

# Comments to Belcher et al. 2018's critique of Hansson and Polk 2018

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## Abstract

Assessing the value of transdisciplinary research is a complex and multifaceted enterprise allowing room for many perspectives. The Belcher et al. (2018) critique of our paper (Hansson and Polk 2018) seems to be based on different perspectives and different readings of prior work. These differences for us explains the majority of the criticisms raised against our paper. After having critically reread all of the involved texts we conclude that the analysis, overall conclusions and content of our paper are solid. However, the response to our paper raised some very nuanced and important points regarding how we understand and reference each other's work. In this comment we will respond to and explain the most important issues raised in relation to the aim of our paper, the validity of our empirical results and our interpretation of the reference texts. We find that from different perspectives and with different aims and methods our work comes to very similar conclusions regarding the RCL framework and its usefulness in promoting the societal impact of research.

**Key words:** societal impact; evaluation; sustainability; transdisciplinary research

## Introduction

Assessing the value of transdisciplinary (TD) research is a complex and multifaceted enterprise allowing room for many perspectives. It seems to us that the Belcher et al. (2018) critique of our paper (Hansson and Polk 2018) is based on a different perspective and on different readings of prior work. Overall, we see the aim of our paper differently than the authors of the response and this distinct context leads to varying views on our use of empirical material and interpretations of the referenced papers. To better understand the gap between our viewpoints, we have critically re-read all of the involved texts (Cash et al. 2002; Belcher et al. 2016, 2018; Hansson and Polk 2018).

It became clear to us after our investigation, that our understandings and assumptions differ from those of the authors of the critique regarding how actors outside of the university are involved in and shape TD research processes. From our backgrounds, TD processes are led, designed and funded by *both* researchers as well as practitioners. This includes both researchers and stakeholders from outside of the university who have a variety of different purposes, mandates, and interests. The different assumptions regarding the background and position of participants in TD research processes for us explains the majority of the criticisms raised against our paper, as well as our differing interpretations. After our multiple re-readings

of the involved texts, and from the perspective of the critique, we conclude that the analysis, overall conclusions and content of our paper are solid. However, the response to our paper raised some very nuanced and important points regarding how we understand and reference each other's work. For us, different interpretations mirror the complexity of the research topic, namely how TD processes can contribute to societal change. In the following, we respond to and explain what we see as the most important issues raised in the response to our paper.

## The aim of our paper and the relationship to our conclusions

The author's main critique of our paper relates to what they see as a shift from the purpose of Cash et al. (2002) and Belcher et al. (2016) to identify criteria that make research relevant, credible, and legitimate to knowledge users, to a focus in our text on internal project processes. The authors of the response raise this critique several times in their text. We therefore find it crucial for this debate and important to respond to. The shift of purpose that the authors of the response point out is intentional and clearly stated in our aim. The purpose of Cash et al. (2002: 1) is to explore: '1) how effective boundary work involves creating salient, credible, and legitimate information simultaneously for multiple audiences; 2) the thresholds,

complementarities and tradeoffs between salience, credibility and legitimacy when crossing boundaries; and 3) propositions for institutional mechanisms in boundary organizations which effectively balance tradeoffs, take advantage of complementarities, and reach thresholds of salience, credibility, and legitimacy'. The aim of Belcher et al. (2016: 3) is: 'to identify appropriate principles and criteria for defining and measuring research quality in a transdisciplinary context and to organize those principles and criteria as an evaluation framework'.

Our overall aim is to 'build on such approaches [Cash et al. 2002 and Belcher et al. 2016] to increase our understanding of the relationship between the quality of TD research process (their participatory features) and their societal effects. Based in criteria suggested in Cash et al. (2002) (and applied in Belcher et al. 2016), this article takes as its point of departure the difficulty of having research results affect policy and practice, particularly due to contextual constraints (Cash et al. 2003: 8089). It will test if such approaches, which were largely developed from within the science-policy discourse, can be applied to evaluating contributions of a TD approach to societal impact' (Hansson and Polk 2018: 133).

The overall argument of our paper is that if impact is included in evaluations of TD research quality, then we need a better understanding of the process-impact link. We find, in line with much of the other literature we build upon in our text, that there are other factors than relevance, credibility, and legitimacy (RCL), both process-related and factors external to the projects, that also shape impact. We conclude that RCL cannot be used on its own to determine the potential for impact. Since our purpose is different from Cash et al. (2002) and Belcher et al. (2016), there is a shift in our text to focus on internal processes, because we focus on the process-impact relationship. We motivate this by the fact that it is partly in the internal TD research process where societal and scientific actors produce the values of RCL. Belcher et al. conclude their critique by proposing that we follow their lead in helping 'make knowledge relevant, credible, and legitimate for stakeholders' (Belcher et al. 2018: 5) by testing them according to a particular method. However, our purpose in this article is not to help make knowledge relevant, credible, and legitimate, but to investigate how the construction and understanding of RCL plays out in practice and how it relates to impact. Interestingly enough, our conclusions, though we come to them in different ways, also support the overall discussions given in Cash et al. (2003) and Belcher et al. (2016) since both add additional discussions or elements to the RCL framework that they deem necessary for taking the next step to better understanding societal impact. Cash et al. add a focus on boundary management and their related institutional features (Cash et al. 2003: 8089–90). Belcher et al. (2016), add an additional component of effectiveness to the three RCL principles, which performs a similar function.

We do not question the potential of the RCL framework in general. We question the potential of the RCL framework as a tool to understand the link between process and impact in our examples of empirical TD-cases, and hence its usefulness for assessing impact (as an intermediary tool due to the difficulties of assessing transformational change), and subsequently for designing projects with the purpose of achieving impact. We support Cash et al.'s (2003) claim that boundary management is needed in order to create salient, credible, and legitimate information simultaneously for multiple audiences. However, our empirical cases identify the importance of additional institutional factors, internal-external dynamics, the role of various actors within organizations, and other political factors

that, if not sufficiently taken into consideration, limit the impact of the processes. This is why the framework was insufficient to understand the process-impact link in our empirical cases.

### The validity of our empirical results

The second main issue raised by the authors of the response regards the validity of our empirical results. As noted above, our empirical focus is on the relationships between process, and outputs, outcomes, and societal impact, and the role that RCL has in this link. The authors say that our interviewees did not include knowledge users. Actually, our project participants are also knowledge users. Moreover, the partner coordinators are members of the public bodies, which make up the center itself, and represent the targeted audience of the TD projects. We focus on the process of the projects, and let the knowledge users themselves identify and evaluate the project results. This was explained in the method and project descriptions, but the explanation was not acknowledged in the critique. As mentioned by way of introduction, the background and position of the participants is crucial for our study design.

We do not agree with the claim that we lose sight of the fact that Cash et al.'s concepts of RCL refer to attributes of knowledge as perceived by knowledge users. The comment makes us wonder whether the authors consider knowledge users as different from project participants and in our case Center partner coordinators. In (our) TD-research processes, project participants are also knowledge users. This is why the internal project processes are key to what makes participants perceive the knowledge produced as relevant, credible, and legitimate, and underscores the importance of designing the process in such a way that they achieve such qualities. This is a basic premise in TD research in our cases, which is not acknowledged in the critique.

The authors state that 'there do not appear to be data with which to assess external users' perceptions, acceptance, or use of project outputs, let alone any more objective assessment of outcomes and impact' (Belcher et al. 2018: 5). This is not correct. First, see our discussion of the challenges of assessing TD research impact, particularly regarding the time aspect (134–6). Second, the partner coordinators are external to the projects, in the sense that their organizations are partners of the Center but they are not involved in the research projects, and can assess impact of the projects in their home organizations, as well as more generally. The practitioner project participants are also in a position to assess the impact of the research in their home organizations.

Furthermore, in the paragraph on action value attribution framework in the methodology section on page 135, we write 'the project participants assess the outcomes, in particular from their specific practice-based setting, where practitioners both identify and attribute value to specific project results, outputs and impact'. The paragraph ends by stating: 'The coordinator interviews were used to triangulate the results because they are in a position to assess the contribution of projects to the broader organizations, their receptive capacity/willingness, and external factors that shape impact'. We consider it clear that the respondents assessed impact through the accounts given in the interviews. To this was added our analysis of project documentation. In several of the empirical cases there is quite tangible evidence of outcomes and impact that we describe in the project descriptions. We list the most important parts of these impacts in the descriptions of the projects. It is not clear how this procedure leaves anything to be desired regarding the impact

analysis, and neither do the authors of the response provide any details in support of their critique.

As mentioned above, the authors state that there is a shift in perspective from user's perceptions of the quality of knowledge produced by a project, to a focus on the relationship between participants in a research process (Belcher et al. 2018: 4) actually, this is not an unintended shift. We argue (using the action-value attribution framework) that perceptions of the quality of the knowledge produced are closely related to how the relationships play out. Hence, it is an effort to understand how the two factors are related. We argue that the perceptions of the value of outputs are shaped by both how the participants relate to each other across stakeholder boundaries, and how participants manage to create a neutral space where they can act free from institutional and political pressure from their own organizations, which has an impact on perceptions of credibility by both project participants and other stakeholders. Again the purpose of the article is not to criticize the RCL framework as such, but to investigate its usefulness for assessing the link between process and impact in empirical cases.

What we do in our study, is that we show that attributes of project participants and socially hierarchical relationships among them shape attributes of knowledge as perceived by knowledge users. Cash et al. (2002: 5) also state this in their definition of credibility. In the interviews, these factors were important for the respondents' understanding of how knowledge was perceived by others as relevant, credible, and legitimate. This is part of the basis for our claim that institutional and political factors are crucial for understanding how different actors perceive and treat knowledge as relevant, credible, and legitimate. In other words, it is not just the characteristics of the knowledge in itself, but also characteristics of context, conditions, and efforts as many others have argued (Godin and Doré 2005) and which we have cited in Section 2 of the original article.

The authors claim that the description of the methods lacks detail and precision. (Belcher et al. 2018: 3). Please see our description of the methods used on page 135–6. They also claim that we lack description of how the data were analyzed, and that we provide little detail on how the framework was used (4). We regret that space limitations force us to make trade-offs, and that it forces us to be brief. In this case, we have developed the methods section as much as our reviewers, and we, found necessary to understand the procedure. In the second paragraph of the methodology section on page 135, we explain how the action value attribution framework was used. The action-value attribution framework is about how stakeholders attribute value to certain actions, i.e. in this case it means we have analyzed the material in terms of how the project participants and the Center partner coordinators attribute the values of RCL to certain activities internal to the projects, and how those values were understood by external actors. We also state that the material made it necessary to open up the categories since they were not capturing how the respondents conceived of them.

### Our interpretation of the reference texts

The third main issue raised in the response to our article is our interpretation of the reference texts and definitions of the concepts. Again, we find that our text was misrepresented by presenting false conflicts rather than viewing differences as complementary.

The authors of the response claim that we 'mostly ignore' the evaluation criteria (in Belcher et al. 2016) for TD research that would be expected theoretically to produce knowledge that is

perceived to be relevant, credible, and legitimate by intended audiences. We agree that these criteria (outlined in Belcher et al. 2016, Table 3, pages 9–11) are relevant. They are a summary of much of the literature on TD research organized under the broad categories of RCL and effectiveness. What we do in our paper, however, is to look at how project participants and partner coordinators conceive of the creation of these qualities throughout the research process and their link to impact. Hence, we do not test the objective fulfillment of the criteria but focus on the subjective interpretations of knowledge users from their specific user contexts. In this case, we follow the original RCL framework in Cash et al. (2003) and not the one developed further by Belcher et al. (2016).

The authors further claim that we assert that the reference papers 'seem to assume that stakeholders can implement usable results once they understand their relevance, and find them credible and legitimate'. However, the rest of the paragraph in our text qualifies that claim with reference to de Jong et al. (2016), Bornmann (2013), and Cash et al. (2002). We explicitly state that 'Cash et al. problematize such assumptions by adding the element of boundaries to explore contextual and institutional factors', which has influenced our work and is further elaborated in the following section of the text. On page 134, end of second paragraph we develop: 'TD approaches are built on the assumption that the intermediate or direct effects of participatory research contribute indirectly to transformational societal change, since the latter is difficult to measure, as it is often significantly delayed as well as hard to attribute to specific research'. In the sixth paragraph on the same page, we further describe the conclusions made by Cash et al. (2002).

The authors write that the point of the reference articles is that 'stakeholders will be more likely to find research relevant when it asks and answers the right questions, which can be achieved through a comprehensive understanding of the problem context and engagement of stakeholders' (Belcher et al. 2018: 2). In no way do we object to that, but we aim to dig deeper into how this plays out in practice, where we, and Cash et al. (2003), find that other factors both internal and external to the projects contribute to shaping how relevance contributes to impact. In other words, it is not sufficient to ask and answer the 'right' questions. As Cash et al. (2003), clearly state: 'The cases explored here suggest that efforts to mobilize S & T for sustainability are more likely to be effective when they manage boundaries between knowledge and action in ways that simultaneously enhance the salience, credibility and legitimacy of the information they produce'. We characterize the three functions that contributed most to such 'boundary management' as 'communication', 'translation', and 'mediation'. (Cash et al. 2003: 8087–88). The rest of Cash et al. focuses on these three functions, their links to institutional features and how they can be used to create better 'boundary management'.

According to the authors of the response, we argue that 'their [Cash et al. (2002)] reasoning implies somewhat homogenous groups where relevance, credibility and legitimacy are experienced according to similar criteria'. They further write that 'Cash et al. fully appreciate and discuss that different stakeholders will evaluate and use knowledge according to their own unique context and perception', and that Belcher et al. (2016) 'deliberately apply ideas of appropriateness and adequacy in their framework to encompass the necessary flexibility and specificity' (Belcher et al. 2018: 3). It is clear that both texts see the complexity regarding different user groups. Our point focuses on the differences within the same stakeholder group or organization. Our claim refers specifically to the

point made by Cash et al. (2002) that the different categories have different meanings to different groups divided by various boundaries. Cash et al. (2002: 7) list boundaries between functional activities, political jurisdiction, academic disciplines, as well as different knowledges. Such boundaries are all highly relevant and important to manage. In the cases they analyze they do not distinguish between actors within different administrative or functional groups. They do not focus on boundaries between, for example, levels or units within the same organization. We maintain our claim that the emphasis in the way Cash et al. deal with boundaries *implies* certain homogeneous groups, such as decision-makers, scientists, civil servants, and that there is a need to distinguish between actors within those groups. Certainly, Cash et al. would not disagree; our point is to raise this as an important distinction to make.

Belcher et al. (2016) are not mentioned in this argument in our text, however, they do not discuss different types of stakeholders or knowledge users in this way. In Table 3, under the rubric scale for effectiveness they distinguish between research participants and stakeholders; in their definition of credibility they distinguish between ‘researchers’ and ‘extra-scientific actors’; and in the definition of legitimacy they distinguish between ‘researchers’ and ‘those external to the research group’ (Belcher et al. 2016: 8–11). We of course assume that all of these authors are aware of this complexity; we are just making an analytical point of it.

The authors further argue that we misrepresent Belcher et al. (2016) who strongly emphasize that the engagement of stakeholders is important in all stages in TD research (Belcher et al. 2018: 3). Clearly we do not deny this focus on engagement, since this is a cornerstone of TD research. We have elaborated what this means in practice in terms of who is *responsible* for ensuring that this engagement occurs. With our focus on RCL, we are interested in understanding who are the subjects when different authors define these terms. Our respondents clearly identify the active role of various actors as important since it shapes notions of authority in the research process, not least in the writing and dissemination phase. In the quote cited in the response, we say: ‘this *suggests* that researchers take *more responsibility* for...’ (italics added), not that societal actors are not engaged in the research process. In their definition of *relevance*, Belcher et al. (2016: 8) have an active subject, i.e. researchers—who ‘must demonstrate an in-depth knowledge of and ongoing engagement with the problem context in which their research takes place’. In their definition of *credibility*, they distinguish between researchers, who should be ‘actively engaged in the problem context’ and extra-scientific actors ‘who should be included as part of the research process’ (8). It is therefore reasonable to conclude that the text implies that researchers are expected to take responsibility for relevance.

The authors mention that we have not dealt with their effectiveness criteria at any depth (Belcher et al. 2018: 5). Effectiveness is actually an estimation of impact or potential impact. We bring up this point in our introductory remarks. Furthermore, while we have followed the framework by Belcher et al. (2016), we choose to focus on Cash et al. (2003). This was because we found that *effectiveness* did not give our analysis of the process—impact link the depth that we needed to understand our empirical material better. We needed another level of detail, which we felt Wiek et al. (2014) provided.

## Conclusions

As noted by way of introduction and explained more thoroughly above, it is our contention that the basis of Belcher et al. (2018) response to our paper is different understandings and assumptions regarding how different actor groups (including researchers) are involved in TD processes. These differences have led to different interpretations and understandings regarding both our paper and our readings of Belcher et al. (2016). As noted by way of introduction, we do not see such misunderstandings as right or wrong. What they point to are the challenges in communicating, even within the same subject area. Difficulties in communication is one of the core challenges of TD research. The discussion raised here show that this is not only between different actor groups, but as well between the same actor groups, in our case, researchers. Despite these differences, and though applying different approaches and perspectives, Cash et al. (2002), Belcher et al. (2016), and Hansson and Polk (2018) all come to similar conclusions regarding the RCL framework and its usefulness in promoting the societal impact of research. Cash et al. (2002) note the importance of boundary management through the function of ‘communication, translation and mediation’ (8088); Belcher et al. (2016) add the concept of effectiveness to the RCL framework, and Hansson and Polk (2018), through looking at the process-impact link, also conclude with the importance of context, specifically institutional and political factors. Overall, we feel that all of these studies complement one another and add to the discussion on how to better understand impact within TD research approaches.

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