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Mutual learning for knowledge co-creation about disability inclusive development: experiences with a community of practice

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To deal with world-wide problems in development, actors need to co-create new knowledge. This can be done through mutual reflection on underlying values and assumptions and by combining the knowledge of different actors from society and academia. This paper shows how knowledge co-creation can be facilitated with attention to multiple actor collaboration, creating outputs which are relevant for science and society and which contribute to sustainable development. We describe how a group of different actors can become mutually engaged to co-create knowledge in a shared domain of interest. Through mutual learning and experimentation in a community of practice, the actors develop a shared repertoire of socially robust knowledge. The balance between theory and practice during knowledge co-creation process helped to gain in-depth understanding of the process. This shows the importance of mutual learning and co-creation of knowledge when a new issue is introduced in development practices. To illustrate this, the experiences of over 30 organisations, united in a community of practice on disability inclusive development, are considered.

Keywords: knowledge integration; multi-stakeholder collaboration; disability; development practice; communities of practice; development organisations

Introduction

Knowledge integration has emerged as an area of great interest because governments, non-governmental organisations (NGOs), individuals, and academia are trying to work together to address worldwide issues, like the Millennium Development Goals (MDGs). This results in the breaking down of boundaries between research and practice. Cross-sectoral partnerships have become particularly popular since the 2002 World Summit on Sustainable Development in Johannesburg, South Africa, where it was recognised that sustainable development dilemmas cannot be accomplished by single-sector actors and knowledge integration was seen as a key factor in effectiveness (Van Poelje and Maarse 2013; Le Borgne and Cummings 2009). Since then, inter-organisational activities to promote knowledge integration have become common practice in development cooperation (Waddell et al. 2013). Transdiciplinary

research represents a scientific tradition which involves the explicit integration of the knowledge of different actors in academia with knowledge from experience in society (Hirsch Hadorn, Gertrude Biber-Klemm et al. 2008; Klein et al. 2001). This research tradition can provide the development sector and development practitioners with theoretical grounding and practical examples of knowledge integration to improve their own knowledge integration and knowledge co-creation processes. In order to enhance the understanding of these collaborative knowledge creation processes, the authors argued in a previous article that it is important to focus on the process of co-creation of knowledge (Regeer & Bunders 2003; Regeer & Bunders 2009).

The Dutch umbrella organisation for development, PSO, developed an approach, called Thematic Learning Programmes (TLP), to stimulate the process of co-creation of knowledge in networks of NGOs, academia, and specialists, about what works and does not work when applying concepts, tools and assumptions in a specific context (Hiemstra et al. 2012). In these TLPs, participants focus on co-creating knowledge that is applicable for societal practices as well as for science. Since 2010, PSO has funded 10 TLPs in the Dutch development sector, in collaboration with partners in the South (van Poelje & Maarse 2013; Phlix et al. 2012). In this article, we focus on one of these initiatives and explore the knowledge co-creation process, and its outcomes, of the TLP on inclusion of persons with disabilities.

The TLP on inclusion of persons with disabilities was initiated in 2010 by PSO in response to the declaration of the United Nations Convention of the Rights of Persons with Disabilities (CRPD) which strongly encourages development actors to implement disability inclusive policies and practices (Bruijn et al. 2012; General Assembly United Nations 2006: article 32). Despite the ratification of the CRPD by 90 countries in 2010 (UNenable 2010), knowledge regarding the inclusion of persons with disabilities in development practices ha’s received insufficient attention to date. To boost the process of disability inclusive development, this TLP aimed to integrate knowledge and insights from the scientific field of disability studies with experiential knowledge and insights from the practice of development cooperation.

This paper show how the project team facilitated a joint process of knowledge co-creation among a range of actors, from both science and practice, on the inclusion of persons with disabilities in development, resulting in lessons for practitioners in the field of knowledge management for development. It displays the importance of facilitating mutual reflection in the process of knowledge co-creation and it shows examples of the outputs that can be expected that are relevant for both science and society.

The theoretical background of knowledge co-creation

Sociologists Berger and Luckmann (1966) describe knowledge as a set of shared beliefs that are constructed through social interactions and are embedded in social contexts in which knowledge is created. They build on the work of philosopher Wittgenstein (1953) who emphasised that the meaning we give to the natural world is embedded in our practices, activities and uses. With this understanding that knowledge, social interactions and context are closely intertwined came the notion of two different types of knowledge: tacit and explicit knowledge. Polanyi (1966), introduced the term tacit knowing which comprises the knowledge we use unconsciously and which is embedded in habits and culture. Explicit knowledge, on the other hand, is knowledge that has been or can be articulated, codified, stored and readily shared with others (Nonaka and Takeucchi 1995; Le Borgne and Cummings 2009). Tacit and explicit knowledge cannot be separated or distinguished easily because the understanding of knowledge as tacit or explicit is heavily dependent on epistemic culture.

Knowledge co-creation is a process that integrates explicit and tacit knowledge in an iterative process of action and adaptation (Nonaka & Takeucchi 1995; Brown & Daguid 1998; Wenger 1998). Regeer and Bunders (2003) elaborate on this idea in the context of transdisciplinary research by stating that knowledge integration is not simply a matter of adding up different 'pieces' of knowledge of academic and non-academic actors. Rather, because of the partly tacit nature of knowledge, knowledge integration is a matter of building a community in which understandings are developed, shared and deepened through practice. Knowledge co-creation than seems a more appropriate term than knowledge integration (Regeer and Bunders, 2003).

Knowledge co-creation is thus an integral part of transdisciplinary research, in which multiple actors from both academia and practice collaborate to solve a common, complex problem by developing mutual in-depth understanding and new knowledge (Klein et al. 2001; Hirsch Hadorn, Gertrude Biber-Klemm et al. 2008; Regeer & Bunders 2003; Ho et al. 2012; Pohl & Hadorn 2008). In this paper, we apply the definition of Klein et al (2001), who describe transdisciplinary research as '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' (p. 7). To conceptualise the process of knowledge co-creation in transdisciplinary research processes, we use the theory of Communities of Practice (CoP) (Wenger 1998) to describe the engagement of multiple actors as the fundamental process by which we acquire knowledge and give meaning to complex challenges as we did in earlier work (Regeer & Bunders 2003; Regeer & Bunders 2009). Wenger (1998) defines three dimensions of practice as characteristic of CoPs: joint enterprise, mutual engagement and shared repertoire. In the context of transdisciplinary research, we translate these dimensions into 1) a shared domain of interest; 2) the process of building a community for knowledge co-

creation and 3) the socially robust knowledge output, namely the co-created knowledge (see Figure 1).

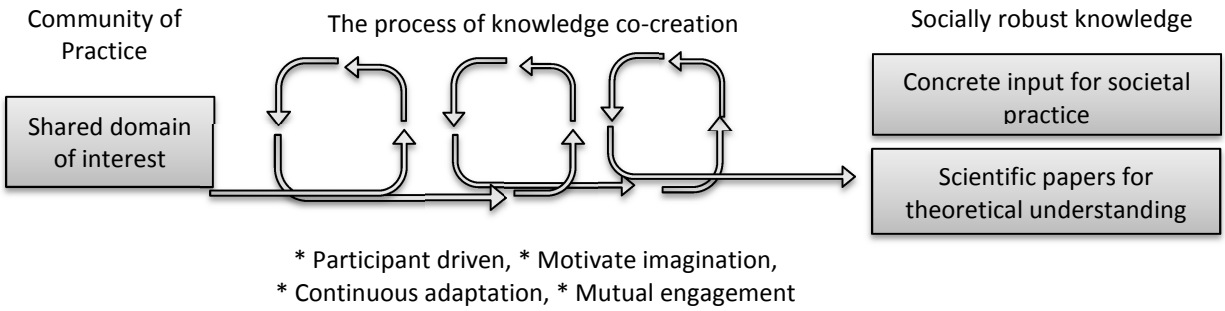

Figure 1: three dimension of knowledge co-creation in the transdisciplinary research process

The first dimension proposes that successful transdisciplinary research focuses bringing together multiple actors around a shared domain of interest. The participants share a passion, interest or a sense of urgency to learn together regarding a specific topic (Wenger 1998). The second dimension emphasises the importance of facilitating the process of building a community for knowledge co-creation in a way that ensures the involvement of all participants from different disciplines. Wenger (1998) describes four concepts of CoPs that help to build a community for knowledge co-creation (Wenger 1998). First, Wenger (1998) argues that CoPs should be participant driven, thereby ensuring ownership of knowledge needs among participants (Regeer and Bunders 2009; Wenger 1998). Second, the design of CoPs should motivate the imagination of the participants and their ability to think 'out of the box', and generate innovative and creative solutions in which the expertise of different disciplines can be integrated. Third, CoPs should be flexible in their organisation and continuously adapt their activities in relation to the context at the boundaries of the CoP. This relates to the need to align newly developed knowledge to regular practice (Wenger 1998). Lastly, CoPs should ensure mutual engagement of the participants.

The third dimension stresses the importance, especially in transdisciplinary research, of ensuring that the output of knowledge co-creation is applicable to all participants involved. Nowotny (2000) describes output of knowledge co-created in transdisciplinary processes as 'socially robust knowledge' (p. 1). She explains the importance of contextualisation of knowledge for society and science, leading to new knowledge that is applicable in societal practice as well as in the scientific realm. Through experimentation in practice, reflection in the CoP and alignment to regular practices, a shared repertoire of action strategies emerges around identified knowledge needs of different actors (Wenger 1998; Bood & Coenders 2004; Regeer & Bunders 2009). The co-created knowledge, however, is not only relevant to participants of the CoP but also others can learn from the knowledge created in different contexts. In this way, a CoP can act as a vehicle for newly developed knowledge and

innovative approaches to be adopted in a large range of organisations (Cummings et al. 2006). Several scholars explain how socially robust knowledge 'sticks' because it is deeply rooted in practice (Regeer and Bunders 2009; Nowotny et al. 2001; Brown and Daguid 1998).

We have argued that complex, societal problems require a transdisciplinary approach in which all relevant actors are brought together in a knowledge sharing and knowledge co-creation process. As this approach, even though now used in many projects in the world, is still relatively new, there is a great need for experiential knowledge about ways to facilitate and advance such a collaborative process. Therefore, we want to share in this article our experiences with the TLP on inclusion of persons with disabilities. This brings us to the following research questions that form the focus of this paper:

1) *What lessons on the facilitation of processes of knowledge co-creation can be learned from the TLP on inclusion of persons with disabilities?*

2) *What different forms of socially robust knowledge outputs can be identified as resulting from the process of knowledge co-creation in the TLP on inclusion of persons with disabilities?*

Methodological considerations

In the following paragraph, we introduce the initial design of the TLP on inclusion of persons with disabilities and show how, from the start, it was intended to function as a CoP. Then we elaborate on the research approach and the role of the authors of this paper in facilitating the TLP and conducting research on the TLP at the same time.

Introduction to the TLP on inclusion of persons with disabilities

This TLP is an example of a CoP in which academic and non-academic actors together give meaning, in this case to disability inclusive development. We describe how the original reasons for starting this TLP relate to the three dimensions of a CoP in transdisciplinary research, described above.

The first dimension concerns the shared domain of interest that binds multiple actors together. The TLP started in response to the UN CRPD which stresses the importance of equal opportunities for persons with disabilities in society, in accordance with the Universal Declaration of Human Rights. It specifically addresses the importance of international cooperation in Article 32 which states the need for:

> *[...] ensuring that international cooperation, including international development programmes, is inclusive of and accessible to persons with disabilities.*

The shared domain of interest, or the commonly experienced complex challenge, was the fact that despite the determination of NGOs to reach marginalized groups in society, disabled persons are often not specifically included in their programmes or are even excluded. The multiple actors that were interested in this complex challenge were:

- International NGOs and their local partners who wanted to learn about how to practice disability inclusive development.
- Disability specific NGOs who were interested to learn about the role they could play in supporting disability inclusive development.
- Scientists in the field of disability and development who wanted to develop insights into the practice of disability inclusive development.
- Scientists on transdisciplinary research, such as the authors of this paper, who focus on understanding the process of knowledge co-creation and how this could contribute to a more inclusive development sector.

The second dimension of knowledge co-creation is the process of building a knowledge creating community that gives meaning to the domain of interest. Wenger et al. (2002) describes how participants in CoP all bring in their own knowledge and experiences in relation to knowledge needs. In the TLP the NGOs brought in knowledge on their development practices in different sectors, like health, water and sanitation, emergency aid etc. The disability specific NGOs brought in their knowledge about the needs of persons with disabilities in development programmes. The scientists brought in knowledge and theories on disability, development and inclusion. The scientists with expertise on transdisciplinary collaboration helped to facilitate the process of building a community for knowledge co-creation and meticulously documented this process as well as knowledge outputs.
The third element of knowledge co-creation is the socially robust knowledge output that is created around identified knowledge needs. The TLP aimed to contribute to the development of practical insights, tools, strategies and guidelines for development practitioners that want to start including persons with disabilities in their programmes. Furthermore, it intended to capture lessons learnt and theoretical insights on disability inclusive development to inform development practitioners, disability specific organisations and academics (Bruijn, P. 2009).

Methodological considerations

The authors of this paper facilitated, together with a disability specific NGO that coordinated the TLP, the process of knowledge co-creation. We chose an action research approach to facilitate the process of knowledge co-creation, and simultaneously study this process. Action research approaches, developed by Kemmis and McTaggert (1988) and others, employ a cyclical process that starts with a dream and then circles around from planning to taking action, observing and reflection, as is visualised in Figure 1 (adapted from Kemmis and McTaggert 1988; Senge 1990). The choices of actions to stimulate knowledge co-creation

within this research were determined in each round on the basis of interactions in practice, which encouraged continuous adaptation of actions (visualised randomly with stars in Figure 2) (Veen et al. in review).

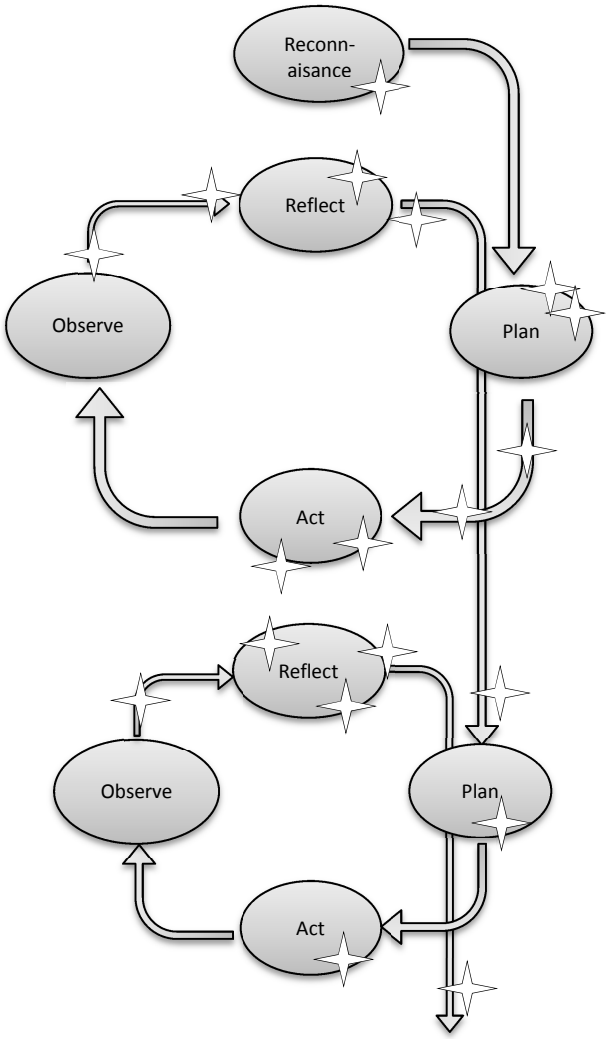

Figure 2: Action research spiral

The research on which this paper is based took place during October 2010 – December 2012, and consisted of a number of cycles. In these cycles, we aimed to ensure a balance between experimentation in practice, on the one hand, and reflection, on the other, to allow opportunities for adaptation to emerging insights. From this process of action research, more general lessons emerged, leading to new knowledge related to disability inclusive development. These knowledge outputs were carefully captured, documented and shared in the TLP through newsletters, reports, case stories and personal communication. The knowledge output was also shared beyond the TLP, in the final publication 'Count me in' (Bruijn et al. 2012).

Recruitment of the NGOs and scientists to participate in the TLP was mainly organised by the disability specific NGO that coordinated the TLP. Skalicky and West (2006) argue that a CoP consists of a core group, an inner circle and an outer circle, depending on the level of involvement. This was also the case in the TLP:

- The core group existed of five like-minded NGOs, including one disability specific NGO, that shared the dream of disability inclusive development. Furthermore, three expert organisations in disability and development (in the Netherlands, India and Ethiopia) and two academic partners, specialised in disability and development and transdisciplinary research were involved. Persons with disabilities, employed by the expert organisations in disability and development, had an important role in the programme.
- Interested partners of the core NGOs in India (eleven organisations) and Ethiopia (nine organisations) formed the inner circle of the CoP.
- About nine other European NGOs and two Dutch disability specific NGOs joined the programme in the outer circle because they had also embarked on the challenge of disability inclusion.

In action research, the researchers are part of the action that is being studied (Whyte 1991), giving them a dual role. The authors were aware of their dual role in the TLP. All steps in the action research were carefully and explicitly documented through recording of all sessions, transcribing all data, and keeping observation and planning logbooks. Furthermore, additional interviews and evaluation sessions were planned, transcribed and analysed to acquire in-depth insights into key challenges and the process of knowledge co-creation. Multiple methods (Gray 2004) were used to operationalise disability inclusive development. Different participatory and dialogical tools were used at different times to facilitate and document knowledge co-creation. For example, open space sessions, timeline workshops, visualisations, drama, intervision sessions, and focus group discussions (Veen et al. in review) were used to create a creative and imaginative atmosphere, encouraging the development of new perspectives. In this process, the facilitators adhered to the principles of naturalistic inquiry which stresses the importance of contextualisation, collaboration between researchers and subjects, links to action, and appreciation of values (Guba & Lincoln 1982). Validity was improved by triangulation of the methods, data and analysis.

Results

In this section, the process of knowledge co-creation in the TLP and the knowledge outputs of the programme are described. First, we discuss the facilitation of the process of knowledge co-creation. Second, we reflect on the knowledge outputs related to disability inclusive development.

Facilitating the process of knowledge co-creation

In this section, we provide insights into the research question: *What lessons on the facilitation of processes of knowledge co-creation can be learned from the TLP on inclusion of persons with disabilities?* We do this by showing how the TLP coordinators facilitated the process of knowledge co-creation in relation to the four important concepts that characterise the process of knowledge co-creation. First, the process should be participant driven ensuring ownership. Second, the design of the process should ensure that the creativity and imagination of participants is stimulated. Third, the design of the process should be flexible, allowing for continuous adaptation. Fourth, the design should provide room for mutual engagement. Below these concepts are related to the facilitation of the TLP, showing how the community was built. Table 1 summarizes these results.

Table 1: The process of knowledge co-creation

Important principles of the process of knowledge co-creation		**Implementation of principles in TLP practice**
Ownership	Participant driven	TLP participants determine knowledge needs; and Collective learning sessions were hosted in turn by the core NGOs.
Design	Motivate imagination	The TLP facilitators organised 7 interactive learning sessions, comprising different participatory exercises.
	Continuous adaptation	The TLP facilitators took an action research approach to address the issues encountered with experimenting in practice; The exercises in the learning sessions were tailor-made to the needs of the participants in their confrontation with the outside world; and The TLP participants experimented at the boundaries of the CoP in their own organisation, aligning new insights to regular practice.
	Mutual engagement	The TLP facilitators paid attention to building relationships; and Activities were designed to ensure mutually engagement between participants.

In the TLP, the facilitators employed different means to encourage the participants to take ownership of the knowledge co-creation process and thus make the endeavour participant driven. First, ownership was encouraged by the holding of learning sessions in the offices of the participants. This stimulated mutual understanding of each other's institutional setting and demonstrated commitment to the CoP. Second, the process was explicitly organised around the knowledge needs of each of the participants, using the Dynamic Learning Agenda (see Veen et al. in review) as a tool to capture and monitor knowledge needs and subsequent actions. The TLP facilitated ownership of the knowledge needs identified by making the participants responsible for their individual learning questions. Third, active contribution of participants in the sessions was facilitated by inviting participants to present, share and reflect on their experiences. Each session consistently started or ended with time for reflection to further specify or add to the identified knowledge needs.

The imagination and creativity of participants was stimulated in brainstorming exercises at the start of the knowledge co-creation process, although it was a challenge to maintain this open-minded atmosphere in the later stages. In the design of the TLP, the facilitators choose a

cyclical process of action research, aiming to facilitate brainstorming during the planning and reflection phases. In the learning sessions, the participants reflected on their activities and observations on disability inclusive development through participatory exercises that were tailor-made to their knowledge needs. In this process, they were able to learn from the different stakeholders: peers, experts in disability issues and experienced facilitators of disability inclusive development. Peer reflection was prepared by asking the participants to write case stories and reflect on the case stories of others. Reflection with experts focussed on the historical discourse of disability inclusive development. By facilitating a dialogue between these experts and the participants, meaning was given to disability inclusion in context. In this process, explicit and tacit knowledge on disability inclusive development was combined and the progress of knowledge co-creation was documented by the facilitators.

The facilitators of the TLP paid attention to the alignment to standard practice by choosing a flexible design for planning of activities. This was necessary because the TLP aimed to contribute to a change in practices of the participants and their organisations. To achieve this aim, the facilitators tried to ensure that the activities of the TLP were related to activities in the various organisations as well as to the participants' needs for greater understanding of the subject. At the start, discussions involved open reflection on the different perspectives and roles that together can lead to a disability inclusive society while, in later stages, reflections were focussed more practically on explicit experiences with the inclusion of persons with disabilities. Box 1 gives a detailed illustration of how learning sessions formed a cyclical process of action and reflection that related to the needs of participants in their (work) context, informing the co-creation of knowledge.

Engagement in this intensive process led to the strengthening of relationships within the CoP. Participants expressed the positive feelings brought about by sharing their experiences with others when implementing new practice. The TLP facilitators aimed to facilitate building of trust and sharing insights, knowledge and problem situations. Mutual engagement was enhanced by interactive exercises, such as developing a seating plan for dinner which would match participants with similar knowledge needs, as well as excursions outside conference halls to experience disability inclusion. As one participant noted:

> *It was really good combination of being constructive and learning something and also having fun with people from all over the world.*

Co-created knowledge outputs

In this paragraph, we provide insights into the research question: *What different forms of socially robust knowledge outputs can be identified that resulted from the process of knowledge co-creation in the TLP on inclusion of persons with disabilities?*

Outputs of knowledge co-creation can have different forms, ranging from tacit changes in regular practice to explicit tools and guidelines. In the TLP, outputs focused on improving the disability inclusiveness of development practice. In this section, we first address the knowledge needs in the TLP. Second, we consider how the socially robust knowledge is aligned to practice of TLP participants. Third, we address whether this knowledge is also relevant for the wider society.

Box 1: The cyclical nature of mutual knowledge co-creation	*Facili-tators*	*Participants*
All participants in the CoP have a vivid memory of the second learning session where one of the experts in the core group of the CoP, a lawyer and disability rights activist, hosted a session on awareness raising. It was not the content of the session that impressed people but the charismatic appearance of a women who is blind, self-confident and very knowledgeable. *She is really a living example of what is possible I think. An example of possibility of what inclusion is and an opportunity to be included, to go to school, to study, the sky is limit. I mean because she is blind doesn't mean that she is less.*	*Act*	*Observe*
This session made the participants in the CoP realise the possibilities of disability inclusive development and therefore its urgency. They planned for actions to start working on the issue and were very motivated. *That is just very impressive, that you're really thinking, damn, we cannot ignore this anymore.*		*Reflect* *Plan*
However, when the facilitators contacted the participants in preparation for the next session, it became clear that they faced difficulties in translating their motivation into practice. One participant noted: *After the awareness session, someone said, well, now we finally know what the problem is and now you leave.* The facilitators took note of these comments and integrated' them into in the next session.	*Reflect* *Plan*	
The next session they invited an external expert from an international NGO who is active in mainstreaming disability worldwide. Her presentation gave the participants insights into how to implement disability inclusive practices. Her main lesson was that everything starts with attitude change to build commitment for disability inclusive development. This helped the participants to get practical ideas on how to continue with the issue in their organisations. *Lots of material is already available, also great training material. Let's try to use that. That was an eye-opener for me.*	*Act*	*Observe*
This session did not only provide practical ideas, but also encouraged the participants to take action. The fact that disability mainstreaming by an international NGO was so successful helped doubtful participants to become motivated.		*Reflect*
After this session many participants wanted to use the practical examples to raise awareness in their own organisations. They organised different types of sessions, during official meetings, lunch breaks and seminars. As one of the participant in the inner circle explains: *I organised a lunch meeting amongst colleagues to raise awareness for the inclusion of people with a disability… Communication and fundraising for disability inclusive development became an issue in the discussions as disability was seen as an opportunity for raising money. A second point that was raised in this respect was, 'What does society get back for investing in people with a disability?'*		*Plan / act* *Act* *Observe*
This shocked her because she had expected her colleagues to be more aware of the rights of persons with disabilities. It gave food for thought about her role in advocating disability inclusive development. She did not want to become the lone expert on this		*Reflect*

issue who has to defend its importance over and over again. Instead, she went searching for a way to broaden the support for disability inclusive development on the basis of right-based values. *Plan/ act*

This example shows three cycles of action research. It shows how the sequence of interventions that relate to each other and touch upon different themes results in co-created knowledge becoming embedded in new practices and values.

Knowledge needs

Knowledge needs were identified, collectively and individually, and formulated in very specific terms to fit the understanding and context of the participants. In retrospect, we can discern three fields of interest. First, the TLP participants developed knowledge on the *meaning* of inclusion of persons with disabilities in development programmes, including knowledge about the implication of disability inclusive development for their own organisations and the societal change to which their organisations want to contribute. Second, the TLP participants mapped *challenges and opportunities* for disability inclusive development. They developed insight into roots for resistance for disability mainstreaming, leading to improved sensitive practices on disability inclusive development. Third, CoP participants experimented with the *applicability* of inclusion of persons with disabilities in development programmes. Through reflection and experimentation they developed a shared repertoire of new practical insights, tools and guidelines (see table 2). Looking back at the answers to the knowledge needs we can say, in accordance to Wenger (1998b), that:

Table 2: Overview of the shared repertoire of insights, tools and guidelines/checklists on disability inclusive development

Knowledge needs	**Shared repertoire of insights, tools and guidelines/checklists**
Giving meaning to disability inclusion	*Insights* into the principles of disability inclusive development, equal rights, participation, accessibility and sustainability. *Insights* into roles and responsibilities in disability inclusive development.
Mapping opportunities and challenges for disability inclusion.	*Insights* into the reasoning for organisations (not) to include persons with disabilities in their programmes. *Insights* into the barriers that prevent persons with disabilities from participating in development programmes. *Insights* into opportunities for collaboration with disability specific organisations
Experimenting with the application of disability inclusive practices	*Insights* into the process of implementing disability inclusive practices in different sectors and ensuring the participation of persons with disabilities throughout the whole project cycle. *Tools* in the form of case stories that show the learning curve and lessons learned in experimenting with the inclusion of persons with disabilities in development practices. *Tools* for organising and developing awareness raising activities and trainings for project staff and management. *Tools* for identifying persons with disabilities. *Tools* for including disability in monitoring and evaluation formats. *Tools* for removing the barriers for persons with disabilities to participate in development programmes.

	Checklist on how to become a disability inclusive organisation. *Guidelines* for building a network for disability inclusive development *Guidelines* in the form of a first description of steps for making a programme disability inclusive and criteria for a disability inclusive development organisation. *Guidelines* in the form of a first description of steps to embed disability inclusion in organisational strategies and systems.

> *the* [answers to identified knowledge needs] *gain their coherence not in and of themselves as specific activities, symbols, or artefacts, but to the fact that they belong to the practice that the CoP is pursuing.* (p. 82)

The application of co-created knowledge in practice

In a transdisciplinary research process, actors find themselves temporarily in a sheltered environment - such as a CoP - in which they focus on the issue at hand and together develop 'ideal' solutions without regard to the limitations of the broader context of organisation and society. For such solutions to become generally applicable, they need to be socially robust and congruent with current practice. In the TLP, participants experimented within their own organisations to test the social robustness of the interventions proposed and reported back on their experiences. Two examples of this process are described below concerning monitoring and evaluation (M&E) practice and the provision of emergency aid (Figure 3).

Disability inclusive development calls for new M&E practice, such as the selection of new indicators with specific data collection requirements. In the TLP, the participants agreed that it is important to start with some simple questions concerning the participation of persons with disabilities and the development of partnerships with disability specific organisations. By integrating this perspective into standard M&E practice, a boundary object (Wenger 1998; Star & Griesemer 1989) was formed, namely inclusive M&E (iM&E) practice. Through dialogue in one of the organisations and reflection in the CoP, iM&E was improved in theory and application. Emergency aid became an important issue during the TLP because of the emergency response to the hunger in the Horn of Africa in the summer of 2011. As a result, CoP members started to address the issue of inclusion of persons with disabilities in their regular practice of emergency aid, based on the experience of one relief mission. In a process of brokering (Wenger 1998), some CoP members initiated inclusive emergency aid (iAID) in their practices. The TLP supported this process by gathering good practices on similar initiatives, by providing advocacy documents and by developing arguments to convince the organisation to adopt disability inclusive emergency aid. In practice, iAID tries to balance equal treatment of persons with disabilities and special measures to allow them to participate.

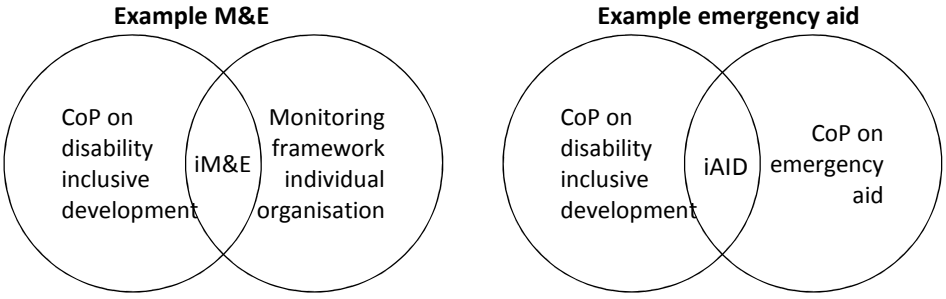

Figure 3: Examples of knowledge on integrating disability in practice

Relevance of knowledge outputs to others

Any organisation seeking to practice disability inclusive development could benefit from the documentation of experiences and outcomes of the participants of the TLP. Out of the numerous examples in different organisational aspects in which the perspective of 'disability' was included (e.g. policy, monitoring and evaluation, communication strategies etc.) generic lessons were extracted and published in newsletters and in the practical guide 'Count me in' (Bruijn et al. 2012). These lessons offer guidance for development practitioners at different levels who want to include persons with disabilities in their practices. Also the extensive collection of examples from the CoP participants offers a rich source of inspiration that can be adapted by other organisations.

In addition to practical guidelines, the programme also resulted in theoretical understanding of disability inclusive development. Regeer and Bunders (2003) describe how practical insights need to be systemically de-contextualized and disembodied to be relevant for science. In the TLP this meant that the researchers were crossing the boundaries from the co-creation of knowledge useable in particular contexts to disembodying the lessons learnt and establishing a more generic level of understanding. The researchers thus played a dual role: they were participants of the TLP but at the same time distanced themselves from the TLP to place the lessons learnt in a theoretical frame by analysing the experiences of the CoP participants and publishing generic results in five articles for the scientific literature. These articles are being published in journals that relate to mainstream development cooperation and knowledge management in general. In addition, an essay on the costs and benefits of disability inclusive development has been published in the field of disability studies (Veen 2012). These publications are mainly aimed at a scientific audience, but are also relevant for development practitioners that are working on policy or management level. In addition, eleven master students wrote research reports to document experiences and changes of different TLP participants. These reports provide detailed insights in opportunities and challenges for disability inclusive development that may be relevant for development practitioners and researchers.

Finally, at several stages during the programme, actors from society and science were brought together on the subject of disability inclusive development. The TLP itself organised a closing conference entitled *Development for all* and the results from the CoP were presented at two international conferences aimed at development practitioners, policy makers and scientists. The closing conference of the TLP brought together the CoP participants and also involved different actors, such as policy makers, scientists, development practitioners, and Master students.

In summary, we have shown that defining the knowledge outputs of a transdisciplinary research process is not straightforward. Both knowledge needs and knowledge outputs are often intangible because they are embedded in practice. We have seen that through the facilitated process of knowledge co-creation, the CoP participants developed a shared repertoire of insights, tools and guidelines/checklists to include people with a disability in development processes. This tacit knowledge was made more socially robust by experimenting within the mainstream development practices of the home organisations of the participants. Finally, this socially robust knowledge was de-contextualised and aligned with different scientific and professional communities through newsletters, a practical guide, peer reviewed articles and presentations at conferences.

During this process, knowledge is integrated and co-created and tacit knowledge is made more explicit. Table 3 summarizes these findings and provides an overview of what knowledge outputs that might be expected from transdisciplinary CoPs.

Table 3: overview of the new knowledge developed in the TLP

Knowledge output characteristics	**Knowledge output concepts**	**TLP knowledge outputs**	
Shared repertoire of CoP participants	Building a perspective that is innovative and aligned to regular practice	The TLP provided examples in different sectors on the boundary of the CoP on how organisations learned to act in a disability sensitive way.	**Tacit knowledge**
	Answers to identified knowledge needs	TLP participants give meaning to disability inclusive development TLP participants map opportunities and challenges for disability inclusive development TLP participants experiment with the application of inclusion of persons with disabilities in development practice	
Socially robust knowledge for CoP participants and outsiders	Knowledge is socially relevant in the sense that it is practical, contextualised, and adaptable	Policies for disability inclusive development Monitoring and Evaluation formats that include disability Disability inclusive communication strategies Participatory tools for awareness-raising 4 Newsletters	↕

		Publication 'Count me in' (Bruijn et al. 2012)	
	Knowledge contributes to theoretical understanding and is systematically decontextualized and disembodied.	2 scientific conference attendances 5 articles in peer reviewed journals 1 essay in disability studies community 11 internship reports	

Concluding remarks

As Krohwinkel-Karlsson (2007) shows in a literature review on knowledge management in development cooperation, it is difficult to evaluate knowledge co-creation and learning in the context of development cooperation in a systematic way. Yet, development of such a systematic approach is highly relevant, as knowledge is increasingly recognised as a key resource to achieve effectiveness in development cooperation (Ho et al. 2012).
In this article we aimed to show how knowledge co-creation in a transdisciplinary CoP can contribute to relevant insights for science and society in the new area of disability inclusive development.

Numerous scholars stress the need for collaboration between multiple actors when addressing complex world-wide issues (Regeer & Bunders 2009; Le Borgne & Cummings 2009). This is true also for disability inclusive development (Veen et al. 2013; Mattioli 2008; Harris & Enfield 2003). We have shown how knowledge co-creation in a transdisciplinary CoP, crosses boundaries, and brings actors from academia and practice, from national and local levels together in a shared search for answers to identified knowledge needs.

This effort would be of less value if the knowledge so gained was not applicable outside the confines of the project. There are many guidebooks, manuals and roadmaps addressing disability inclusive development (Harris & Enfield 2003; WHO 2011; Rieser 2012). However, these are often too extensive and too generic for development actors to be able to apply them in their own specific context. We have shown how a knowledge community can be facilitated by a cyclical, action based research approach, to facilitate constant cross-checking of the applicability of co-created knowledge in different contexts. This resulted in practice based insights, tools and guidelines for disability inclusive development. Furthermore, we have seen that not only explicit knowledge outcomes, like guidelines, tools and strategies, are of importance, but also tacit experiences and lessons learned give insight in disability inclusive development in practice. We trust this overview of knowledge output may help managers in

development cooperation to overcome their reluctance for funding knowledge programmes and programmes that address disability inclusive development.

We hope to have demonstrated that a structured, well monitored and facilitated process of knowledge co-creation can result in a wealth of practical experiences for new and revised practices with evolving theoretical foundations. The variety of the contexts of these results may help to make the results applicable for others. By scaling-up these outputs of knowledge co-creation on disability inclusive development, marginalised groups in general can better be reached by development programmes.

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References

UN General Berger, P. & Luckmann, T., 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, New York: Garden City.

Bood, R. & Coenders, M., 2004. *Communities of practice*, Utrecht: Lemma.

Le Borgne, E. & Cummings, S., 2009. The tip of the iceberg: tentative first steps in cross-organisational comparison of knowledge management in development organisations. *Knowledge Management for Development Journal*, 5(1), pp.39–60.

Brown, J.S. & Daguid, P., 1998. Organizing Knowledge. *California Management Review*, 40(3), pp.90–111.

Bruijn, P. et al., 2012. *Count me in; Include people with disabilities in development projects.*, Available at: http://www.lightfortheworld.nl/en/news/news-detail/2012/11/30/count-me-in---a-practical-guide-towards-inclusion.

Bruijn, P., 2009. Thematic Learning Program on Inclusion of Persons with a Disability.

Cummings, S., Heeks, R. & Huysman, M., 2006. Development in Practice Knowledge and learning in online networks in development : a social- capital perspective. *Development in Practice*, 16(6), pp.570–586.

Gray, D.E., 2004. *Doing Research in the Real World*, London: Sage Publications, Inc.

Guba, E. & Lincoln, Y., 1982. Epistemological and Methodological Bases of Naturalistic Inquiry. *Educational Communication Technology Journal*, 30(4), pp.233–252.

Harris, A. & Enfield, S., 2003. *Disability, Equality, and Human Rights. A training manual for development and humanitarian organisations.*, Oxford: Oxfam GB.

Hiemstra, W. et al., 2012. *Thematic Learning Programmes - a primer*, The Hague. Available at: https://partos.nl/webfm_send/34296 [Accessed May 31, 2013].

Hirsch Hadorn, Gertrude Biber-Klemm, S. et al., 2008. The Emergence of Transdisciplinarity as a form of Research. In S. Hirsch Hadorn, Gertrude Biber-Klemm et al., eds. *Handbook of Transdisciplinary Research*. Heidelberg: Springer.

Ho, W., Stremmelaar, J. & Cummings, S., 2012. Knowledge Management for The state of the art on knowledge integration across boundaries : key findings and emerging future issues. *Knowledge Management for Development Journal*, 8(2-3), pp.213–218.

Kemmis, S. & McTaggert, R., 1988. *The action research planning*, Victoria: Deadin University Press.

Klein, J. et al., 2001. *Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society*, Basel: Birkhauser.

Krohwinkel-Karlsson, A., 2007. Knowledge and Learning in Aid Organizations – A literature review with suggestions for further studies. *Sadev working paper*, 1, pp.1–30.

Mattioli, N., 2008. *Including Disability into Development Cooperation.Analysis of Initiatives by National and International Donors*, Madrid.

Nonaka, I. & Takeucchi, H., 1995. *The knowledge creating company; how Japanese companies create the dynamics of innovation*, New York: Oxford University Press.

Nowotny, H., 2000. Re-thinking Science : From Reliable Knowledge to Socially Robust Knowledge. In *Jahrbuch 2000 des Collegium Helveticum*. Zurich, pp. 1–19.

Nowotny, H., Scott, P. & Gibbons, M., 2001. *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty*, Cambridge: Blackwell publishers.

Phlix, G. et al., 2012. *Facilitating Organisational Learning ; Insights from Practice*, The Hague.

Van Poelje, R. & Maarse, A., 2013. Building bridges through learning. *Capacity.org*, (46), p.9.

Pohl, C. & Hadorn, G.H., 2008. Article Methodological challenges of transdisciplinary research. *Natures Sciences Sociétés*, 16, pp.111–121.

Polanyi, M., 1966. *The Tacit Dimension*, Chicago: University Of Chicago Press.

Regeer, B. & Bunders, J., 2009. *Knowledge co-creation : Interaction between science and society*, Zoeterwoude: Raad voor ruimtelijk, milieu en natuuronderzoek.

Regeer, B.J. & Bunders, J.F.G., 2003. The epistemology of transdisciplinary research: from knowledge integration to communities of practice. *Interdisciplinary Environmental Review*, 5(2), pp.98–118.

Rieser, R., 2012. *Implementing Inclusive Education: A Commonwealth Guide to Implementing Article 24 of the UN Convention on the Rights of Persons With Disabilities*, London: Commonwealth Secretariat.

Senge, P.M., 1990. *The Fifth Discipline: The Art and Practice of the Learning Organization*, New York: Doubleday.

Skalicky, J. & West, M., 2006. *UTAS Community of Practice Initiative*, London.

Star, S.L. & Griesemer, J., 1989. Institutional Ecology, "translations" and boundary objects: amateurs and professionals in Berkeley's Museum of vertebrate zoology, 1907-1939. *Social Studies of Science*, 19, pp.387–420.

UN, 2006. *United Nations Convention on the Rights of Persons with Disabilities*, United Nations General assembly. Available at: http://www.un.org/disabilities/default.asp?id=259 [Accessed June 3, 2013].

UNenable, 2010. CRPD and optional protocol signatures and ratifications.

Veen, S. Van et al., (in review). Supporting reflective practices in social change processes with the Dynamic Learning Agenda. *International Journal of Learning and Change*.

Veen, S. Van, 2012. Torn between rights and reality. Costs and benefits with respect to the rights of persons with disabilities in development cooperation. In J. Jansen & J. Dobbelaar, eds. *Kijk anders, zie meer*. Den Haag: Zonmw, pp. 33–46.

Veen, S. van, Regeer, B. & Bunders, J., 2013. Meeting the Challenge of the Rights-based Approach to Disability: The Changing Role of Disability-Specific NGOs and DPOs. *Nordic Journal of Human Rights*, 31(3), pp.359–380.

Waddell, S. et al., 2013. Inter-organisational learning: a new frontier. *Capacity.org*, (46), pp.3–6.

Wenger, E., 1998. *Communities of Practice: Learning, Meaning, and Identity*, Cambridge: Cambridge University Press.

Wenger, E., McDermott, R. & Snyder, W., 2002. *Cultivating communities of practice*, Boston: Harvard Business School Press.

WHO, 2011. *The world report on disability.*, Geneva. Available at: http://www.who.int/disabilities/world_report/2011/report/en/index.html.

Whyte, W.F., 1991. *Participatory Action Research*, CA: Sage.

Wittgenstein, L., 1953. *Phylosophical Investigations*, Oxford: Blackwell publishers.

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