

## International Team Research in Comparative Higher Education: Shedding Some Light on its Social Side

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### Introduction - International Collaboration Rates and International Team Research Are Growing Fast

International comparative studies are one of the field's key methodologies (Tight 2012; Manzon 2011; Cowen and Kazamias 2009). They are important in order to deconstruct narrow and often parochial national perspectives by illuminating intriguing differences and similarities among higher education systems, practices and policies throughout the world. Through comparison, we can furthermore evaluate the position or the performance of a higher education system in relation to other systems. And comparative research also gives us the opportunity to investigate whether empirical relationships and phenomena found in one context can also be observed in other contexts and to analyze empirical regularities of several cases (Bray, Adamson, and Mason 2007; Kosmützky 2018a; Rust, Johnstone and Allaf 2009; Teichler 2014). Although comparative education and international comparative higher education each have specific objects of inquiry (K12/school education vs. tertiary education), they also intersect to a large extent and both study objects in a cross-spatial (e.g., cross-national, cross-cultural, cross-societal etc.) perspective and apply international comparative research designs (Kosmützky 2016). Comparative higher education research has systematically developed only from the 1960s onward, but comparisons of higher education and higher education systems date back to the nineteenth century (Kosmützky 2018a). International comparative studies in general emerged in the nineteenth century, in the era of nation-states, as the "social-scientific equivalent of the natural sciences experiment," with the underlying notion of implementing a methodology as rigorous and precise as that of real experiments (Schriewer 2009). Based on this notion, comparative studies in the social sciences and humanities, among them educational science, prospered in the late nineteenth and early twentieth century.

Up to the 1980s, a so-called "safari approach" or "anthropological approach" of comparative research had been pursued and individual researchers and national research teams traveled abroad for the

fieldwork and ventured into "unknown" territory, collected and analyzed international data, and studied foreign countries (Deville, Guggenheim, and Hrdličková 2016a, Hantrais 2009). From the 1990s onwards, international research teams consisting of geographically spread local research teams have become a more and more common mode of comparative research – in higher education research and beyond. To an increasing degree, today, comparative research is also conducted through international research collaboration and within international teams.

International co-authorship is only a partial indicator for international research collaboration (Laudel 2002), but it easily shows that international collaboration rates are growing. E.g., the rate of internationally co-authored papers, as measured by Science Citation Index data, grew from one percent to four percent in the sciences in the 1970s (Frame and Carpenter 1979) to currently between 20 percent up to almost 50 percent (in earth and space science which are the champion in international collaboration). Although this rate is somewhat lower in the social sciences, around 10 percent, they currently have the highest growth rates in international collaboration and are gradually catching up (Gazni, Sugimoto, and Didegah 2012). For comparative higher education research, bibliometric studies based on a range of international higher education journals have shown that their proportion of international co-authored articles is already nearly twice as large compared to non-comparative higher education research (Kosmützky and Krücken 2014), and that on average one in ten articles that presents results from comparative research stems from international collaborative teams (Kosmützky 2016). Moreover, surveys among academics that define international collaboration not just by co-authorship but in a broader sense by sharing data, mutual exchange, organizing conferences etc., indicate international collaboration rates of 60-75 percent for both the sciences and social sciences (Kwiek 2015). Despite such growth tendencies the micro-level of comparative and international collaborative teams has so far not been examined and is still mostly a black box.

Working with international colleagues has many benefits for international comparative research, because they provide access to knowledge about the context and culture of the countries under investigation as well as to contacts and data on the local ground. But an international research team, spread over different countries and often even time zones, is also a melting pot of cultural, linguistic, institutional, career stage and national contextual differences, and the different perspectives of the team members increase the (social) complexity and make it more difficult to achieve a common ground of understanding (Brew, Boud, Lucas, and Crawford 2013). Thus, international comparative team research has not only benefits, but also some social complications and not every team is successful. Comparative research conducted in international teams often implicates time-consuming and costly communication of methodological issues, theoretical frameworks as well as coordination of field access and data collection. Hence, it is often difficult for such teams to publish journal articles within the usual three-year time span of research projects and even more difficult to stabilize the research network beyond the project duration. Furthermore, as Deville, Guggenheim, and Hrdličková (2016a) put it, “collaborations shape the object of comparison just as the object shapes collaborations” (p. 33). Consequently, scholars reflecting on international comparative team research have described its character as a two-sided medal: “Much to be gained, many ways to get in trouble” (Anderson 2011, p. 7), “exciting but difficult, creative but problematic” (Livingstone 2003, p. 478), or “[a]dvantages are many, but we need to be cautious” (Amarasekera 2013, p. 137) are some characterizations that have been used. Other scholars even warn (and personalize) that international comparative and collaborative research “is not for the fainthearted” (Gardner et al. 2012, p. 253; Teagarden et al. 1995, p. 1262). However, these quotes point to a tension inherent in international comparative team research.

The nature of this tension will be briefly explored in the following to shed some light on its potential causes. The main questions are: How can we conceptually capture the social side of comparative research that is conducted in international teams? To what extent do researchers engaged in international comparative team research perceive social aspects within the team and research process as challenges as opposed to methodological and task-related challenges? Some approximate empirical results of a rating among higher education researchers on the challenges of an international team research mode of comparative investigations will be provided to roughly estimate the

influence of the social dimension. The aim of this exploratory examination of the team dimension of comparative research is to stimulate further research on the increasingly collaborative character of comparative (higher education) research, as well as to inspire reflection of the team research practice within our field.

### **Comparative (Higher Education) Research – Methodologically More Complex and Socially More Challenging**

Comparative research has many benefits that have been extensively reported. But, as argued earlier, comparative (higher education) research is methodologically also more complex than non-comparative research (Hantrais 2009; Kosmützky 2016; Øyen 1990; Smelser 1976). This type of research is so complex due to the logic of comparison itself: the combined and simultaneous observation of (partial) sameness and difference of research objects in different national higher education systems. It is furthermore more complex because the analysis usually proceeds simultaneously at the level of the higher education system or country, which is typically used for the explanation of similarities and differences, and at a within system level and/or supra-national level, for example, policy discourses, universities as organizations and academic careers. But it is also more complex because it gathers, analyzes and compares data from different national, geographic, cultural, etc. contexts, and in different languages. Both individual researchers and international teams cope with this methodological complexity in comparative research, and, thus, rich and deep contextual knowledge of the countries and cultures of the comparative objects and units under investigation is essential for rigorous research. International teams have the benefit that they are typically composed of team members from the countries under investigation and, thus, have access to the contextual knowledge of the comparative objects, access to data sources and contacts on the local ground that are needed. An international research team might also more easily deal with cross-national interpretations and data-analysis. The multiperspectivity and the detailed contextual knowledge of the team members about the comparative objects are conducive to comparative research, and an international team of local experts of the countries, cultures and contexts under investigation makes rigorous comparative research possible (Kosmützky 2018b).

In return, and this is the main argument of this article, international research teams also have to cope with social challenges that stem from the team

dimension, particularly from the diversity of their team members from different institutional and national contexts. A collaborative team has been defined as international when it involves investigators whose primary employment affiliations are located in different countries (Anderson 2011). Collaborative research teams are largely voluntary, substantially autonomous, self-governed social entities that see themselves (and are seen by others) as a team based on mutual interests of multiple individuals (Wang and Hicks 2015, Weiss and Hoegl 2015). They can vary from pretty fluid ad hoc teams with unstable memberships and ill-defined boundaries to more stable research projects based on shared goals (e.g., as part of a research proposal), project funding and more stable memberships (López-Yáñez and Altopiedi 2015, Wang and Hicks 2015). This article focuses on the latter and additionally defines such projects as temporary organizations (see e.g., Bakker 2010; Burke and Morley 2016; Lundin and Söderholm 1995) due to their time limit and the participation of different home organizations (universities, research institutes, etc.) of the project members. On this basis, three dimensions of influence on the research practice and process in collaborative research projects can be distinguished: I. the *task (and time) dimension* which is determined to a large extent by the character and complexity of the research but also by the form of collaboration (e.g., extent of division of labor and interdependence), the envisaged outputs and the research capacity, and thus, the project duration, II. *the team dimension* which addresses the social dimension and the team dynamics, and III. *the context dimension* which includes the institutional and national contexts that are carried into the project by the project members. Table 1 presents an overview of the assertive aspects for each dimension.

TABLE 1

Conceptualizing International Team Research as Temporary Organizations

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**Task (and Time)**

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- Character and Complexity of Research
  - Division of Labour and Form of Collaboration
  - Envisaged Outputs; Publication and Dissemination Strategies
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**Team**

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- Team Composition and Dynamics (incl. Trust, Motivation)
  - Project and Publication Language(s)
  - Intercultural Differences/ Congruence (incl. Intellectual and Academic Styles)
  - Research Coordination and Management (incl. Leadership)
  - Communication Management and Exchange; Technological Support for Communication and Collaboration
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**Context**

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- Research Integrity and Ethics
  - Research Capacity/ Budget/Funding
  - Legal Aspects
  - Institutional and National Modes of Research Governance and Measurement of Success
  - Promotion of Early Career Researchers
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Geographically dispersed research teams typically consist of team members speaking different languages and coming from countries with differing academic styles, cultural norms and practices (Jeong, Choi, and Kim 2014; Rambur 2009; Wagner 2005). Such teams often choose English as the language for the project communication and for their publications, which puts team members in different social positions within the team according to their language skills. Thus, research coordination and management (including leadership and trust building) is of particular importance in such projects (Fiore 2008). Research on research teams in the sciences has shown the importance of the project coordination and furthermore revealed as precondition of successful project management that principal investigators and project managers need to be respected, need to have experience in managing and leading such research teams, and need to exhibit strong leadership qualities (Olson et al. 2008). The larger the size of the project and the more members from different countries are involved in the international team the more complex and challenging the coordination and project management, including attitudinal factors like trust-building. But many principal investigators of international comparative and collaborative research

projects learn about the management of such a project on the job (Hantrais 2009). Moreover, the team members bring their diverse contexts and working backgrounds in multiple institutional settings (e.g., research universities, teaching universities, (extramural) research institutes) and in multiple national contexts (national higher education and science systems) into the team. Thus, there are differing standards of research integrity and ethics, legal and normative aspects, governance and quality assurance, and graduate education and postdoctoral training within the team (Anderson 2011; Bohnhorst et al. 2011; De Vries, Rott, and Paruchuri 2011). Last but not least, research teams (international as well as national) also typically have team members in different career stages, from doctoral students to senior professors, with diverse goals and needs (e.g., publications vs. reputation) and differing requirements and practices of PhD training and education (Anderson et al. 2011). Thus, international research teams need to reflect on and negotiate about their different contextual conditions, which also might be challenging in the social dimension but might play out differently for the principal investigators who are in charge of the overall project, the project's success, and outcomes, and the researchers involved in the project.

Although it can be assumed that the socio-cultural complexity and negotiations related to their institutional and national configuration of international research teams influence the research practice and the task fulfillment and shape the research object (Deville, Guggenheim, and Hrdličková 2016a), and thus, also the research results, the social dimension of comparative and international collaborative teams has so far not been examined and is still mostly a black box (Kosmützky 2018b).

Studies that systematically provide insight into the micro-level of international teams and the collaborative research practice are rare (see for exceptions, Brew et al. 2013; Jeong, Choi, and Kim 2014; Melin, 2000; Rambur 2009; Ulicane 2015; and Wagner 2006). Even the "Science of Team Science" (SOTS) research (Fiore 2008; Hall et al. 2008; Stokols et al. 2008), which is particularly concerned with team dynamics, has not yet focused on international teams or research teams in the social sciences, let alone comparative research. Their focus is mostly on collaborative research in STEM fields and their recommendations do not match knowledge production processes in the social sciences and, particularly, in international comparative social science research (see for a discussion: Kosmützky 2018b). To begin closing this gap and to approximate first empirical evidence on the impact of the social dimension of international comparative team research in the field of higher education, a rating among higher education

researchers, who have conducted comparative research with an international team, was carried out. As a first step toward more detailed research, the rating should help in examining whether scholars perceive the team dimension and context dimension as sources of social challenges in collaborative and comparative team research.

## **An Approximation to Some Quantitative Empirical Evidence on the Team Dimension**

### ***Data Collection***

To collect the data a rating among higher education researchers was conducted in autumn 2016 at a major international higher education conference in the UK. The conference, which typically has around 150 participants, had almost 200 participants from 26 different countries in 2016. By checking the list of participants it was proven that enough scholars who have been involved in international team research in comparative higher education would be attending the conference. For one third of the participants such an experience could be assumed, because of the authors' field knowledge and desk research on the participants' CVs, which was considered as sufficient as sampling frame. The group of people with experience in international collaborative team research on comparative higher education topics consisted of scholars from all career stages. Only early career researchers up to the point of their PhD were not included, because their PhD research is often tied to the comparative project and this might cause a response bias. The aim of the rating was to explore the scholars' perception of the strength of the influence of the team dimension that is mostly invisible in assessments of comparative and collaborative research. Thus, the scholars were asked about their personal experience and perception of the influence of social aspects and, thus, asked to think back to the last comparative and collaborative research project in which they have participated and to do the rating according to that project.

The method of collecting data from one's own peers and in one's own community to test instruments and to gather first insights into the phenomenon under investigation was adopted from scholars in the field of computer science, who use real-world conference data to capture community information about participants and their face-to-face contacts and, thus, often apply their instruments (e.g., sensing technologies, like RFID tags, networking applications, and data collection tools) among their own colleagues at conferences (e.g., (Atzmueller et al. 2016)). Scholars in the field of computer science use the approach to utilize their own community as their study participants in order to have access to study subjects. This approach was also

suitable for this study in order to get access to study subjects for an exploratory investigation of a topic that has so far been widely overlooked. Another compelling reason for sampling the participants and collecting the data within one international conference was the opportunity to include the scope of scholars from different countries.

The rating sheet was constructed based on a) methodological and social challenges that were distinguished and b) measured dependently (summing up to overall challenges), but not built on a causal model of methodological challenges as dependent and social challenges as independent variables, but rather challenges are included as dependent variable, while size and role were envisaged as independent variables. For the methodological challenges, the rating sheet was differentiated along the steps of the research process and captured the specificities of comparative research: definition of purpose and research design (purpose of comparison, comparative approach and design, research question); selection of theories and hypotheses (consideration of suitability of theories and hypotheses in different contexts) and selection of empirical objects, levels of investigation, methods (consideration of country and data selection, levels of comparison); data collection and data analysis (consideration of adequacy of methods, equivalence of data collection in different contexts, and data analysis); reflection on results (consideration of the equivalence of findings, incl. documentation etc., comparison); publication and dissemination of findings (consideration of publication strategies and outlets, write-up). For the social challenges the assertive aspects for the team and context dimension listed in table 1 were given on the rating sheet. Further questions about the geographical distribution of the team members were not included to keep the rating sheet manageable as research tool for a data collection during a conference. But they were asked whether they have participated in this project as principal investigator or as researcher.

On the cover sheet of the rating sheet, the purpose of the research and the approach to methodological and social challenges of international comparative and collaborative research were briefly explained. As mentioned above, the participants were instructed to recollect their last comparative collaborative project in which they worked with an international team and rate to what extent the challenges this project team faced was of a methodological or social nature. The actual instruction that was given was as follows:

On the following page you find a rating sheet that is organized along the lines of a research project and

differentiates in methodological and social challenges. Please think back to the last comparative and collaborative research project in that you have participated and do the rating according to that project. Assume that the challenges you and your team were facing in that project taken together sum up to a total of 100%. On this basis, please rate the percentage of methodological challenges for each stage of the research process (left column). Please also rate the percentage of the social challenges for all stages together (right column). Taken together, the methodological (left column) and social challenges (right column) should sum up to 100%, e.g. [...]. Additionally, please specify whether you have participated as PI or as researcher and how many researchers took part in this project.

After an initial call for participations for the rating in one of the opening sessions, scholars, who have been involved in international comparative team research, were approached personally during coffee and lunch breaks on the first two conference days and invited to participate in a quick rating of challenges of comparative collaborative research. After they agreed, they received a rating sheet that was to be filled in immediately or to be returned by the end of the conference.

Forty-nine rating sheets were distributed to recognized researchers (PhD holders who are not yet fully independent), established researchers (PhD holders who have developed a level of independence) and leading researchers (researchers leading in their research area)(European Commission 2011). Thirty-seven rating sheets were returned. This corresponds to a response rate of 76 percent, which is the result of the personal and direct approach to the participants. Thirty-five of the rating sheets were valid and included in the examination of the results. Although the sample size is small allows for a range of basic descriptive statistics when the standard principles of quality research design respected. Another justification of the small sample as well as sampling at one conference is that that the population of interest is relatively small and spread around the world (Petersen 2008).

## **Results**

The results are based on the rating of 21 principal investigators and 14 researchers. Not included in the data analysis was data on the size of the projects because of non-response and missing data on the variable size. Only the variable role – as principal investigator or researcher – was included in the descriptive statistic analysis as

independent variable. Although the variable role is missing and the overall sample is small, the collected data allows for analyses based on basic descriptive statistics. The data shows a normal curve of distribution described by its mean and standard deviation and a t-test and the effect size (Hedges g) was calculated to test statistical significance of differences between principal investigators and researchers.

The results of the analysis are presented in Table 2. They indicate that scholars in higher education research attribute the challenges that occur in such collaborative and comparative research projects to 60 percent to the methodological dimension and to 40 percent to the social dimension. The standard deviation is 18 percent for the methodological challenges and 17 percent for the social challenges. It is important to note that this result might have a bias due to the small sample (smaller samples are more vulnerable to bias) and to the structure of the rating sheet. For the methodological challenges, the rating sheet was differentiated along the steps of the research process, but it was not equally differentiated for the social challenges and contained only one block for the task, team, and context related challenges. This difference might cause a distortion of the results and the social challenges might have even been underestimated. Although the sample is small, this shows that social challenges originating from the collaborative mode of research play a noteworthy role and provides some initial evidence that scholars in the field of higher education research attribute challenges in the comparative team research process to a great extent to the social dimension. Thus, it also indicates a direction of future research.

Furthermore, the results show that principal investigators do not rate the social challenges as more challenging than project members without principal investigator status, and the methodological challenges appear also not more challenging for them than among project members. Although, their perception differs somewhat in percentage – 10 percent in the arithmetic mean for both the social challenges and the methodological challenges – it does not differ statistically significant neither for the methodological challenges with  $t(33) = 0,08$  ( $p > 0.05$ ) nor for the social challenges with  $t(33) = 0,07$  ( $p > 0.05$ ) as t-tests reveal. Additionally the effect size, which emphasizes the size of the difference between both groups rather than sample size, was calculated according to Hedges g. g. The effect size is 0,684 for the methodological challenges and 0,605 for the social challenges. These values indicate that the difference is about two thirds of the respective standard deviation.

TABLE 2  
Results of the Rating among Higher Education Scholars

	MEAN	SD	MIN	MAX
<b>All Respondents; N = 35</b>				
Methodological Challenges	60%	18%	5%	95%
Social Challenges	40%	17%	5%	80%
<b>Principal Investigators; N = 21</b>				
Methodological Challenges	64%	15%	5%	95%
Social Challenges	36%	18%	5%	75%
<b>Researchers; N = 14</b>				
Methodological Challenges	54%	14%	20%	70%
Social Challenges	46%	14%	30%	80%

**Discussion and Conclusion – Taking Social Challenges Serious**

This article has argued that international comparative team research faces multifaceted challenges beyond the higher level of task-related methodological complexity that comparative research has anyway when it is conducted with an international team. On the one hand, an international team offers access to contextual knowledge of the countries and cultures of the units under investigation, which is essential for rigorous research. On the other hand, additional social challenges result from the mode of knowledge production in teams that are geographically dispersed, and culturally, socially, and institutionally diverse. The article particularly focuses on research projects that are conducted with an international team and has conceptualized research projects as purpose and goal-oriented interest groups and temporary organizations. The conceptual perspective that defines international team research projects as temporary organizations and enables the differentiation of a team, task, and context dimension should help to unravel methodological and social aspects.

On this conceptual basis a rating that was conducted among higher education scholars illuminates that the social dimension matters to a large extent. On average, higher education scholars attribute 40 percent of challenges that they are facing in international team research to social complexities and, in turn, 60 percent to task-related methodological challenges. It was also shown that principal investigators and researchers do not differ much regarding their perception of these challenges.

How can these results be interpreted? Due to its temporary and at the same time collaborative character, comparative research in international project teams is conducted under high uncertainty and at the same time highly interdependent (regarding task-relevant contextual knowledge of the comparative objects, access to data sources and contacts on the local ground, and language skills etc.). Thus, the social dimension matters and trust is particularly important. However, the geographically distributed and temporary nature of such teams limits the possibilities for trust building, which result from personal interaction. Research on temporary organisations also shows that the tendency to focus on tasks rather than relationships is typical for temporary organisations (Bakker, 2010). Furthermore, survey research conducted among principal investigators of multi-institutional projects on a national level has shown that paradoxically in multi-institutional projects, which might need more collaboration management, fewer resources were devoted to research management and collaboration-promoting practices, and fewer project meetings were held. The division of labor was also less discussed, and the transfer of knowledge between institutions played a less important role (Cummings and Kiesler 2005, 2007).

Based on such findings, one could also assume that principal investigators tend to focus more on the task-related methodological issues. Due to their role as project leaders, principal investigators who are in charge of the overall project, the project's success, and outcomes, might underestimate the social challenges systematically for reasons related to the temporary character of the collaboration. But opposed to that, one could also assume that researchers overestimate the social challenges, because they are more involved in the actual process of data collection and data analysis than principal investigators and, thus, more affected by the division of labor and rely on reflexive communication processes to connect and combine knowledge to a larger extent. As postdoctoral researchers they also might be new to the practice of collaborative research and might have greater difficulties in getting used to this mode of knowledge production within an international team. These two effects might balance each other out and eventually cause a very similar perception. However, the difference in the perception of challenges by principal investigators and researchers might be a random effect caused by the small sample size of the rating, and a replication with a refined rating sheet and a larger group of respondents would be necessary to verify it.

But although based on limited data, the results of the study indicate that we should take the social side of international team research serious and that it is worth

studying the social dimension, particularly in its interplay with the construction of the objects of comparison and the design of comparative research more systematically. Thus, further investigations with special focus on team dynamics, division of labor and conditions for trust building might be important.

The rating that was presented in this article was not built on a causal model of task-related methodological challenges as dependent and social challenges as independent variables. For this purpose, a more complex survey will be constructed and conducted in the future. Such a survey should also include the size of the projects (number of team members, number of national teams within the international team) as well as the geographical scope of the team, the previous international research experience and national and disciplinary backgrounds of team members. Furthermore, the definition of an international team needs to be adjusted and refined. Based on Anderson (2011), for this article a research project team was defined as international when it involves investigators whose primary employment affiliations are located in different countries. This is a handy and approximate but only preliminary definition that should be refined for future research to capture the diversity of international teams. Team dynamics might play out very differently in e.g., a team with members from Australia, the UK, and US and a team with members from Finland, Germany, Japan, Portugal, the US, and the UK, which are culturally more diverse and distant. Particularly important is also qualitative research, for example, in the form of case studies and projects ethnographies of international research teams who conduct comparative research, to learn more about the practices and processes within international comparative research teams and how they shape the comparative object and influence the research process and the quality of research results. At the center of such research would be the "comparator," as Deville, Guggenheim, and Hrdličková (2016b, p. 99) call the entity that does the comparative work (whether it is an individual researcher or an international team and whether it is a human comparator or non-human devices), and on how the comparator and the comparative objects shape each other within research process.

A practical implication of the findings is the need to develop reflexive knowledge on international collaborative processes that is accessible to principal investigators and researchers. International team research is growing and funding programs and grant agencies at both the national and supranational level support its proliferation (Cuntz and Peuckert 2015; Slipersæter and Aksnes 2008). And it is likely that

many higher education researchers will find themselves participating in an international research team or leading it as principal investigator at some point in their careers. Within the above-mentioned SOTS field, a discussion about field guides and practical recommendations that try to support principal investigators and team members throughout the course of the collaborative enterprise is on-going (National Research Council 2015). This discussion, however, has not yet arrived in the social sciences nor has it been the subject of interest in higher education research. But it is important to begin with it, because not all recommendations from the SOTS, as e.g., a high division and modularization of labor (Olson et al. 2008), fit for comparative international team research in the social sciences that operate on high levels of task-interdependence (Mauthner and Doucet 2008). Another implication of the results on the methodological challenges is that more discussion of issues and options related to the construction of comparative objects and the design of comparative research as well as verified and tested comparative procedures within the field might be needed to help cope with methodological challenges and pitfalls of comparative research, whether it the comparator is a team or an individual researcher. This in turn implies that the promising debate on comparative methodology, which has begun within the field of comparative higher education a few years ago, should also be continued and intensified.

### References

- Amarasekera, Nanda. 2012. "International Collaborative Clinical Research: Advantages Are Many, but We Need to Be Cautious." *Ceylon Medical Journal* 57 (4): 137-139. doi: 10.4038/cmj.v57i4.5076.
- Anderson, Melissa S. 2011. "What Can Be Gained and What Can Go Wrong in the Context of Different National Research Environments." In *International Research Collaborations: Much to Be Gained, Many Ways to Get in Trouble*, edited by Melissa S. Anderson and Nicholas H. Steneck, 3-9. New York: Routledge.
- Anderson, Melissa S., Felly Chiteng Kot, Yiyun Jie, Takehito Kamata, Aliya Kuzhabekova, Christine C. Lepkowski, Marta A. Shaw, Martha M. Sorenson, and Sonia M. R. Vasconcelos. 2011. "Differences in National Approaches to Doctoral Education: Implications for International Research Collaborations." In *International Research Collaborations: Much to Be Gained, Many Ways to Get in Trouble*, edited by Melissa S. Anderson and Nicholas H. Steneck, 169-190. New York: Routledge.
- Atzmueller, Martin, Andreas Ernst, Friedrich Krebs, Christoph Scholz, and Gerd Stumme. 2016. "Formation and Temporal Evolution of Social Groups During Coffee Breaks." In *Big Data Analytics in the Social and Ubiquitous Context. Lecture Notes in Computer Science*, edited by Martin Atzmueller, Alvin Chin, Frederik Janssen, Immanuel Schweizer and Christoph Trattner, 90-108. Cham: Springer International Publishing.
- Bakker, René M. 2010. "Taking Stock of Temporary Organizational Forms: A Systematic Review and Research Agenda." *International Journal of Management Reviews* 12 (4): 466-486. doi: 10.1111/j.1468-2370.2010.00281.x.
- Bohnhorst, Mark A., Meredith McQuaid, Stacey R. Bolton Tsantir, Donald M. Amundson, and Melissa S. Anderson. 2011. "Legal and Regulatory Considerations in International Research Collaborations." In *International Research Collaborations: Much to Be Gained, Many Ways to Get in Trouble*, edited by Melissa S. Anderson and Nicholas H. Steneck, 79-96. New York: Routledge.
- Bray, Mark, Bob Adamson, and Mark Mason. 2007. "Introduction." In *Comparative Education Research: Approaches and Methods*, edited by Mark Bray, Bob Adamson and Mark Mason, 1-11. Hong Kong, Cham: Comparative Education Research Centre (CERC), Springer.
- Brew, Angela, David Boud, Lisa Lucas, and Karin Crawford. 2013. "Reflexive Deliberation in International Research Collaboration: Minimising Risk and Maximising Opportunity." *Higher Education* 66 (1): 93-104. doi: 10.1007/s10734-012-9592-6.
- Burke, Catriona M., and Michael J. Morley. 2016. "On Temporary Organizations: A Review, Synthesis and Research Agenda." *Human Relations* 69 (6): 1235-1258. doi: 10.1177/0018726715610809.
- Cowen, Robert, and Andreas M. Kazamias. 2009. "Joint Editorial Introduction." In *International Handbook of Comparative Education*, edited by Robert Cowen and Andreas M. Kazamias, 3-6. Dordrecht: Springer.
- Cummings, Jonathon N., and Sara Kiesler. 2005. "Collaborative Research across Disciplinary and Organizational Boundaries." *Social Studies of Science* 35 (5): 703-722. doi: 10.1177/0306312705055535.
- Cummings, Jonathon N., and Sara Kiesler. 2007. "Coordination Costs and Project Outcomes in Multi-University Collaborations." *Research Policy*



- 36 (10): 1620-1634. doi: 10.1016/j.respol.2007.09.001.
- Cuntz, Alexander, and Jan Peuckert. 2015. "Openness Determinants of National Research Funding Programmes in Eu27." *Science and Public Policy* 42 (4): 474-486. doi: 10.1093/scipol/scu063.
- De Vries, Raymond G., Leslie M. Rott, and Yasaswi Paruchuri. 2011. "Normative Environments of International Science." In *International Research Collaborations: Much to Be Gained, Many Ways to Get in Trouble*, edited by Melissa S. Anderson and Nicholas H. Steneck, 105-119. New York: Routledge.
- Deville, Joe, Michael Guggenheim, and Zuzana Hrdličková. 2016a. "Introduction: The Practices and Infrastructures of Comparison." In *Practising Comparison: Logics, Relations, Collaborations*, edited by Joe Deville, Michael Guggenheim and Zuzana Hrdličková, 17-41. Manchester: Mattering Press.
- Deville, Joe, Michael Guggenheim, and Zuzana Hrdličková. 2016b. "Same, Same but Different: Provoking Relations, Assembling the Comparator." In *Practising Comparison: Logics, Relations, Collaborations*, edited by Joe Deville, Michael Guggenheim and Zuzana Hrdličková, 99-129. Manchester: Mattering Press.
- European Commission. 2011. *Towards a European Framework for Research Careers*. Brussels: European Commission.
- Fiore, Stephen M. 2008. "Interdisciplinarity as Teamwork: How the Science of Teams Can Inform Team Science." *Small Group Research* 39 (3): 251-277. doi: 10.1177/1046496408317797.
- Frame, J. Davidson, and Mark P. Carpenter. 1979. "International Research Collaboration." *Social Studies of Science* 9 (4): 481-497. doi: 10.1177/030631277900900405.
- Gardner, Paula, Keiko Katagiri, John Parsons, Jeonghwa Lee, and Radha Thevannoor. 2012. "'Not for the Fainthearted': Engaging in Cross-National Comparative Research." *Journal of Aging Studies* 26 (3): 253-261. doi: 10.1016/j.jaging.2012.02.004.
- Gazni, Ali, Cassidy R. Sugimoto, and Fereshteh Didegah. 2012. "Mapping World Scientific Collaboration: Authors, Institutions, and Countries." *Journal of the American Society for Information Science and Technology* 63 (2): 323-335. doi: 10.1002/asi.21688.
- Hall, Kara L., Annie X. Feng, Richard P. Moser, Daniel Stokols, and Brandie K. Taylor. 2008. "Moving the Science of Team Science Forward: Collaboration and Creativity." *American Journal of Preventive Medicine* 35 (2): 243-249. doi: 10.1016/j.amepre.2008.05.007.
- Hantrais, Linda. 2009. *International Comparative Research: Theory, Methods and Practice*. Basingstoke: Palgrave Macmillan.
- Jeong, Seongkyoon, Jae Young Choi, and Jang-Yun Kim. 2014. "On the Drivers of International Collaboration: The Impact of Informal Communication, Motivation, and Research Resources." *Science and Public Policy* 41 (4): 520-531. doi: 10.1093/scipol/sct079.
- Kosmützky, Anna. 2016. "The Precision and Rigor of International Comparative Studies in Higher Education." In *Theory and Method in Higher Education Research*, edited by Jeroen Huisman and Malcom Tight, 199-221. Bingley: Emerald Group Publishing.
- Kosmützky, Anna. 2018a. "Comparative Research, Higher Education." In *Encyclopedia of International Higher Education Systems and Institutions*, edited by Pedro Teixeira, Jung Cheol Shin, Alberto Amaral, Andres Bernasconi, António Magalhaes, Barbara M. Kehm, Bjorn Stensaker, Edward Choi, Elizabeth Balbachevsky, Fiona Hunter, Gaelle Goastellec, Goolam Mohamedbhai, Hans de Wit, Jussi Välimaa, Laura Rumbley, Lisa Unangst, Manja Klemencic, Patricio Langa, Rui Yang and Terhi Nokkala, 1-8. Dordrecht: Springer.
- Kosmützky, Anna. 2018b. "A Two-Sided Medal: On the Complexity of International Comparative and Collaborative Team Research." *Higher Education Quarterly* 72 (4). doi: 10.1111/hequ.12156.
- Kosmützky, Anna, and Georg Krücken. 2014. "Growth or Steady State? A Bibliometric Focus on International Comparative Higher Education Research." *Higher Education* 67 (4): 457-472. doi: 10.1007/s10734-013-9694-9.
- Kwiek, Marek. 2015. "The Internationalization of Research in Europe: A Quantitative Study of 11 National Systems from a Micro-Level Perspective." *Journal of Studies in International Education* 19 (4): 341-359. doi: 10.1177/1028315315572898.
- Laudel, Grit. 2002. "What Do We Measure by Co-Authorships?" *Research Evaluation* 11 (1): 3-15. doi: 10.3152/147154402781776961.
- Livingstone, Sonia. 2003. "On the Challenges of Cross-National Comparative Media Research." *European Journal of Communication* 18 (4): 477-500. doi: 10.1177/0267323103184003.
- López-Yáñez, Julián, and Mariana Altopiedi. 2015. "Evolution and Social Dynamics of Acknowledged Research Groups." *Higher Education* 70 (4): 629-647. doi: 10.1007/s10734-014-9835-9.
- Lundin, Rolf A., and Anders Söderholm. 1995. "A Theory of the Temporary Organization."

- Scandinavian Journal of Management* 11 (4): 437-455. doi: 10.1016/0956-5221(95)00036-U.
- Manzon, Maria. 2011. *Comparative Education: The Construction of a Field*. Hong Kong, Dordrecht: Comparative Education Research Centre (CERC), Springer.
- Mauthner, Natasha S., and Andrea Doucet. 2008. "Knowledge Once Divided Can Be Hard to Put Together Again': An Epistemological Critique of Collaborative and Team-Based Research Practices." *Sociology* 42 (5): 971-985. doi: 10.1177/0038038508094574.
- Melin, Göran. 2000. "Pragmatism and Self-Organization: Research Collaboration on the Individual Level." *Research Policy* 29 (1): 31-40. doi: 10.1016/S0048-7333(99)00031-1.
- National Research Council. 2015. *Enhancing the Effectiveness of Team Science*. Edited by Nancy J. Cooke and Margaret L. Hilton. Washington, D.C.: The National Academies Press.
- Olson, Judith S., Erik C. Hofer, Nathan Bos, Ann Zimmerman, Gary M. Olson, Daniel Cooney, and Ixchel Faniel. 2008. "A Theory of Remote Scientific Collaboration." In *Scientific Collaboration on the Internet*, edited by Gary M. Olson, Ann Zimmerman and Nathan Bos, 73-97. Cambridge, London: The MIT Press.
- Øyen, Else. 1990. "The Imperfection of Comparisons." In *Comparative Methodology: Theory and Practice in International Social Research*, edited by Else Øyen, 1-18. London: Sage.
- Petersen, Naomi Jeffery. 2008. "Designing a Rigorous Small Sample Study." In *Best Practices in Quantitative Methods*, edited by Jason W. Osborne, 137-146. Thousand Oaks: Sage.
- Rambur, Betty. 2009. "Creating Collaboration: An Exploration of Multinational Research Partnerships." In *Academic Research and Researchers*, edited by Angela Brew and Lisa Lucas, 80-95. Maidenhead, New York: Open University Press, Society for Research into Higher Education.
- Rust, Val D., Brian Johnstone, and Carine Allaf. 2009. "Reflections on the Development of Comparative Education." In *International Handbook of Comparative Education*, edited by Robert Cowen and Andreas M. Kazamias, 121-138. Dordrecht, Heidelberg, London, New York: Springer.
- Schriewer, Jürgen. 2009. "Comparative Education Methodology in Transition: Towards a Science of Complexity?" In *Discourse Formation in Comparative Education*, edited by Jürgen Schriewer, 3-53. Frankfurt am Main: Peter Lang.
- Slipersæter, Stig, and Dag W. Aksnes. 2008. "The Many Ways of Internationalisation." In *Borderless Knowledge*, edited by Åse Gornitzka and Liv Langfeldt, 13-36. Dordrecht: Springer.
- Smelser, Neil J. 1976. *Comparative Methods in the Social Sciences*. Englewood Cliffs: Prentice-Hall.
- Stokols, Daniel, Kara L. Hall, Brandie K. Taylor, and Richard P. Moser. 2008. "The Science of Team Science: Overview of the Field and Introduction to the Supplement." *American Journal of Preventive Medicine* 35 (2): 77-89. doi: 10.1016/j.amepre.2008.05.002.
- Teagarden, Mary B., Mary Ann Von Glinow, David E. Bowen, Colette A. Frayne, Stephen Nason, Y. Paul Huo, John Milliman, Maria E. Arias, Mark C. Butler, J. Michael Geringer, Nam-Hyeon Kim, Hugh Scullion, Kevin B. Lowe, and Ellen A. Drost. 1995. "Toward a Theory of Comparative Management Research: An Idiographic Case-Study of the Best International Human-Resources Management Protect." *Academy of Management Journal* 38 (5): 1261-1287. doi: 10.2307/256857.
- Teichler, Ulrich. 2014. "Opportunities and Problems of Comparative Higher Education Research: The Daily Life of Research." *Higher Education* 67 (4): 393-408. doi: 10.1007/s10734-013-9682-0.
- Tight, Malcolm. 2012. *Researching Higher Education*. 2. ed. Maidenhead, New York: Open University Press, Society for Research into Higher Education
- Ulnicane, Inga. 2015. "Why Do International Research Collaborations Last? Virtuous Circle of Feedback Loops, Continuity and Renewal." *Science and Public Policy* 42 (4): 433-447. doi: 10.1093/scipol/scu060.
- Wagner, Caroline S. 2005. "Six Case Studies of International Collaboration in Science." *Scientometrics* 62 (1): 3-26. doi: 10.1007/s11192-005-0001-0.
- Wang, Jian, and Diana Hicks. 2015. "Scientific Teams: Self-Assembly, Fluidness, and Interdependence." *Journal of Informetrics* 9 (1): 197-207. doi: 10.1016/j.joi.2014.12.006.
- Weiss, Matthias, and Martin Hoegl. 2015. "The History of Teamwork's Societal Diffusion: A Multi-Method Review." *Small Group Research* 46 (6): 589-622. doi: 10.1177/1046496415602778.