2S Disciplinary Specialists

While team leaders set the orientation to an I2S-based approach, the I2S disciplinary specialists have the detailed knowledge that makes it possible for that approach to be implemented. Their knowledge about I2S provides them with an overview of the full scope of the discipline and mastery of a range of concepts and methods, including the ability to apply them in diverse situations, which they have learnt through case examples and hands-on experience. They are also adept at using guides to relevant knowledge from outside I2S, such as guides to systems thinking and to political science theories about how government policy is made. The wealth of detailed knowledge makes it unlikely that individual I2S disciplinary specialists will be fully proficient across the range of relevant concepts, methods, applications and guides, but it is a fair expectation that they have a basic understanding of the entirety of their discipline and an extensive network of colleagues who can be called on to provide specific expertise, as needed.

I2S disciplinary specialists must have sufficient competence to ensure that each domain can be fully addressed, along with the intersections between the domains. In the first domain of knowledge synthesis, their task is to ensure that all of the relevant knowledge—from disciplines and stakeholders—is recognised and that defensible decisions are made about which knowledge will be taken into account. In the second domain they provide the detailed understanding about diverse unknowns that allows them to be considered comprehensively. This includes the ability to bring together different disciplinary and stakeholder approaches to unknowns, as well as thinking about unknowns using typologies that do not rely on the disciplines. In the third domain, I2S disciplinary specialists provide detailed knowledge about how integrated research can support policy and practice change. They have general appreciation of the government, business and civil society arenas and bring a detailed understanding of at least one of them. The specific skills of I2S specialists are described in Box 30.2.

Box 30.2 Skills for I2S Disciplinary Specialists

I2S disciplinary specialists must have basic working skills in all of the following and particular competence in some.

- Systems thinking to conceptualise and deal with both problems and the arenas for implementation. This includes understanding where different disciplines and stakeholders 'fit', how different systems approaches deal with diverse unknowns and the organisational structures and processes that make up policy and practice systems.

- Scoping to determine: a) the full range of systems views that could be applied to the problem and the arenas for implementation; b) all the relevant disciplines and stakeholders, including what they could contribute and how; c) the diversity of relevant unknowns, taking into account their complexity, as well as different categorisations and typologies; and d) all the possible avenues for providing integrated research support, especially considering arenas, systems, organisations within systems and individuals.

- Boundary setting to determine what is included and excluded, as well as what is central and peripheral. This applies to disciplinary and stakeholder knowledge, unknowns and possibilities for providing integrated research support. The boundary setting must avoid defaulting to 'business as usual', especially in the response to unknowns, but in all domains the task is to identify the issues that are most critical for the problem under consideration, and the arena for implementation that is likely to be most fruitful.

- Framing to communicate accurately and effectively to the relevant audiences about the approach to the problem and unknowns, as well the findings of the integrated research.

- Dealing with values and how they influence the knowledge synthesis, the comprehensive approach to diverse unknowns and the provision of integrated research support in terms of targets and processes.

- Methods for: a) knowledge synthesis (including dialogue methods, modelling and other targeted techniques using products and vision, as well as common-metric-based methods); b) dealing with diverse unknowns (namely reduction, banishment, acceptance, surrender, exploitation and denial), as well as appreciation of when these are adaptive and maladaptive; and c) supporting policy and practice change (including communication, advocacy and engagement), as well as assessing the most suitable policy and practice targets, and the options that are most likely to be influential.

- Understanding overall context to ensure that the most important factors are considered for knowledge synthesis and unknowns, as well as the 'big picture' issues that are likely to influence how the arenas for implementation (government, business and/or civil society) and the organisations within them view the problem and respond to integrated research.

For each of these tasks, I2S specialists will be able to orient their teams to the strengths and limitations of the various concepts, methods and guides. In addition, they will be able to highlight interactions between the domains, especially synergies and conflicts, as well as methods for responding to them.

As well as providing the necessary expertise for integrative applied research teams to function effectively, the second key role for I2S disciplinary specialists is to participate in the ongoing development and improvement of their discipline. This involves

- being on the lookout for opportunities to improve, or develop new, concepts, methods and guides, and to publish any advances
- writing up innovative aspects of projects as new case examples
- ensuring that the knowledge synthesis, comprehensive consideration of diverse unknowns and provision of integrated research support for policy and practice change are documented in a way that makes them easy to evaluate and draw lessons from—by teams themselves and by peers
- helping teams reflect on outcomes and ways to improve the application of the I2S discipline in future projects
- being involved in conferences and the reviewing process for grants and publications, especially learning from these to strengthen I2S collections of concepts, methods and case examples, as well as guides to relevant knowledge from outside I2S.

Another component of the discipline-building task for I2S specialists is to identify the specific challenges for providing support using *integrated* research compared with other types of research and how these can best be addressed. For example, integrative applied research to some extent performs the functions that occur in good policy making, by gathering together all the relevant research knowledge, consulting stakeholders, assessing the importance of diverse unknowns and generating options for policy change. Nevertheless, these functions are performed differently in the research and policy worlds. For example, an I2S specialist places emphasis on weighing up the evidence, whereas for the policy maker assessing political risk is an important part of the evaluation. Other differences are described in Chapter 19 under 'harnessing and managing differences', especially in Box 19.2. Case examples comparing how the same issue is handled in the integrative applied research and policy worlds would therefore be very useful.

The roles and functioning of I2S specialists have parallels with those of other disciplinary experts in integrative applied research teams. In particular, they have a specific set of know-how to contribute. Like other disciplinary experts, they also have a role in helping their discipline expand its array of useful

theory, methods and case examples. They can be expected to do this through the integrative applied research—for instance, by trialling a new method or by documenting the research as a case example.

I2S disciplinary specialists will both be responsible for and be the main beneficiaries of the I2S Development Drive in its tasks of compiling concepts, methods and case examples, as well as guides to relevant knowledge from outside I2S.[1] The aim is for the specialists to continue to hone their expertise, as well as to enhance the quality of the discipline and its ability to contribute to addressing complex real-world problems.

I2S Appreciation for Other Integrative Applied Research Team Members

While the team leaders and the I2S disciplinary specialists carry the primary responsibilities for ensuring that integrative applied research teams make the most of what I2S has to offer, other team members need to have at least a basic appreciation of I2S. This enables them to see their place in the research overall, as well as what their expert knowledge can contribute and where there may be useful interactions or problematic incompatibilities. Further, the level of knowledge about I2S needs to be greater for teams that involve all or most members in making decisions about knowledge synthesis, consideration of diverse unknowns and providing integrated research support for policy and practice change than for teams whose members primarily contribute their discipline-based expertise and where the integration and provision of research support are undertaken by the leaders and I2S specialists. But even in the latter cases, it is helpful for all team members to understand the general strengths and limitations of the overall I2S approach as well as the rationale for particular decisions such as which knowledge, unknowns and policy or practice change are being considered, which methods have been chosen and the framing used.

It is also worth noting that team members may have particular I2S skills to contribute. For example, they may have expertise in a dialogue or modelling method, their discipline may have developed an innovative approach to unknowns or they may have pre-existing experience in working closely with an industry group.

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1   Of course, I2S disciplinary specialists also have a role in reviewing, expanding and revising the framework presented here and in resolving the issues and weaknesses identified in the previous chapters. These include improved articulation of context, as well as the overlaps between scoping and context, more extensive work on values, and identifying effective strategies for managing the reality of imperfection, in terms of how teams position themselves, recognise 'good enough' actions and outcomes (as well as the best possible) and assess weaknesses in light of strengths. I2S specialists also have a role in identifying the basic conditions necessary for integrative applied research to succeed and the resources that are required, to enable the move to a situation where integrative applied research is treated with the same matter-of-factness as laboratory-based research, as described in Chapter 29.

Ideally, the I2S process will enable team members to learn from each other in ways that enhance their disciplinary practice. For example, exposure to another discipline or a stakeholder group may spark a creative idea for new research, looking at unknowns in broader ways may stimulate innovative approaches to key issues in their discipline, and appreciation of what is useful to policy makers and practitioners may lead to additional questions being addressed in their discipline-based research. The intersections of the domains may also be hubs for inventive insights.

I2S Appreciation for Policy Makers and Practitioners

As discussed in Chapter 23, policy makers and practitioners who are the targets of integrative applied research also benefit from understanding what it can provide, which involves appreciating how I2S operates. This allows them to better evaluate what the integrated research has to offer, as well as to consider different options for interacting with the research team. For policy makers and practitioners seeking integrated research support, an understanding of I2S allows them to match what they would like against what it is possible to produce. It may also give them an expanded appreciation of manifestations of imperfection, including those arising from incompatibilities between the domains.

<p style="text-align:center">***</p>

This section has brought together the three domains of I2S, especially to explore the interactions between them in terms of synergies, conflicts and balance. The aim is to be able to identify when approaches to the three domains are in harmony and when they are in conflict, and especially how to manage the latter. The balance between the three domains is also important. In particular, consideration of diverse unknowns should not be ignored or minimised, even though it is less developed methodologically.

The purpose of I2S is to provide options—with clear accounts of their strengths and weaknesses—for conducting integrative applied research. Summary lists of major classes of the I2S concepts, methods and case examples, as well as guides to relevant knowledge from outside I2S, which have been proposed in the preceding chapters, are presented in Chapter 34 in the next section demonstrating the Big-Science-like scale of the work plan. In addition, the chapters in the next section examine a range of issues relevant to the operation of I2S and integrative applied research.