

# Chapter 1. Introduction

Research integration is the process of improving the understanding of real-world problems by synthesising relevant knowledge from diverse disciplines and stakeholders. Methods for undertaking research integration have not, however, been well developed or explained. Here, we show how 14 methods developed for dialogue can be useful for research integration. What makes this book unique is that we tease apart components of research integration and match them to particular methods.

Research integration is essential for effectively investigating real-world problems. Such investigation requires bringing together the insights of different disciplines. For example, examination of the impacts of the encroachment of housing on farm and bushland on the fringes of cities can benefit from the expertise of ecologists, economists, hydrologists, sociologists, soil scientists, demographers and so on. Similarly, to comprehensively model the impact of the covert release of an infectious disease agent on a major city requires input from, among others, communicable disease epidemiologists, statistical modellers, urban geographers, psychologists and legal experts.

Bringing together such different disciplinary insights to more thoroughly understand a particular real-world problem requires a new type of researcher with a specific set of concepts and method skills. These skills complement those of disciplinary experts. One of us (Gabriele Bammer) has developed the foundations for a new cross-cutting discipline—Integration and Implementation Sciences (I2S)—which is designed to equip this new breed of researchers with the theory and methods necessary to provide effective integration in all forms of cross-disciplinary research, be they multi, inter or transdisciplinary. One of the essential skills is competence with various integration methods, including methods based on dialogue, as we describe here. We outline the full characteristics of Integration and Implementation Sciences in Appendix 1.

Research integration has another component, in addition to being able to pull together knowledge from the disciplines relevant to understanding a particular problem. This relates to recognition that, while academic disciplines provide essential knowledge about particular aspects of an issue, relevant knowledge is also held by various stakeholders, who are usually those affected by the particular problem and those in a position to make decisions about it. An integration researcher therefore also has to be skilled at involving those groups and weaving their insights into the composite understanding. In the case of land use in peri-urban areas, affected parties can include farmers and recreational users of bushland (whose activities are impinged on by the expansion of housing) and families requiring housing. Those in a position to make decisions about the issue

include government policy-makers, regulators and land developers. In the case of modelling the impact of a disease release in a major city, a wide range of stakeholders would be involved in dealing with such a terrorist attack including police, emergency medicine specialists, media, politicians, and business and community leaders. An integration researcher needs to be equipped with the skills to capture the valuable expertise and insights of these groups to provide a more comprehensive understanding of the problem at stake.

Research integration therefore improves understanding of real-world problems by synthesising knowledge from relevant disciplines and stakeholders; it is integration in the context of research, integration by researchers and integration as a research activity in its own right. Research integration involves more than just bringing together knowledge in terms of 'facts'. It requires appreciation of different epistemologies (that is, the variety of different ways in which we can come to know 'something'), as well as different underlying values, interests, world views, and so on. A more comprehensive understanding of real-world problems involves teasing out such differences and finding ways to synthesise them. The role of a research integrator is to identify, gather, combine and analyse relevant disciplinary and stakeholder knowledge in a way that clarifies the diverse aspects of a problem, as well as the relationships and interconnections among them. The aim is to contribute to a more comprehensive understanding of the problem. This is useful in its own right, as well as contributing to the ability of decision makers to more effectively tackle the problem.

One key set of methods for gathering and combining such diverse perspectives builds on various techniques of dialogue. What do we mean by dialogue? We use Franco's (2006:814) definition, which is to 'jointly create meaning and shared understanding' through conversation. Of course, not all dialogue requires a 'method'. Dialogue can occur through the normal give and take of talking and listening, especially when two, or a small group of, people are involved. Once the group starts to become larger, however, structuring the conversation becomes essential for different understandings to be effectively shared and brought together. Many methods for organising conversation have been developed, but they are not all dialogue (debate is an example) or relevant to research integration. We have chosen 14 of the best-described methods to present here. The aim is to provide a methodological 'tool kit' to assist integration researchers in bringing together multiple perspectives—from disciplines and stakeholders—to address real-world problems. This is not a book about dialogue per se, although we provide a limited amount of additional background information on how these dialogue methods for research integration sit within the broader field of dialogue in Appendix 2.

While few researchers would, at this stage, describe themselves as integration researchers, let alone integration and implementation scientists, many have taken

on an integrative role in cross-disciplinary research addressing real-world problems. They are our primary target audience. They are likely to already have some familiarity with at least some of these dialogue methods, but will be interested in expanding their repertoire. We want to provide them with not only a wider array of methods, but also the foundations on which to continue to develop dialogue methods for research integration.

A second audience is those who seek to become research integrators who are new to methods based on dialogue. For this group, the book aims to provide an overview of available methods that they can seek training and guidance in. Discipline and stakeholder experts who are invited to participate in research integration using dialogue methods are a third audience. We anticipate that improving their understanding about each particular method and what it is most suited to accomplish will enhance the success of the integration endeavour.

In producing this book, our approach was iterative and switched between inductive and deductive. We identified elements of research integration, such as synthesising facts, judgments, visions, values, interests, epistemologies, time scales, geographical scales and world views. At the same time, we read about dialogue methods, examining them through the lens of research integration. We cycled between identifying elements, different types of dialogue methods and case studies in order to match methods with integration tasks. We provide a more detailed description of our methods in Appendix 3.

We wanted to get a sense of the array of available methods, to explore how well they linked with specific research integration tasks and to present those that were the best described (rather than attempting to cover all dialogue methods). As far as we are aware, this has not been done previously. Furthermore, we wanted to not only link individual dialogue methods to specific elements of research integration, we wanted to provide examples of how the methods have been used in research integration. We looked for examples in four research areas: the environment, especially natural resource management, public health, security, and technological innovation. The aim here was twofold. First, we wanted to illustrate how these dialogue methods were broadly useful in a range of different areas. Second, new dialogue methods are often produced in relation to one area of application—for example, they can be produced by researchers investigating environmental problems—and there is no accepted institutional pathway for researchers studying problems in other areas, such as public health, to become familiar with such innovations. This book aims to enhance possibilities for cross-fertilisation.

So far, we have explained what we mean by research integration and by dialogue methods, as well as presenting a brief overview of our approach. In the next section, we discuss how we identify and classify the dialogue methods presented. Following that, we examine a range of issues to do with the application of these

dialogue methods. The bulk of the book consists of descriptions of 14 dialogue methods for research integration, along with case studies illustrating how they have been used for this purpose. The penultimate section of the book describes an exercise matching the methods to the sorts of dialogue questions they are most suited for, using a hypothetical example. This further differentiates methods, allowing research integrators to choose the technique that is most appropriate for a specific research integration task. In the conclusion, we outline how the use of dialogue methods in research integration can be enhanced—particularly by better documentation and publishing of successful and unsuccessful cases, by developing new methods, by continued cross-fertilisation across different topic areas and by improved critical analysis and evaluation.

This book charts new territory in linking dialogue methods to specific research integration tasks, and also provides the foundations for further development of dialogue methods for research integration. We believe that this is a fertile field, which will contribute better solutions to the complex problems facing society.