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Chapter 1

Introduction

1.1 General introduction

In September 2015, the member states of the United Nations (UN) General Assembly ratified the Sustainable Development Goals (SDGs), a transformational agenda to address the problems facing the global community, including poverty, gender inequality, and climate change (UN, 2015). The UN and its members states 'are committed to achieving sustainable development in its three dimensions— economic, social and environmental — in a balanced and integrated manner' (UN, 2015, 6). For the SDGs, sustainable development involves the eradication of poverty, combating inequality, preserving the planet, and creating 'sustained, inclusive and sustainable economic growth' (UN, 2015: 8). The SDGs set the framework of the international development agenda up to the year 2030 (UN, 2015) and will have an enormous influence on development policy and practice in the coming years. As a reflection of this, international organisations, such as the UN Food and Agriculture Organisation (FAO) (FAO, 2015) and the World Bank (World Bank, 2016), and the world's largest aid donor, namely the European Union and its member states (European Commission, 2015), have already embraced the new agenda, re-framing their development efforts in the light of the SDGs. In addition, some national governments, including the Netherlands (PBL Netherlands Environmental Assessment Agency, 2016) and India, Liberia, Somalia and Switzerland (Risse, 2016) have already taken the step of reviewing their own national policies within the framework of the SDGs. For the first time, global development efforts in the economic, social and environmental spheres for both developed and developing countries are being integrated (Cummings, 2015). This represents a great step forward, reducing the fragmentation of efforts to address global problems. However, a number of challenges remain, some of which relate to the role of knowledge.

There is a general recognition of the centrality of knowledge to development. For example, the UN Development Programme's Human Development Index (HDI) generates indicators for monitoring long-term, national progress in human development, based on three fundamental dimensions, one of which is 'access to knowledge'. Indeed, access to knowledge receives equal importance as the other two dimensions, namely 'long and healthy life' and 'standard of living' (Gaye, 2011). In the SDGs, the importance of knowledge is also recognised as can be seen from this quote which emphasises the need to develop knowledge societies:

The spread of information and communications technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies, as does scientific and technological innovation across areas as diverse as medicine and energy. (UN, 2015: 9)

Despite this recognition, there is the possibility that the current way knowledge is included in the SDGs, and within the paradigm of sustainable development more generally, might place too much emphasis on Western approaches, concepts and researchers. For instance, Malunga and Holcombe consider that by 'trying to create, or perhaps better said, "clone" development in developing countries in the image of Western "development", development efforts defeat their own purpose through undermining their own relevance, legitimacy, and sustainability' (2014, 615). Criticisms of approaches to knowledge within the SDGs focus on the model of

knowledge transfer (Ramalingam, 2015), the lack of reference to local knowledge (ICSU/ISSC, 2015) and the failure to recognise that development needs to be based on developing countries' experiences and realities (Leach, 2013). Ramalingam, for instance, argues that 'the overriding mentality [of the SDGs] is still that developing countries are vessels to be filled with knowledge and ideas' (2015, no pagination). It, therefore, appears that there might be too much focus on Western approaches, while local knowledge is largely ignored. As Escobar has noted 'Development has relied exclusively on one knowledge system, namely the modern Western one. The dominance of this knowledge system has dictated the marginalization of non-western knowledge systems' (1995: 13).

There is an increasing acknowledgement that it is important to link sustainable development to local knowledge (also referred to as traditional knowledge and indigenous knowledge). For example, UNESCO focuses on local knowledge as the basis of development capacities at the local level as demonstrated by this quote:

All societies possess a rich range of knowledge and make use, in their daily lives, of various levels and types of knowledge that they produce and pass on using a wide variety of means, practices and tools. They are a base on which the capacities necessary for their development can sooner or later be built. (UNESCO, 2005: 188)

Kothari (2007), an Indian academic and environmental activist, considers that there are 'essential links' between local knowledge and sustainable development in various development sectors: primary, secondary and tertiary sectors, and climate change. In addition, the UN Declaration on Indigenous Peoples recognizes the link between sustainability and indigenous knowledge because 'respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment' (UN General Assembly, 2007). Sustainable development needs to be based on respect for local knowledge and should be built on local knowledge and local realities because 'the ultimate task of high-quality development policy remains to search for mechanisms to initiate self-reinforcing processes of endogenous change' (van Lieshout et al., 2010: 232). The International Centre for Integrated Mountain Development (ICIMOD) and European Commission Humanitarian Aid (ECHO) have argued that: 'local knowledge and practices, whether they are relevant or not in a specific context for a specific project, should not be ignored. Local knowledge always needs to be taken into account' (Dekens, 2007: 5). However, acknowledging the importance of local knowledge does not answer the question of how it can be effectively integrated into sustainable development.

Approaches are needed to improve the way in which local knowledge and local realities are able to make a contribution to sustainable development. To this end, various scholars focus on approaches that integrate scientific knowledge (of academics) and local knowledge (of relevant stakeholders). For example, Rist et al. consider that 'sustainable development requires a type of knowledge production that can bridge scientific and other forms of knowledge' (2011: 122). Transdisciplinary research and knowledge management for development appear to be promising approaches for bridging different types of knowledge. Developed from the 1970s onwards, transdisciplinary research is based on the understanding that scientific knowledge

alone cannot address persistent problems, emphasising the role of socially robust knowledge and experiential knowledge. Knowledge management for development is currently an active field of research and practice with, at its core, KM4Dev, a vibrant network of more than 3000 professionals. The importance of local knowledge is recognised by both transdisciplinary research (Görg et al., 2014; Brown, 2008; 2011) and knowledge management for development (Ferreira and Neto, 2005; Dhewa et al., 2014; Mchombu, 2004).

Another interesting approach to link local knowledge more effectively to sustainable development focuses on the role of social capital in local knowledge exchange (Díez-Vial and Montoro-Sánchez, 2014; Trigilia, 2001). Social capital, roughly synonymous with the resources accessible through one's social network, has been found to contribute to poverty alleviation (Grootaert, 2001; Narayan, 1997), and health and wellbeing (Halpern, 2005c; Russek and Schwartz, 1997; Berkman and Syme, 1979). Although past research recognises that social capital provides benefits in terms of access to information and knowledge, the link between social capital and knowledge creation and exchange has generally been the explicit focus of scholars in the developed rather than the developing world (Nahapiet and Ghoshal, 1998; Coleman, 1988; Lin, 1999). Such researchers have examined how social capital contributes to business success, focusing on networks and communities of practice (Lin, 2001; Hopkins and Thomas, 2002; Huysman, 2004; Lesser and Prusak, 1999). However, although this approach appears interesting, it would first need to be investigated for its relevance to contexts in developing countries.

In this thesis, we aim to generate new insights into these three broad approaches which are very promising for the role of local knowledge in sustainable development, namely transdisciplinary research, knowledge management for research, and social capital. Our main research question thus asks:

How can new modes of knowledge production and exchange, such as transdisciplinary research, knowledge management for development and social capital, improve approaches to sustainable development?

1.2 Theoretical concepts

In the previous section, we considered the background to the main research question. We now consider the scientific basis underlying this thesis. We begin with a short introduction to sustainable development, followed by a discussion of the concept of local knowledge. Next, we consider knowledge management for development and transdisciplinary research. Following this, we introduce the concept of social capital and how it contributes to development and knowledge production and exchange.

1.2.1 Sustainable development

The paradigm of sustainable development is at the heart of the SDGs. Sustainable development is possibly *the* central concept in current approaches to development and has been identified as the 'defining agenda' by the International Institute for Sustainable Development (Halle, 2016: 8). It might also be 'the only "paradigm" of development left

standing' (Drexhage and Murphy, 2010: 11), given the failure of development models based only on economic growth.

The theoretical framework for sustainable development has been developed from 1972 onwards during a series of international initiatives and conferences since the UN Conference on the Human Environment in 1972 (Drexhage and Murphy, 2010). In 1987, sustainable development was defined by the Brundtland Commission as 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development, 1987: 43) and this definition of sustainability can be found throughout the academic and policy literature. According to some commentators, sustainable development is both a 'noble and necessary aspiration' and a 'visionary development paradigm' (Drexhage and Murphy, 2010: 6). However, over time, sustainable development may have been re-interpreted to emphasize the environmental rather than the social aspect of sustainability and to represent the interests of developed rather than developing countries 'to the detriment of the original Brundtland prioritization on the needs of the poorest' (Barkemeyer et al., 2014: 15). A number of commentators have welcomed the fact that the SDGs have put 'sustainability centre stage' (Scoones, 2015: no pagination) while others criticize the fact that the meaning of sustainability is not clearly specified. For example, when writing about the SDGs, Easterly notes that "'Sustainable" is so overused in so many different contexts that it means very little' (2015: no pagination). According to Norgaard (1988), the mainstream debate about sustainable development has ignored culturally-specific definitions of sustainability in favour of knowledge supported by the dominant science paradigm.

Despite its recognized importance to development, sustainable development has proven difficult to define, possibly because of overuse. The concept suffers from definitional ambiguity, vagueness, fluidity and multiple interpretations by different actors (Drexhage and Murphy, 2010) as well as reflecting the different political and economic interests behind the different definitions (Redclift, 2005). However, this definitional ambiguity is also a strength because it can be used by different actors in different ways (Ciegis et al., 2009). Based on a systematic literature review, Ciegis et al. (2009) consider that sustainable development involves the search for economic and social development which is compatible with environmental responsibility but with an emphasis on the economic and social. A representation of the three interlocking pillars, economic development, social progress and environmental responsibility, can be seen in Figure 1.1 Sustainable development also has 'an important ethical component' (Ciegis et al., 2009: 30) which reflects the right of every individual, as well as future generations, to have a fair share of the world's resources. In their analysis of the different definitions of sustainable development, Afgan and Carvalho (2010) consider that a further element is political, implying the need for global, regional and local action by the UN and national and local governments. For the purpose of this thesis, sustainable development is defined as follows:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of 'needs', in particular the essential needs of the world's

poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs. (World Commission on Environment and Development, 1987: 43)

This represents the full definition from the Brundtland Report, although the two key concepts are usually not given. We chose this definition because of its focus on the world's poor.

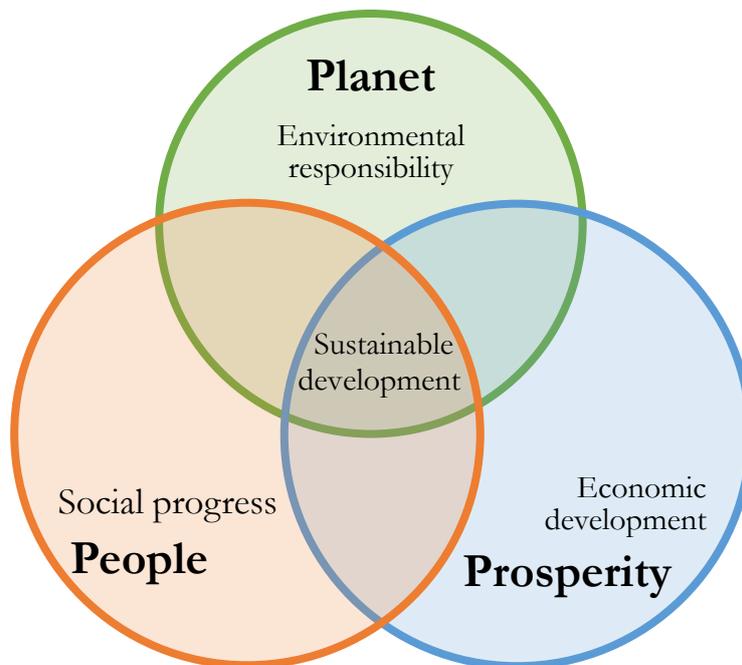


Figure 1.1 Sustainable development at the intersection of planet, people and prosperity

1.2.2 Local knowledge

One of the difficulties facing scientific investigation of the field of knowledge is the enormous number of different definitions of knowledge. One of the key theoretical constructs in this thesis, namely local knowledge, also suffers from this difficulty. Local knowledge consists of social competencies in solving problems which are geographically or socially limited which is why they are identified as 'local' (Renn, 2012). According to UNESCO,

'Local and indigenous knowledge' refers to the cumulative and complex bodies of knowledge, know-how, practices and representations that are maintained and developed by peoples with extended histories of interactions with the natural environment. These cognitive systems are part of a complex that also includes language, attachment to place, spirituality and worldview. (2003, no pagination)

UNESCO also identifies a whole range of synonyms for local and indigenous knowledge which include traditional ecological knowledge, indigenous knowledge, local knowledge, rural peoples' knowledge, farmers' knowledge, folk science and indigenous science, as well as range

of terms related to ethnobiology and ethno-science. Not only is there a wide range of terms for local knowledge, local knowledge is also the subject of many disciplinary fields, including 'geography, anthropology, natural resource management, climate change, development, rural sociology, urban planning, and engineering' (Dekens, 2007: 4). According to Vandebroek and colleagues, local knowledge systems are made up of:

knowledge, beliefs, traditions, practices, institutions, and worldviews developed and sustained by indigenous and local communities, and are believed to represent an adaptive strategy to the environment in which these communities live. (2011: 1)

As this quote demonstrates, adaptation to the environment and knowledge of the natural world are commonly ascribed to local knowledge because 'local cultures know their plant, animal and physical resources intimately and are expert in juggling the options meeting day-to-day requirements and making the most of ephemeral opportunities' (Nazarea, 1999: 1). In the literature, local knowledge has, for example, been linked to climate change adaptation in Ghana (Derbile et al., 2016) and knowledge of medicinal plants in Indonesia (Silalahia et al., 2015) and Namibia (Dan et al., 2010).

Models of local, indigenous and traditional knowledge may have limitations (Millar, 2014) because there is often a tendency to view local knowledge as something that is linked to traditional societies and which is declining in the face of modernity. In a study of Amerindians in the Bolivian Amazon, Reyes-García et al. (2013) hypothesize that 'Tsimane' [sic] people might be abandoning their traditional knowledge because they find that it does not help them cope with modern socio-economic and cultural conditions. Based on use of local plant varieties during 2000-2009, they establish that the rate of abandonment of traditional knowledge was faster among men than women and faster in villages close to large roads than in remote areas. A number of other academics have likewise observed a decline in local knowledge as it relates to plant knowledge (see, for example, Cox, 2000) while Ramirez considers that 'traditional knowledge is being lost throughout the world' (2007: 245).

Endogenous knowledge is another synonym for local knowledge as is evident from the work of a wide number of researchers (see, for example, Malunga and Holcombe, 2014; Devisch and Crossman, 2002; Millar, 2014). The model of endogenous knowledge appears to be more dynamic and have greater rooting in modern cultures than local or traditional knowledge (Malunga and Holcombe, 2014). Devisch and Crossman define endogenous knowledge as 'community-, site- and role-specific epistemology governing the structures and development of the cognitive life, values and practices shared by a particular community (often demarcated by its language) and its members, in relation to a specific life-world' (2002: 108) which also 'represents a critique of dominant knowledge' (2002: 109). Norgaard (1988) considers that the related paradigm of endogenous development might be able to provide a counterbalance to the dominant science paradigm. In this thesis, we generally use the term local knowledge although we also include these critical aspects in our definition of local knowledge.

Brown (2008; 2011) provides yet another definition of local knowledge. Based on action research undertaken in over 300 communities in Australia, Hong Kong, Malaysia and Nepal

over the 1992-2004 period with the Local Sustainability Project (2016), Brown (2008; 2011) argues that all individuals are part of different knowledge cultures, each with their own types of content, forms of inquiry and languages (Brown, 2008; 2011). These knowledge cultures are responsible for 'multiple knowledges' which need to be combined to address complex problems (Brown, 2011). In the model of multiple knowledges (see Figure 1.2), local knowledge is based on the shared lived experiences of individual, families, businesses and communities, comprising stories, events and histories. This model recognizes the complexity of local knowledge.

Strongly influenced by Devisch and Crossman's (2002) definition of endogenous knowledge and by Brown's understanding of multiple knowledges (2008; 2011), for the purposes of this thesis we define local knowledge as a dynamic system of knowledge which belongs to a living community and which is relevant to contemporary society, although it may express itself in local and ethnic modes. It is social and people-centred, represents a community's distinctive resources and capacities, and recognises the importance of multiple knowledges to local development. Although this understanding of local knowledge recognises the relevance of scientific and technical knowledge at a local level, it does not view them as superior forms of knowledge and considers that local development needs, first, to be built on community knowledge and local realities.

In this thesis, we generally use the term local knowledge. However, we have sometimes used the synonym endogenous knowledge to link knowledge to endogenous change. The definition of local knowledge presented above is very much linked to knowledge management for development and transdisciplinary research which are both concerned with new modes of knowledge production.

1.2.3 New modes of knowledge production and exchange

In this thesis, we focus on two new modes of knowledge production and exchange, namely knowledge management for development (KM4D) and transdisciplinary research. Knowledge management for development is currently an active field of research and practice. From the late 1990s, the field emerged out of the mainstream of knowledge management. It shares many of the foci of mainstream knowledge management, such as information and communication technologies (ICTs), the knowledge management strategies of development organisations, and communities of practice (see, for example, Cummings and Ferguson, 2008; Ferguson and Cummings, 2008; Ferguson et al., 2008). In addition to this focus on knowledge management in organisations, there has been increasing interest in the societal role of knowledge. As Ferreira (2009) considers, the field and its associated network, KM4Dev, recognize the importance of knowledge to development and also desire to change how development is being done, leading to claims that it represents a new Enlightenment (Ferreira, 2009). As Ferreira explains:

KM4Dev has become a global network of development agents who share the idea that knowledge can contribute to the development of poor countries and groups in a disadvantaged situation. KM4Dev is already playing the role of a cognitive bridge for development agents worldwide, and the demand of methodologies and tools of

development agents have shaped the flow of knowledge among the members of the net. KM4Dev plays that role with a high level of efficiency, providing reliable answers to development agents on a daily basis, almost in real time, and at very low cost. (2009: 105)

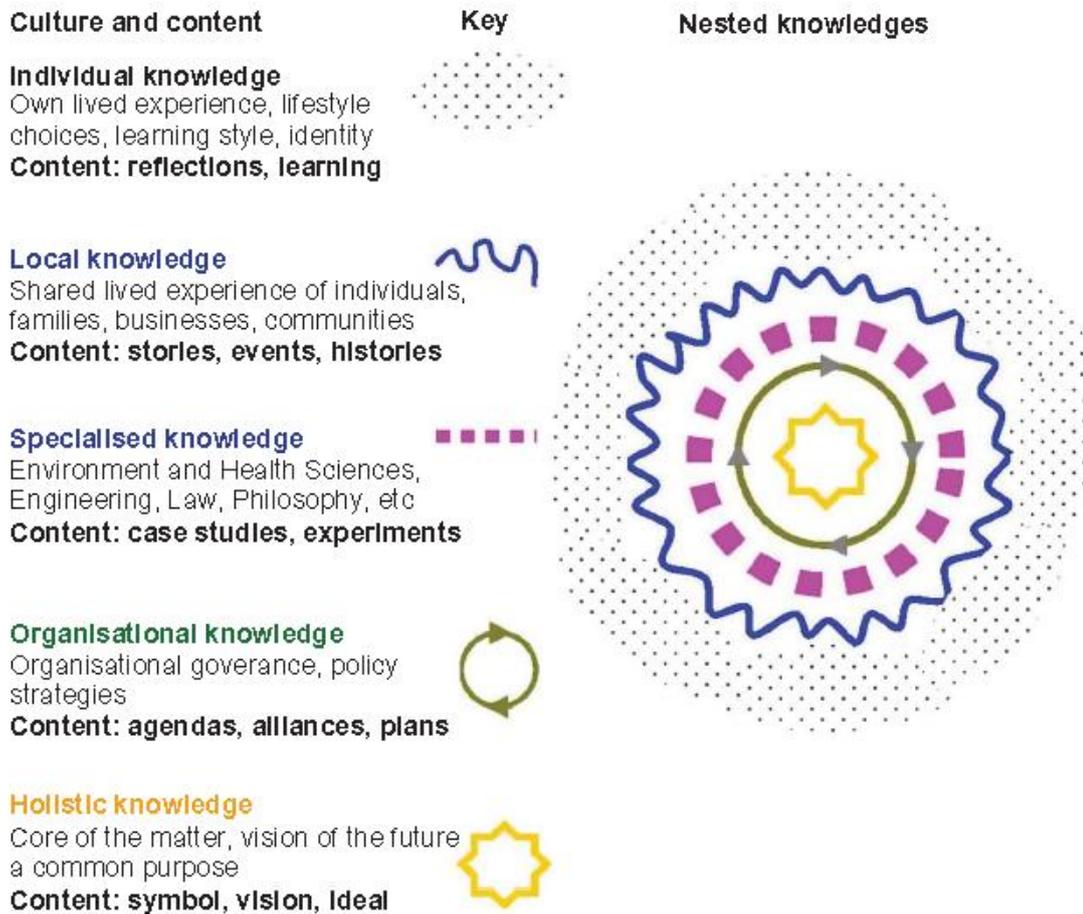


Figure 1.2 Knowledge cultures as a nested system (Brown, 2011: 125)

Indeed, knowledge can provide understanding, experience and lessons that can contribute to new perspectives on global societies as knowledge societies rather than only having relevance for development per se (Powell and Cummings, Forthcoming).

Transdisciplinary research ‘is a new form of learning and problem solving involving cooperation among different parts of society and academia in order to meet complex challenges of society’ (Klein et al., 2001: 7). It is ‘a key methodology for a more sustainable future’ (Bunders et al., 2015: 17). Transdisciplinary research is based on the understanding that scientific knowledge alone cannot address persistent problems, recognizing the importance of experiential knowledge. Indeed, knowledge is at the core of transdisciplinary research because it is:

An umbrella term for interfaces in which different actors generate socially robust knowledge in meaningful interactions in order to contribute to solving unstructured problems. (Regeer and Bunders, 2009: 47)

Transdisciplinary research approaches are often not recognised as such because they go by different names and are embedded in local scientific, cultural and political practices that differ by country. Examples of transdisciplinary research approaches are: integrated research studies, constructive technology assessment, interactive learning and action, participatory action research and action research. These approaches all share some essential features, including focus on real world problems, involvement of multiple stakeholders, integration of different forms of knowledge, and crossing boundaries between disciplines and between science and society. Some of these characteristics are also increasingly to be found in the field of knowledge management for development.

Both transdisciplinary research and knowledge management for development take a very different approach to knowledge production and exchange than the linear model which considers that scientific knowledge is at the root of development and in which knowledge flows from the North to the South. However, the precise nature of the similarities between transdisciplinary research and knowledge management for development requires further analysis to see how they can learn from each other.

1.2.4 Social capital

Social capital refers to the idea that social networks provide access to resources, representing ‘the aggregate of the actual and potential resources which are linked to possession of a durable network’ (Bourdieu, 1986: 248). Social capital represents an endogenous resource, present in all societies, and thus has potential to contribute to endogenous development. It is also considered as having an impact in terms of providing access to knowledge and information (see, for example, Coleman, 1988; Nahapiet and Ghoshal, 1998; Lin, 1999; Bakshi et al., 2015; McLure and Faraj, 2005). In this thesis, we adopt the definition of Nahapiet and Ghoshal (1998), with the addition of the historical element proposed by Van der Gaag and Snijders (2004):

The sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or a social unit, as a result of the history of these relationships. (2004: 202)

Social capital has been widely used as a conceptual lens by scholars and development practitioners in the last two decades, influenced by Putnam’s analysis of the role of social capital in differing democratic governance performance in Italy (Putnam, 1993). The concept of social capital gained widespread recognition as being relevant for development because of the attention it received from the World Bank in the 1990s, with one commentator even going so far as to say that it is the ‘missing link’ in development (Grootaert, 1998). However, despite this enormous amount of attention, social capital has also been the subject of controversies. Fine, for example, has argued that it is ‘an analytical sack of potatoes’ (2002: 22) because it depoliticises development, channels resources from education, and is difficult to define and use. Some commentators consider that social capital’s value resides in the fact that it can be purposefully mobilised (Coleman, 1998; Lin 1999), while for others it cannot be instrumentalised (Bourdieu, 1986). Authors describe social capital at different levels: as a property of communities (Putnam, 1993) or at the individual (relational) level (Lin, 1999). In

addition, some authors emphasize the place of trust (see, for example, Fukuyama, 1995), others conceive trust as a precursor of social capital (such as Lin, 1999), while it is absent from Bourdieu's theory.

As conceptualized by Granovetter (1973), social capital consists of ties of different strengths and which carry different functionalities. In the literature, there is a consensus on the classification between three different (functional) subtypes: bonding, and bridging, and linking social capital. At the micro-level, bonding refers to the familial networks, bridging to the networks with peers, and linking to the vertical networks with power holders (Halpern, 2005).

Uphoff (1999) divides social capital into two analytical categories, namely structural and cognitive social capital. Structural components enable mutually beneficial collective actions through the establishment of social networks and roles (Uphoff, 1999). These networks are valuable because potential resources can be mobilized through individual contacts (Lin, 1999). Lin (1999) further considers that social capital elements comprise network resources (range of resources, best resources, variety of resources, contact resources) and network location (structural role, structural constraint). Cognitive components consist of norms and values, and predispose people towards collective action (Uphoff, 1999), having been understood, for example, as solidarity, trust, or cooperation (Grootaert and Bastelaer, 2002; Krishna and Uphoff, 1999). Different types of norms and values, part of social capital, have also been described as resulting in different impacts. For example, Mayoux (2001) argues that social capital can have a negative impact on women because it may entrench unequal gender relations in norms and traditions.

1.2.4.1 Social capital and knowledge

A number of academics have made the link between social capital and access to information, although most of the seminal works on this theme are located in the developed world. Coleman (1988), for example, describes aspects of social relations that provide useful capital resources for individuals, arguing that one form of social capital resides in the information potential that can be accessed via social relations maintained for other purposes. For Lin (1999), social capital comprises the resources embedded in a social structure which provide benefits by facilitating the flow of information. The link between social capital and information has, however, also been made in rural Bangladesh. For example, Bakshi and colleagues have identified social capital as 'a powerful tool that affects human behaviour by mitigating information asymmetries among individuals' (2015: 1604).

In the literature, social capital has been identified as having a number of implications for organisations and networks. First, networks of social relations, particularly those characterised by weak ties or structural holes (disconnections and non-equivalences among actors) are considered to improve efficiency of information diffusion by reducing redundancy (Burt, 1992). Second, social capital is seen to be an aid to creativity and learning (Fischer et al., 2004; Burt, 2002). Third, social capital encourages cooperative behaviour, facilitating new forms of association and innovative organisation (Fukuyama, 1995; Putnam, 1993). For organisational

and management sciences, social capital is an important concept for understanding institutional dynamics, innovation, and value creation (Nahapiet and Ghoshal, 1998).

From the literature, it appears that social capital has an impact on development but the mechanisms involved require further study. Although there is considerable evidence of the link between social capital and knowledge at the level of organisations, there is much less evidence on the links between social capital and local knowledge. In addition, it cannot be assumed that approaches, elaborated for the developed world, are automatically applicable to developing countries.

1.3 Research design

This section describes the research design of this thesis, starting with the research framework and main research question. To answer the main research question, we have devised three sub-questions. Following this, we developed a number of studies to answer these sub-questions. These studies were conducted, building on each other in an iterative way. At the end of this chapter, issues related to validity are addressed and the outline of the thesis is presented.

1.3.1 Research framework and research questions

From the above theoretical explorations, the research framework and main question are derived. In the theoretical framework, I hypothesize the relationships between these theoretical concepts. I argue that multiple knowledges, representing a combination of local knowledge and scientific and technical knowledge, brings about endogenous change at the grassroots which leads to sustainable development. I postulate that this process is facilitated by new modes of knowledge production and exchange, such as knowledge management for development, transdisciplinary research and social capital. Although this approach appears to place social capital in the same category as knowledge management for development and transdisciplinary research, I recognise that they represent very different phenomena, although all having an impact on knowledge production and exchange at the grassroots. I also hypothesize that knowledge production and exchange contribute to endogenous change and, thus to sustainable development (see Figure 1.3). This framework leads to the main research question:

How can new modes of knowledge production and exchange, such as transdisciplinary research, knowledge management for development and social capital, improve approaches to sustainable development?

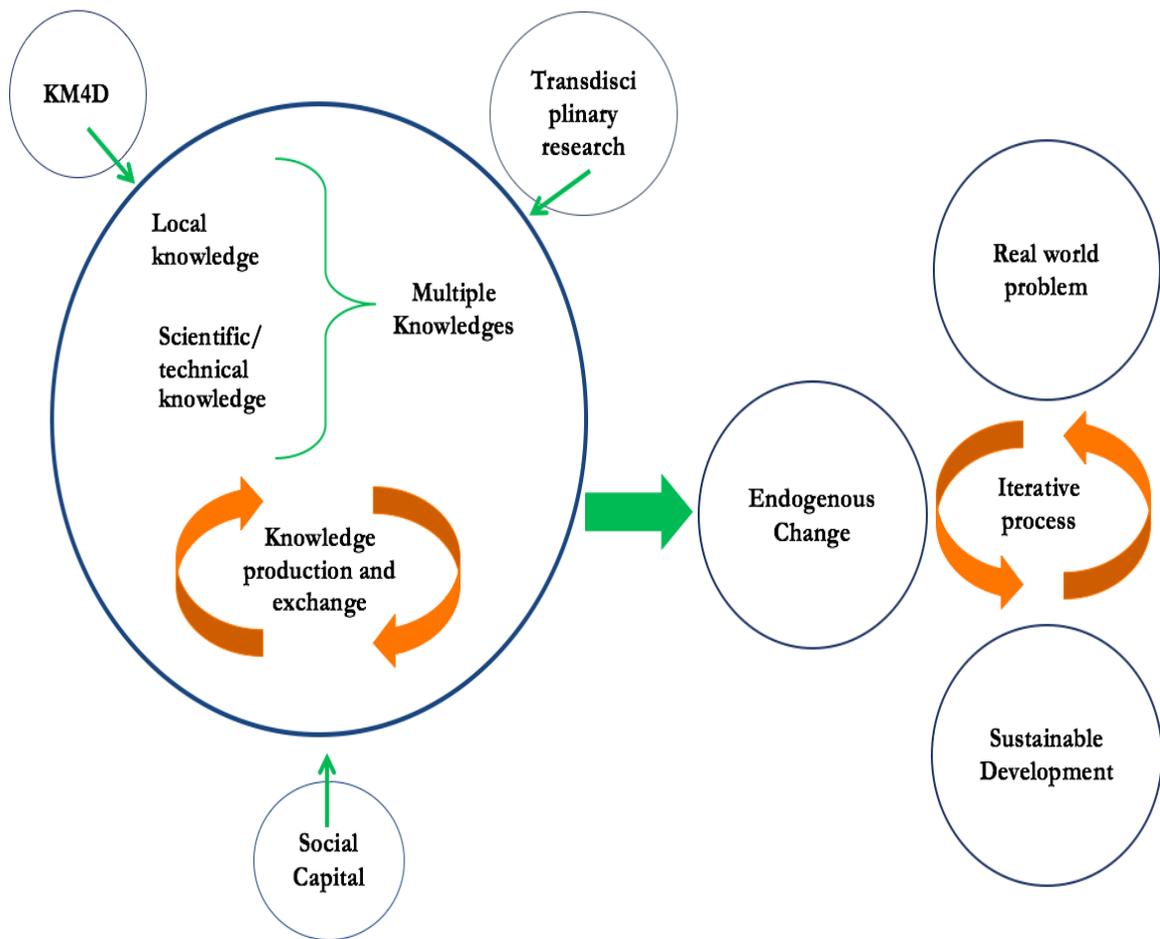


Figure 1.3 The hypothesized relationship between new modes of knowledge production and exchange, endogenous change and ultimately sustainable development

In our discussion of theoretical insights, we discussed literature which argues that current approaches to sustainable development are dominated by Western approaches, concepts and researchers. Before investigating the role of new modes of knowledge production and exchange, we first need to consider the status quo and to find out whether Western approaches are, indeed, dominant. This led us to develop the first research sub-question:

1. To what extent do Western approaches to knowledge and Western researchers dominate discourses of knowledge related to sustainable development (and development more generally)?

In addition, we also need to know more about the new modes of knowledge production and exchange. In previous sections, we have introduced knowledge management for development, transdisciplinary research and social capital. Given that transdisciplinary research and knowledge management appear to have some similar characteristics, we need to know how they relate to each other and how they relate to processes of knowledge production and exchange. We also need to investigate whether social capital provides a useful theoretical lens through which to view knowledge for development. This led us to the following sub-question:

2. What are the characteristics of new modes of knowledge production and exchange, and to what extent are they applicable to development?

Subsequently, we want to apply these insights to knowledge production and exchange at the grassroots. First, however, we need to consider the evidence about whether social capital contributes to development at the grassroots because we know that social capital is a contested concept (see, for example, Fine, 2002; Harriss, 2002; Edwards, 1999) and that it can have perverse, negative implications (see, for example, Rubio, 1997; Mayoux, 2001). In addition, we also consider that developing an intervention at the grassroots is not a simple undertaking because we need to find an appropriate methodology which will yield useful insights into complex processes of knowledge production and exchange. This led us develop the final research sub-question:

3. Through which mechanisms and strategies can local knowledge and social capital be strengthened for sustainable development at the grassroots?

1.3.2 Research approach

The research sub-questions were investigated by employing multiple, individual studies which also had their own study-level research questions which contributed to answering the sub-questions. The relationship between the sub-questions and the study-level research questions can be seen in Table 1.1 below. For ease of reference, we have also included the respective chapter number in this table.

1.3.2.1 Research sub-question 1

To investigate the first sub-question, we need to develop insights into whether Western approaches to knowledge and Western researchers are dominating discourses of knowledge. To do this, we undertook two studies.

Study 1: Critical discourse analysis and the SDGs

There seemed to be a good opportunity to consider the possible dominance of Western approaches to knowledge in the recently agreed SDGs. As we demonstrated in the introduction, the SDGs are already framing international development efforts at the level of aid donors, international organisations and countries. We decided to analyse the text of the main SDG document, and started to look at the references to knowledge within it. However, we were not satisfied with this approach which appeared to be too anecdotal. Searching for a more systematic method, we decided to apply the methodology of transdisciplinary critical discourse analysis (Fairclough, 2012) to analyse the text of the SDGs.

Study 1 represents a desk study undertaken in 2016 to consider the key political, social text in ‘Transforming our world: the 2030 agenda for sustainable development’ (UN, 2015), the final text of the SDGs ratified by the UN. It has the following study-level research question:

Which discourses of knowledge are evident in the SDGs at the level of vision, strategy, implementation and goals, and to what extent are they in a position to address the complex problems facing the global community?

After we had completed this study, another paper was published which had used the same methodology to analyse the SDGs, vindicating our choice of methodology (Briant Carant, 2016).

Table 1.1 An overview of research sub-questions, study-level questions and the studies

Research sub-questions	Study-level research questions	Studies (and chapters)
To what extent do Western approaches to knowledge and Western researchers dominate discourses of knowledge related to sustainable development (and development more generally)?	a. Which discourses of knowledge are evident in the SDGs at the level of vision, strategy, implementation and goals, and to what extent are they in a position to address the complex problems facing the global community? (Societal view)	Study 1 (Chapter 2)
	b. To what extent are academics from developing countries represented as authors and editorial board members in scientific journals? (academic view)	Study 2 (Chapter 3)
What are the characteristics of new modes of knowledge production and exchange, and to what extent are they applicable to development?	a. How are transdisciplinary research and knowledge management different and how can they learn from each other?	Study 3 (Chapter 4)
	b. To what extent can the concept of social capital support our understanding of online networks, created by development organisations to stimulate knowledge sharing at the meso-level?	Study 4 (Chapter 5)
Through which mechanisms and strategies can local knowledge and social capital be strengthened for sustainable development at the grassroots?	a. Through which processes has social capital been found to contribute to poverty alleviation at the micro-level of the grassroots?	Study 5 (Chapter 6)
	b. What are the defining characteristics, development impact and lessons from the application of action research in a development project in Bangladesh?	Study 6 (Chapter 7)
	c. How does strengthening structural, cognitive and relational dimensions of social capital at the grassroots contribute to knowledge creation and exchange, and what types of new knowhow are co-created?	Study 6 (Chapter 8)
	d. What types of social capital have been used and which strategies have been developed to strengthen women's social capital for poverty alleviation in rural Bangladesh?	Study 6 (Chapter 9)

Study 2: Patterns of academic knowledge production in the field of development studies

We also wanted to consider the issue of whether Western researchers are dominating discourses of development more generally. To do this, we decided to focus on one interdisciplinary group of researchers, namely researchers in the field of development studies who are explicitly trying to address issues of development (Sumner and Tribe, 2009). We applied a form of social network analysis, developed by Burgess and Shaw (2010), to consider whether Western researchers were dominating editorial boards of journals in the field of development studies. To complement this, we also undertook a bibliographic analysis of data on the Web of Science (WoS) to identify author affiliations and country locations for a number of journals.

Study 2 comprised a desk study undertaken over the 2012-2016 period in which we used bibliographic analysis and social network analysis to consider the extent to which academics from developing countries feature as authors and editorial board members in 10 journals in the field of development studies. It has the following study-level research question:

To what extent are academics from developing countries represented as authors and editorial board members in scientific journals?

1.3.2.2 Research sub-question 2

To address the second sub-question on the characteristics of the new modes of knowledge production and their application to development, we then undertook two studies.

Study 3: Comparative analysis of transdisciplinary research and knowledge management for development

We first decided to consider the similarities and differences of two new modes of knowledge production and exchange being considered in this thesis, namely knowledge management for development and transdisciplinary research. We decided that a literature review would be the most appropriate methodology so that we could analyse how the two fields had evolved. At this stage, we did not want to also consider social capital as well because we recognise that it represents a different type of resource.

Study 3 was undertaken in 2013 and represents a comparative analysis of the fields of transdisciplinary research and knowledge management for development, based on a literature review, with the following study-level research question:

How are transdisciplinary research and knowledge management different and how can they learn from each other?

Study 4: Social capital and knowledge networks for development

In the literature, we found that social capital appears to play an important role in knowledge production and exchange. However, previous research on this subject was generally focused on the role of social capital in organisations and networks. To consider whether this was a promising approach to development with potential to be employed at the grassroots, we first decided to apply the methodology at the meso-level to knowledge networks. These networks

have been established by development organisations to support their staff in knowledge production and exchange. We decided to use a literature review to investigate this issue. Study 4 comprises a desk study, based on a literature review, and was undertaken over the 2004-2006 period with the following study-level research question:

To what extent can the concept of social capital support our understanding of online networks, created by development organisations to stimulate knowledge sharing at the meso-level?

1.3.2.3 Research sub-question 3

To investigate the final sub-question on mechanisms and strategies for strengthening knowledge and social capital for sustainable development at the grassroots, we undertook two studies.

Study 5: Social capital for development

This first study involved analysis of the literature on the theory and practice of the use of social capital to support development at the grassroots in developing countries. In the previous study, we aimed to establish whether social capital had value for knowledge production and exchange for development, in this study we decided to consider whether it had direct value at the grassroots before applying it to a development intervention. Study 5 comprised a desk study undertaken over the 2012-2014 period, based on a literature review, with the following study-level research question:

Through which mechanisms has social capital been found to contribute to poverty alleviation at the micro-level of the grassroots?

Study 6: Development programme in Bangladesh

We then decided to put our findings into practice as the basis for a development programme in rural Bangladesh. In this study, we decided to use a transdisciplinary approach, employing a form of action research, Interactive Learning and Action (ILA). Given that this was the most substantial study within this thesis, it also had three study-level research questions. First, we wanted to assess whether action research was appropriate for our purposes, using the following study-level research question:

What are the defining characteristics, development impact and lessons from the application of action research in a development project in Bangladesh?

Next, we considered the relationship between social capital and knowledge production and exchange at the grassroots with the study-level research question:

How does strengthening structural, cognitive and relational dimensions of social capital at the grassroots contribute to knowledge creation and exchange, and what types of new knowhow are co-created?

Finally, we investigated how strengthening social capital can facilitate poverty alleviation with the following study-level research question:

What types of social capital have been used and which strategies have been developed to strengthen women’s social capital for poverty alleviation in rural Bangladesh?

Study 6 was undertaken over the 2006-2012 period by a number of different researchers from the Athena Institute who spent up to 3 months a year in Jessore District working with the NGO, People’s Resources in Development Enterprise (PRIDE).

1.3.3 Research methodologies

As explained in the previous section, the thesis has employed five different methodologies which will be discussed in more detail below in four sections. Bibliographic analysis and social network analysis will be considered together because they were employed together. These descriptions and discussions represent a summary; further details are provided in the different chapters. Table 1.2 provides an overview of the methodologies, the studies and the years in which they were undertaken.

1.3.3.1 Critical discourse analysis

Discourse analysis is a collective name for a number of methodologies for analysing semiosis, namely how meaning is created and communicated through written, vocal or sign language. Discourse analysis is used in many disciplines in the social sciences but each discipline has its own methodologies and different underlying assumptions. Critical discourse analysis (CDA) is one type of discourse analysis which aims to ‘understand, expose, and ultimately resist social inequality’ (van Dijk, 2005: 352). Some discourses are dominant while others are considered to be ‘marginal, or oppositional, or alternative’ (Fairclough, 2013: 265).

Table 1.2 An overview of studies

No.	Study	Methodologies	Years
1	Discourse of knowledge in the SDGs	Critical discourse analysis	2016
2	Patterns of academic knowledge production in the field of development studies	Bibliographic analysis and social network analysis	2012-2016
3	Comparative analysis of transdisciplinary research and knowledge management for development	Literature review	2012-2013
4	Social capital and knowledge networks for development	Literature review	2004-2006
5	Social capital for development	Literature review	2012-2014
6	Development programme in Bangladesh	Action research	2012-2016

To study discourses of knowledge and knowledge societies in the text of the SDGs (Study 1), we adapted ‘transdisciplinary’ CDA (Fairclough, 2012) for our purpose. Transdisciplinary CDA, proposed by Fairclough, is divided into four phases which are further divided into steps. The phases comprise: 1) selection of a research topic that relates to a social issue that can be productively approached by a focus on semiosis; 2) identification of obstacles to addressing the social issue based on the analysis of dialectical relations between semiosis and other social elements, which involves the selection and analysis of an appropriate text; 3) consideration of

whether the social order ‘needs’ the social issue, namely whether it is inherent to the social order, whether it can be addressed within it or whether it can only be addressed by changing the social order; and 4) identification of possible ways past the obstacles with a semiotic point of entry, using discourses, narratives and arguments.

According to Fairclough (2005), this methodology is transdisciplinary because it assembles diverse disciplinary resources, without expecting or seeking any substantive change as a result and without confronting ‘thorny theoretical and methodological problems involved in transcending theoretical boundaries’ (Fairclough, 2005: 53). However, we would argue that this type of CDA represents rather an interdisciplinary approach because it does not involve multiple stakeholders.

1.3.3.2 Bibliographic analysis and social network analysis

In this thesis, we consider the geographical location of editorial board members and authors in academic journals in the field of development studies with a view to considering the representation of academics from developing countries and, where possible, women. It is based on two data sets focusing on 10 journals: the institutional affiliations of 329 editorial board members, taken from the journals’ websites; and the institutional affiliation of authors of 2112 articles, published in these journals over the 2012-2014 period on the Web of Science (WoS) database (Study 2).

To analyse the data on editorial boards, we employed social network analysis, using the same methodology employed by Burgess and Shaw (2010) in their analysis of editorial boards of the 40 ‘top journals’ in the management field. Following Burgess and Shaw’s methodology, data collection and preliminary analysis were conducted in Excel, and then further analysis was carried out in Netdraw and UCINET (Borgatti, Everett and Freeman, 1999) with two-mode affiliation data converted into single mode. The three two-mode matrices are individuals affiliated to journals (through editorial board membership), individuals affiliated to organizations (through employment) and journals linked to organisations (through the organisational affiliation of the editorial board member). In the case of editorial boards, we were also able to consider representation of women by manually checking individual board member’s institutional websites when gender was not clear on the basis of first names. Given that women and gender are at the heart of development studies, the representation of women in editorial boards could be seen as a litmus test for inclusive approaches to publication more generally.

Data on authors were collected in March 2015 from the WoS database, covering the three years 2012-2014 for the 10 journals as can be seen in Table 1.3. Only 2112 articles were included in the data; other documents such as editorials and book reviews were excluded because articles are subject to peer review. Some of the journals publish more articles annually and these contribute a higher proportion to the data set (see Table 1.3).

Table 1.3 Number of articles in the author sample

Journals	2012	2013	2014	Total	% of total articles
<i>Economic Development and Cultural Change</i>	26	27	24	77	3.6
<i>Journal of Development Studies</i>	113	110	101	324	15.3
<i>Development and Change</i>	56	59	59	174	8.2
<i>World Development</i>	182	189	232	603	28.6
<i>Third World Quarterly</i>	102	108	109	319	15.1
<i>Canadian Journal of Development Studies</i>	30	34	32	96	4.5
<i>Development Policy Review</i>	38	44	44	126	6
<i>Journal of International Development</i>	73	63	63	199	9.4
<i>European Journal of Development Research</i>	40	47	46	133	6.3
<i>Progress in Development Studies</i>	18	19	24	61	2.9
	678	700	734	2112	100

1.3.3.3 Literature reviews

Some studies in this thesis rely on literature reviews as the primary data collection methodology (Studies 3, 5), although all the chapters are based on ongoing collection and examination of the literature which took place until the finalisation of this manuscript.

Study 3 (Chapter 4) involved the collection of a wide range of literature on transdisciplinary research and knowledge management for development. This relied on the team of authors who were all experienced as both authors and practitioners in these fields. The literature review benefitted from the team's implicit knowledge of the development of these fields as well as their contribution to previous state-of-the-art papers (Ho, 2011; Ferguson and Cummings, 2008; Cummings and Ferguson, 2007). In addition, the paper was the analytical part of a broader undertaking which involved the production of a Special Issue of the *Knowledge Management for Development Journal* on the subject of 'Breaking the boundaries to knowledge integration: society meets science within knowledge management for development.' This Special Issue was explicitly developed to increase awareness of transdisciplinarity within knowledge management for development, and also aimed to contribute to conceptual development of the links between development and transdisciplinary approaches (Brown et al., 2013).

Study 5 (Chapter 6) examined documentary evidence of the impact of social capital on poverty alleviation at the grassroots. Initially, the paper was going to be based on a systematic review of the literature but the number of articles identified was consistently too high to use this methodology. For example, a search of the literature using the term 'social capital' on Google Scholar retrieved nearly three million records in 2012. Attempts to narrow the search remained unsuccessful with, for example, a search on the Science Direct database with the key words 'social capital' and 'poverty' on articles during 2002-2012 retrieving almost 14,000 articles. Attempts to identify key words that would retrieve articles concerning the mechanisms of social capital production were also unsuccessful. Therefore, sampling of literature was undertaken, using a method 'akin to snowball sampling' (Babbie, 2013: 265), to identify the relevant literature on social capital. This is a recognised method in social research:

Once you identify a particularly useful book or article, note which publications its author cites. Some of these will likely be useful. In fact, you'll probably discover some citations that appear again and again, suggesting they are core references within the subject matter you are exploring... it's about digging into the body of knowledge that previous researchers have generated. (Babbie, 2013: 265)

In addition, we took a grounded approach which permits a review to accommodate diverse types of articles, to identify emergent themes and to establish connections between texts (Dedding et al., 2011: 50). In this way, we were able to identify articles describing a range of outcomes and a range of mechanisms of social capital production, both in developing countries and at the micro-level.

1.3.3.4 Action research

Three chapters in this thesis (Study 6, Chapters 7, 8 and 9) focus on a development programme in Bangladesh which employed the ILA methodology, a form of transdisciplinary action research. The development programme was implemented in Jessore District with the local NGO, PRIDE. The ILA methodology and the development programme are covered in detail in these chapters and are summarized here.

Table 1.4 An overview of ILA phases and timelines

Description	Dates	ILA Phase	Activities
Pre-reconnaissance	1998-2004	-	Involvement in ILA project and training with the GKF project (Zweekhorst, 2004)
Reconnaissance	2004-2006	1 - Initiation and preparation	Context is analysed and the research team established
		2 - In-depth study of needs and visions	Perspectives, needs and interests of the different stakeholders are identified, analysed and integrated
		3 - Integration	knowledge perspectives and needs of the different stakeholders are integrated
Action research cycles	2007-2012	4 – Public priority setting and planning	Stakeholders to reflect on the previous phase's results, set priorities and plan the next phase
		5 – Project formulation and implementation	Specific projects are formulated and implemented, involving reflection on the previous phase results, priority setting and planning for the next phase;

Developed during the 1980s and 1990s by Bunders (1990) and Broerse (1998) at the Athena Institute, VU University Amsterdam, ILA has supported diverse multi-stakeholder processes aimed at inclusive agricultural, health and biotechnological innovation. It has been applied in different fields, including influencing public attitudes to genetically modified crops (see, for example, de Cock Buning et al., 2011), development of neurosciences (see, for example, Arentshorst et al., 2014; Pittens et al., 2014), stigma reduction in leprosy (see, for example,

Peters et al., 2015), patient participation in health agenda setting (see, for example, van der Ham et al., 2014; Pittens et al., 2014) and urban waste processes in Europe (see, for example, Broerse et al., 2013). It has also been applied in many countries, including Indonesia (see, for example, Peters et al., 2015), South Africa (Swaans, 2009), Bangladesh (Zweekhorst, 2004; Maas 2013; Maas et al., 2014a; 2014b; 2014c), Thailand (Sermitirong et al., 2014) and the Netherlands (see, for example, de Cock Buning et al., 2014; Arentshorst et al., 2014). This represents a small number of the many references on ILA (Athena Institute, 2016).

The ILA approach comprises five phases (Bunders et al., 2010). The timelines for each of the phases and the activities involved as it relates to this development programme can be seen in Table 1.4. After the reconnaissance, a series of learning cycles occurred continuously (phases 4 and 5), similar to the action research spiral of Kemmis and McTaggart (1988) (see Figure 1.4). Every cycle consists of revised planning, action, observation and reflection after which a new cycle starts. Seven learning cycles took place, encompassing setting priorities, planning and implementing. Each year it involved one learning cycle: monitoring and evaluation (M&E) resulted in adaptations in the following year. The programme went through a number of phases: reconnaissance, experimentation, improvements and scaling up.

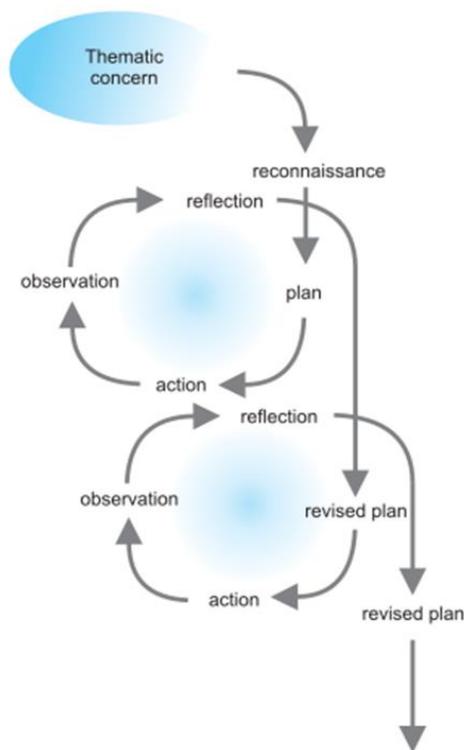


Figure 1.4 Action research spiral (after Kemmis and McTaggart, 1988)

During what has been identified as the pre-reconnaissance phase (1998-2004), the Athena Institute worked with the Grameen Krishi Foundation (GKF) Technology Assessment Unit. In 2004, some of the staff left GKF and started their own NGO, PRIDE. PRIDE aims to improve the livelihood of poor people in rural communities. This thesis focuses on one of PRIDE's programmes, namely the Route to Sustainable Development (RSD) programme which later evolved into the Social Entrepreneurial Leadership (SEL) programme. The aim of

this programme was poverty alleviation and was focused on the most pressing needs identified by local communities, namely food supply. Women were trained in income generating activities (IGAs), initially home-based gardening and poultry rearing, and to support the development of other poor women in the village. The action research project enabled us to develop, implement and evaluate an approach to stimulate the emergence of social entrepreneurship among the rural poor.

The PhD candidate was part of a team of researchers undertaking the action research. Her role was primarily focused on data analysis.

1.3.4 Validity

In this thesis, a variety of strategies have been built into the research design and research process to reduce bias and protect both internal and external validity. This relates to the quantitative and qualitative research methodologies, and the literature reviews. In each of the chapters, issues related to validity are discussed in greater depth. Here, we present a summary of the main issues.

1.3.4.1 Validity of the quantitative data

The quantitative data in this thesis was used in Study 2, Chapter 2. In terms of the external validity of the quantitative data, we attempted to ensure that the data would also be relevant to other, similar journals, checking it with past research from other academic fields. We also used the same search for different years and groups of years to check whether the pattern was similar.

1.3.4.2 Validity of the qualitative data

Qualitative data for this thesis is derived from critical discourse analysis and from action research. For the critical discourse analysis, we triangulated the results with analysis of past discourses. In addition, we compared our findings with other researchers' findings to see if they were consistent.

Action research is faced with a number of potential biases, such as researcher bias, the possibility that people consulted at the grassroots and in the NGO are providing socially desirable answers, and bias which could be the result of data collection instruments. For example, researcher bias could have arisen because the researchers involved in this action research process were not distant observers but actively engaged in the project. To overcome these sources of possible bias, the project triangulated researchers, instruments and data. PRIDE staff undertook the day-to-day monitoring and evaluation of the entrepreneurs, communicating with the Amsterdam-based research team by email and telephone. It was possible to reflect on the programme from different perspectives because research teams had multiple, changing memberships.

Triangulation of data was undertaken by a variety of methods. First, data collection instruments were triangulated to enhance validity. Data obtained from one instrument was checked using data obtained from two other data collection methods. Data collected on different stakeholder categories was also triangulated with others inside and outside the programme.

1.3.4.3 Literature reviews

For the literature reviews, we used a method ‘akin to snowball sampling’ (Babbie, 2013: 265), to identify the relevant literature on social capital. This is a recognised method in social research. In addition, the search strategies employed and the databases consulted are described in detail in the relevant chapters. The literature consulted was also cross-checked for additional, relevant references. Moreover, a minimum of two researchers selected and assessed the literature consulted. We also purposefully consulted previous literature reviews on the themes under discussion.

1.4 Outline of the thesis

This thesis begins with an introductory chapter. Chapter 1 provides the general background to the thesis, introduces the theoretical concepts and the main research question, and outlines the study design. In this chapter, the different methodologies used during this thesis are described, and their validity is examined.

The first main part of the thesis (Part I: Dominance of Western approaches and Western researchers) is composed of two chapters. Chapter 2, ‘Critical discourse analysis of perspectives on knowledge and knowledge societies within the Sustainable Development Goals’ considers knowledge and knowledge societies in the SDGs. Chapter 3, ‘Representation of academics from developing countries as authors and editorial board members in scientific journals: does this matter to the field of development studies?’ considers patterns of publication for a sample of 10 academic journals in the field of development studies.

The second part (Part II: New modes of knowledge production and exchange) focuses on new approaches to the development and sharing of knowledge, and is made up of two chapters. Chapter 4, ‘Proposing a fifth generation of knowledge management for development: investigating convergence between knowledge management for development and transdisciplinary research’ provides an overview of transdisciplinary research, its main characteristics and how it has evolved over the years since the 1970s. This is then compared to the field of knowledge management for development from a generational perspective. Chapter 5, ‘Knowledge and learning in online networks in development: a social capital perspective’ considers the value of social capital as a theoretical lens for knowledge creation and exchange in online knowledge networks, created by development organisations to facilitate knowledge sharing.

The third and final part (Part III: Strengthening social capital and local knowledge) is composed of four chapters. Chapter 6, ‘Producing social capital as a development strategy at the micro-level’ analyses theoretical perspectives and empirical studies of social capital, demonstrating that development initiatives can effectively stimulate social capital to contribute to poverty alleviation. Chapter 7, ‘Action research for incremental transformation: poverty alleviation among rural women in Jessore District, Bangladesh’ explores how action research facilitated a process in which development paths for poor women in rural Bangladesh were elaborated. Chapter 8, ‘Co-creating knowledge in the social fabric: lessons from an action research project in rural Bangladesh’ explores how structural, cognitive and relational social

capital contributed to knowledge co-creation at the grassroots. Chapter 9, 'A dynamic framework for strengthening social capital of women: approaches to community development in rural Bangladesh' analyses strategies employed by PRIDE and women to strengthen social capital of poor women.

Finally, Chapter 10 presents the general conclusions and discussions, and answers and reflects on the research sub-questions which together answer the main research question. It considers the wider relevance of the findings beyond the current context, further analyses the internal and external validity of the results, and outlines a possible future research agenda.