

Epistemic justice: An ethical basis for transdisciplinary and transformative sustainability research

The idea of epistemic justice can help to resolve tensions between different ethical motivations in the transdisciplinary and transformative research literature as to why extra-scientific knowledge holders need to be included in knowledge production processes.

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Abstract

Justice is the social mission and the ethical motivation for knowledge production in the sustainability sciences. To support transformations towards more just societies, alternative forms of knowledge production are needed that include the contributions of extra-scientific knowledge holders. The paper identifies inherent tensions within the literature on transdisciplinary and transformative research (TDTR) between different ethical motivations for involving these knowledge holders. Some point to justice claims derived from the social mission of TDTR; others emphasise forms of justification described in this paper as epistemic prudence. However, it is possible to resolve these tensions by referring to the idea of epistemic justice. The paper introduces this idea to reconstruct ethical intuitions within TDTR. In doing so, it invites TDTR practitioners to critically rethink their ethical motivations in order to advance work on the normative foundations of TDTR.

Keywords

epistemic justice, epistemic prudence, participatory research, sustainable development, transdisciplinary research, transformative research

Justice as the social mission and the ethical motivation for knowledge production in the sustainability sciences

Justice as social mission

The very name of sustainability science indicates its social mission, namely, to contribute to the idea of sustainable development (Horcea-Milcu et al. 2024, Schneider et al. 2019). This idea is a justice-based concept (Grunwald and Kopfmüller 2022, Ott and Döring 2011) that responds to the current socio-natural predicaments and inspires movements for environmental justice (Martínez-Alier 2023). Normatively, the concept seeks to reconcile different claims for justice (inter- and intragenerational, global, environmental, ecological, interspecies, etc.) in order to enable human development while protecting the socio-natural conditions that sustain multiple pathways to such development (Avelino et al. 2024, Christen and Schmidt 2012).

Scholars who want to go beyond describing and analysing the problems of unsustainable development, and to make societies more just, understand that traditional forms of science no longer suffice (Nowotny et al. 2008, Schneidewind and Singer-Brodowski 2014, WBGU 2011; see also Kastenhofer 2024, in this issue). Instead, given the complex nature of most sustainability challenges, they call for different forms of knowledge production that also involve additional knowledge holders and their contributions (Bergmann et al. 2010, Defila and Di Giulio 2016, Funtowicz and Ravetz 1993), in order to better fulfil its social mission.

Justice as ethical motivation for knowledge production?

Are there ethical rationales for including additional knowledge holders and their contributions in transdisciplinary and transformative research (TDTR)¹ in the sustainability sciences that go beyond the social mission? It appears that there are inherent tensions. Some believe that the goal of sustainable development provides sufficient justification for involving extra-scientific actors in TDTR (cf., e.g., Horcea-Milcu et al. 2024, Caniglia et al.

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¹ In the following, whenever TDTR is mentioned, it refers to TDTR in sustainability sciences.

2023, Schneider et al. 2019). Others challenge this view. Defila and Di Giulio (2019, pp. 89 ff.), for instance, argue that TDTR is first and foremost a scientific activity and that the rationale for participating in TDTR cannot be based on extra-scientific (democratic and/or ethical) grounds. They argue that participation must be justified on epistemological grounds (i. e., expertise).

So, when it comes to the reasons for involving extra-scientific actors, there are tensions between justice claims based on the rationale derived from the social mission and epistemological lines of reasoning. It could be argued that the distinction between social and epistemic value spheres, as presented above, is open to question anyway. In this paper, I suggest an alternative approach to the problem. I examine the underlying ethical rationales for the inclusion of extra-scientific actors in TDTR, arguing that it can be described as an issue of epistemic prudence. As I show, this line of reasoning could appear at odds with ethical intuitions that suggest extra-scientific actors should participate in TDTR for reasons of justice. To address this tension, I consider the idea of epistemic justice (Dotson 2012, Pohlhaus 2019, Anderson 2012), which has not yet been systematically discussed within TDTR. Its strength regarding the challenge raised in this paper is its focus on claims to justice *within* the processes of knowledge production.

The paper begins by explaining how we can say that TDTR is primarily inspired by epistemic prudence. It then introduces the idea of epistemic justice and discusses the extent to which it can be used to reconstruct the (implicit) ethical intuitions of TDTR. Finally, the article describes two challenges that may arise from the fact that the participation of extra-scientific actors is a matter of justice. The article concludes by sketching out how the justice claims of sustainable development and epistemic justice can be jointly enacted and how this may reframe the relationship of epistemic justice and epistemic prudence.

Epistemic prudence in transdisciplinary and transformative research

Attempts to address sustainable development issues often require crossing traditional academic boundaries and involving more and different knowledge holders and their respective contributions (Bergmann et al. 2010, Chilvers and Kearnes 2020, Schneidewind and Singer-Brodowski 2014, Scholz 2011). In this way, these issues challenge scientific (often disciplinary) systems that are unable to account for radically different contexts of knowledge production. Responses to these challenges have described subsequent forms of knowledge production as “trans-scientific” (Weinberg 1972) to highlight the ways that social challenges may be described by science but not solved by it. Other terms, like “post-normal science” (Funtowicz and Ravetz 1993), focus attention on concerns over how to manage uncertain facts, value disputes, high stakes, and political urgency. These concerns are often “wicked problems” in that they are difficult or impossible to solve because the conditions for doing so are incomplete, con-

tradictory, and constantly changing (Rittel and Webber 1973). It has been argued that in such situations traditional forms of science fail for many reasons, and relevant forms of knowledge need to be coproduced differently (Funtowicz and Ravetz 1993, Lubchenco 1998, Wittmayer et al. 2024, Ziegler and Ott 2011).

Against this background, I argue that most TDTR scholarship is (at least implicitly) guided by epistemic prudence. This means that if TDTR wants to achieve its social mission of making societies more just, it is simply prudent to decide in trans-scientific and post-normal contexts for alternative forms of knowledge production, which also include the knowledge contributions of extra-scientific actors.

Prudence, according to Luckner (2011), is the ability of actors to orient themselves in complex situations, to choose apt means to achieve their goals, and to be aware of their own strengths and weaknesses. In particular, it implicates a form of the practical wisdom to select and implement those courses of action from general principles and technological alternatives that are appropriate to a given situation and to achieve one’s aims. It often seems that prudence is about sly behaviour that seeks one’s own advantage. This, however, is an oversimplification. To the extent that social actors are always dependent on other actors, it is prudent to take their views into account and thus pursue an enlightened self-interest.

In this perspective, TDTR acts prudently in several ways: by acknowledging the limitations of traditional forms of knowledge production, by involving more and different knowledge holders and their contributions, and by seeking alternative models of knowledge production. Establishing appropriate contexts for knowledge production and making the right methodological choices is tricky and contested terrain, and requires practical judgement (Chambers et al. 2021, Chilvers and Kearnes 2020, Caniglia et al. 2023, Horcea-Milcu et al. 2024). Ultimately, it is in the enlightened self-interest of sustainability research(ers) to engage with extra-scientific actors, as this step could help to better solve or (re)frame research problems (Chambers et al. 2021) and make knowledge production more accountable, impactful and self-reflexive (van der Hel 2016). So, given the high levels of concern, complexity, urgency, and normativity of most sustainability issues, it is simply most prudent to embrace TDTR – and there is *prima facie* nothing wrong with this line of reasoning.

Yet, the scope of prudential arguments has its specific limitations. The philosophical literature describes prudence as a weakly normative concept, meaning that its binding character depends on contingent factors (O’Neill 2000, Luckner 2011). By contrast, there are strongly normative approaches whose binding character is unconditional and pervasive across situations. Applied to the case of TDTR, this means that including extra-scientific actors on the basis of prudence arguments depends on the situational considerations of sustainability researchers and what they consider prudent for a given research challenge. However, if we regard the participation of extra-scientific actors in TDTR as a matter of justice, then their status will take on a greater weight within ethical considerations regarding who is to participate. Such

an argument addresses the criticism that participation in a prudential model is too contingent, and does so through the idea of epistemic justice.

The idea of epistemic (in)justice

Forms of epistemic injustice

The study of epistemic injustice is concerned with forms of injustice related to knowledge production processes, that is, actions that wrong people *in their capacity as epistemic agents* (cf. table 1, p. 384). Such wrongs occur along a continuum from injustices in interpersonal transactions between epistemic agents to injustices caused by epistemic institutions (Anderson 2012, Pohlhaus 2019).

Remedying epistemic injustice

Testimonial injustice arises in the ways in which epistemic agents meet and credit each other. To counter this, epistemic agents (especially dominant ones) need to be self-reflexive and aware of their prejudices. According to Fricker (2007), they need to become ep-

istemically virtuous. While acknowledging the merits of a virtue-based approach, Elisabeth Anderson argues to go beyond. For example, she advocates social integration to overcome the structural causes of credibility discounting by arguing that “[when] social groups are educated together on terms of equality, they share equally in educational resources and thus have access to the same (legitimate) markers of credibility” (Anderson 2012, p. 171).

Hermeneutical injustice is caused by an inadequate epistemic system. It refers to gaps in epistemic resources that cause epistemic harm to certain epistemic agents because they cannot express a distinctive group experience. In addition, their own epistemic resources might prevent dominant agents from understanding what disadvantaged epistemic agents are telling them about their experiences. Thus, dominant and disadvantaged epistemic agents are equally subject to inadequate epistemic resources, but “they do not suffer equally” (Dotson 2012, p. 30). Given that hermeneutical injustice is structural, those aspects in epistemic sys-

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LINUS BACKERT 2021

Trügerischer Streich | Deceptive prank



TABLE 1: Forms of epistemic injustice.

INJUSTICE	EXPLANATION	EXAMPLE
testimonial	Testimonial injustice happens when epistemic agents and their epistemic resources are given less credibility by other, usually dominant epistemic agents because they are members of a group against which dominant epistemic agents hold prejudices based on race, gender, credentials, etc.	In the 1970s, residents of the Love Canal area of Niagara Falls, New York, suffered serious health problems when toxic chemicals from a landfill leaked into their neighbourhood. When residents, many of them women, confronted government scientists with their theory of how the contaminants could have spread and caused harm, their findings were dismissed as “useless housewife data”. Ultimately, their theory proved correct. Credibility discounting occurred here based on gender and academic credentials (cf. Meisch 2024, pp. 4 ff.).
hermeneutical	When epistemic resources with which reality is conceptualised and meaning is socially constructed are insufficient, gaps in the shared understanding of the world can emerge. These gaps can cause harm to certain, often disadvantaged, epistemic agents by preventing them from understanding their own lifeworlds and from contributing their experiences to the social production of knowledge.	Fricker (2007, pp. 147–152) mentions “sexual harassment” as an example of hermeneutical injustice. Before this term existed to describe specific ethically problematic actions, victims (as well as perpetrators) lacked the epistemic resources to specifically name an injustice and thus bring unwanted experiences into public discussion. Previously, there was a gap in the collective epistemic resources which caused injustice to a group of knowers.
contributory	In contrast to hermeneutical injustice, contributory injustice refers to a situation when disadvantaged epistemic agents have succeeded in producing their own epistemic resources (Dotson 2012). However, dominant epistemic agents in an epistemic system, through <i>wilful hermeneutical ignorance</i> (Pohlhaus 2019, p. 20), fail to acknowledge the epistemic contributions of other epistemic agents – even when it is obvious that the dominant epistemic resources are inadequate for an epistemic task at hand.	Again, the Love Canal case is a good example (cf. Meisch 2024, pp. 4 ff.). Although the epistemic resources of the dominant epistemic agents, i. e., the statistical models of the scientific community within the New York State Department of Health, could not explain the local health problems, they clung to them even though the alternative epistemic resources of the local residents were available (i. e., a map showing the correlation between serious health problems and the location of former water bodies through which toxic substances continued to migrate beyond the landfill). As a result, the residents suffered harm.

tems that foster hermeneutical injustice need to be adjusted and new epistemic resources need to be developed (Pohlhaus 2019, p. 20, Dotson 2012, pp. 30–31).

Contributory injustice refers to situations where an epistemic system fails to meet a particular epistemic task. Nevertheless, dominant epistemic agents – in an act of wilful hermeneutical ignorance – maintain and use prejudiced and insufficient epistemic resources (Dotson 2012, p. 31, Pohlhaus 2019, p. 20). Often such injustice occurs when disadvantaged epistemic agents in fact succeed in creating their own epistemic resources, but dominant agents refuse to take them up, choosing instead to use their own inadequate epistemic resources (Mason 2011, p. 306). To redress wilful hermeneutical ignorance, Pohlhaus (2019, p. 20) calls for “a whole new approach [...] in which axiomatic features of the previous collective epistemic resources may need to be abandoned”. Dotson (2012, p. 34) suggests “transconceptual communication” – in line with the idea of “world-traveling” as suggested by Ortega (2006, p. 69): “‘World’-traveling has to do with actual experience; it requires a tremendous commitment to practice: to actually engage in activities where one will experience what others experience”. This involves, among other things, a deep and open engagement with the life-worlds of other epistemic agents and the ways in which they make sense of them, no matter how different their knowledge production processes may be. Such engagement also requires recognising the agency of marginalised

epistemic groups, rather than treating them as helpless. In this way, “world travellers” come to know the tacit elements of epistemic resources that cannot be learned from theoretical constructions alone (cf. also Meisch et al. 2022).

Epistemic justice in transdisciplinary and transformative research

By using the language of epistemic justice, ethical motivations of TDTR can be reconstructed and substantiated.

Testimonial justice focusses on the interactions between individual epistemic agents. It is concerned with the ways in which dominant epistemic agents hold prejudices against members of other, often disadvantaged, groups of epistemic agents, so that their knowledge contributions are unfairly given less or no recognition. Epistemic virtue, in particular the ability of dominant epistemic agents to be aware of and critically engage with their own biases, is seen as a means of countering this injustice.

Along these lines, scholarship on TDTR emphasises the importance of reflecting on one’s own ethical and epistemic presuppositions and preconceptions (Caniglia et al. 2023, Nogueira et al. 2021, Wittmayer et al. 2024). Sustainability researchers are encouraged to critically question their own positions as they may (inadvertently) reproduce systems of injustice such as racism,

sexism, agism, ableism, or credentialism (Caniglia et al. 2023, Meisch 2024). As self-critical researchers, then, TDTR practitioners become epistemically virtuous agents (sensu Fricker 2007).

Hermeneutical justice is concerned with systemic aspects of knowledge production and in particular the epistemic resources for making sense of the world. These resources can be inadequate. In such cases, epistemic agents experience injustice because they are unable to conceptualise, express, and communicate their own experiences and are thus barred from contributing to collective processes of knowledge production. This issue can be remedied by creating alternative epistemic resources that complement and improve existing epistemic systems.

Amending these systems with new epistemic resources is the key rationale of TDTR (Defila and Di Giulio 2018, Horcea-Milcu et al. 2024, Meisch 2020). It is about closing the hermeneutical gaps that traditional disciplinary modes of knowledge production cannot fill (Horcea-Milcu et al. 2024, Temper et al. 2019, Wittmayer et al. 2024), and thus empowering epistemically dis-

advantaged agents (Chambers et al. 2021, Martínez-Alier 2023). To the extent that TDTR meets this requirement, it contributes to ensuring hermeneutical justice.

Beyond that, the concept of hermeneutical (in)justice also supports critiques of the blind spots in TDTR's epistemic resources that have a potential to reproduce injustice (Eckart et al. 2018). For example, TDTR has been criticised for the way it frames concepts such as climate or green economy (Klenk and Meehan 2015, Horcea-Milcu et al. 2024), or methodological considerations such as knowledge integration or consensus building (Chilvers and Kearnes 2020, Esguerra and van der Hel 2021, Nogueira et al. 2021, Turnhout et al. 2020). These examples illustrate how epistemic resources (also used in TDTR) can narrow the space of knowledge production, which is ethically problematic as these resources can unduly exclude epistemic agents from sharing their experiences and participating in knowledge production processes.

Contributory justice concerns the relationship between dominant and marginalised epistemic resources in an epistemic system. The former prevail, even when they turn out to be inappropriate for a given problem. The latter are (wilfully) ignored by dominant epistemic agents, thus leading to epistemic injustice.

BIRGIT SINGER-KRÜGER 2021

Tatort | Crime scene





LARA MÜLLER 2021

Zeugin | Witness

er epistemic agents. Such a shift challenges those forms of TDTR that assign scientists the role of deciding about participation in research. Defila and Di Giulio (2019, pp. 89 ff.), for instance, emphasise that transdisciplinary research is first and foremost a scientific activity, and therefore the ability to contribute to this activity should determine participation in the research process, rather than other, for example, democratic or ethical, considerations. For them, this means that the decision about which epistemic agents to involve must be in the hands of the researchers.

Such a description is similar to concerns about the traditional scientific system as expressed by proponents of TDTR (Horcea-Milcu et al. 2024, Temper et al. 2024), who also call for a substantial reform of the scientific system and suggest forms of collaborative learning such as “transconceptual communication” or “world-traveling”. These create spaces where different epistemic actors can experience the epistemic resources of others and the conditions under which these resources are created. One way of conceptualising such transformative spaces for sharing, learning, and assessing different forms of knowledge is through “extended peer communities” (Funtowicz and Ravetz 1993, Kovacic and Funtowicz 2024), in which epistemic agents can contribute their “extended facts” over which all negotiate in good faith (Meisch 2022, 2024). By engaging in such TDTR, scientists take on new and different roles, ranging from honest broker to critical collaborator, requiring a different attitude to the research process in ways that promote epistemic justice (Horcea-Milcu et al. 2024, Temper et al. 2019).

Challenges

The idea of epistemic justice can provide a language to reconstruct and support ethical intuitions within TDTR. However, argumentative challenges remain: First, if the participation of extra-scientific agents in TDTR is a matter of justice, how does this affect the role of scientists? Second, if epistemic justice, with its stronger normativity, is to inform participation, who will ensure a just process?

Considering who participates – and why

By establishing the claim of extra-scientific epistemic agents to participate in processes of knowledge production, the idea of epistemic justice changes how we think about the dynamics of these processes and the relationships between scientists and oth-

However, it is possible to come to a different conclusion than Defila and Di Giulio. Since they start from the role of persons as epistemic agents, they immediately face the challenges of epistemic justice. This objection does not contradict the claim that expertise should have a say in participating in TDTR. Rather, it suggests that researchers’ prudential considerations are in tension with epistemic agents’ legitimate claims to epistemic justice.

A possible way forward for TDTR scholars (*sensu* Defila and Di Giulio) might be to argue that it would be better for all if, in addition to justice, other ethically relevant aspects – for instance, additional practical considerations of how to do good TDTR – were given thought in knowledge production, and that participation in such processes should therefore be restricted. Such an argument might be perceived as weakening the idea of epistemic justice. However, Tugendhat (1993, pp. 379f.) points out that such a weighing of different ethically relevant aspects is part of what it means to make ethical judgments. It would be wrong to stylise such a juxtaposition of different relevant aspects into a contradiction that fundamentally questions the concept of justice. Consequently, TDTR scholars can and should take the claim of epistemic justice seriously and weigh it against other ethically relevant aspects in such a way that their judgement could be understood and accepted by all those potentially affected. This requirement can be defended on the grounds that it constitutes a minimum criterion in that scientists are obliged to justify their decisions on the participation of epistemic agents.

Ensuring epistemically just research processes

Both the literature on epistemic justice and the literature on sustainability research pay particular attention to the merit of individual researchers’ epistemic virtue (Fricker 2007, Caniglia et al. 2023, Nogueira et al. 2021, Wittmayer et al. 2024). However, such a virtue ethical approach cannot be enough (Anderson 2012). In addition, claims to justice need to be ensured by public policies and institutionalised agents of justice (O’Neill 2016,

pp. 177–192, 2018, pp. 188–192). This also applies to epistemic justice and systems of knowledge production (Herzog and Lepenies 2022, Orozco-Meléndez et al. 2024). From a TDTR perspective, these academic settings need reform, from academic training and research funding to the methods used to assess research quality and career paths (Defila and Di Giulio 2016, Herzog and Lepenies 2022, Horcea-Milcu et al. 2024).

Epistemic justice goes well with sustainability; and it does not make epistemic prudence obsolete

The paper concludes by addressing the tensions in the TDTR literature described above. First, it illustrates how justice claims arising from the social mission (sustainable development) and from the motivation for knowledge production (epistemic justice) can be jointly satisfied, and second, how epistemic prudence relates to these justice claims.

Jointly satisfying claims of justice

TDTR is an action with normative references to justice, both in terms of its mission (inter- and intragenerational, global, environmental, ecological, interspecies, etc.) and its mode of knowledge production (epistemic justice). To arrive at coherent judgments about what scientific practice is right and appropriate, these justice claims must be jointly satisfied. There are many ways of doing this, and there is no reason to assume that all will lead to dilemmas. In fact, TDTR scholars are likely to succeed quite often in jointly enacting the justice claims associated with their social mission and their ethical motivation of knowledge production. In other cases, they may face difficulties. Either way, as self-reflexive researchers they need to be able to give reasons for their research decisions, especially if we agree that extra-scientific epistemic agents have a claim on them. This is an ambitious but possible undertaking.

Judgments about how to act in terms of sustainable development are always multi-layered (Christen and Schmidt 2012). Explicating claims of sustainable development requires both a theory of justice and knowledge of the specific contexts in which it is to be applied. The normative core of sustainable development is that everyone should be able to live good lives. This leads to a twofold challenge: First, to identify those aspects of being human that, in situations of conflict, have priority over other practical considerations (e.g., interests of economic profit, political power, or even scientific curiosity); and second, to argue for those public institutions that have a duty to protect and promote these aspects. This argument extends to the protection of the socio-natural environments humans need to live such good lives (Düwell 2021, O'Neill 2016, Page 2007). Judgments about how to act in accordance with sustainable development consist of several argumentative steps in which these justice considerations need to be concretised for specific fields of action, from policies and indicators to concrete implementation measures (Ott and

Döring 2011, Grunwald and Kopfmüller 2022). TDTR is such a field of action. So, if one wanted to specify claims of justice based on the idea of sustainable development (social mission), one would have to argue how the claim to participate in knowledge production processes is such a key aspect of being human that it has priority over other practical considerations.

Such an argument is consistent with justifications of epistemic justice. Fricker (2007, p. 44), for instance, argues that “[to] be wronged in one’s capacity as a knower is to be wronged in a capacity essential to human value”. Her interpretation of “human value” is consistent with the views of the good human life outlined above, and she too seems to believe that epistemic justice is one of the aspects of being human that takes priority in ethical considerations (cf. also Fricker 2007, pp. 133–137).

Epistemic justice and epistemic prudence

Epistemic justice certainly has the higher degree of ethical obligation compared to epistemic prudence. Nonetheless, this does not render epistemic prudence obsolete, as TDTR practitioners will still need to choose appropriate research paths in complex situations. However, they do have less leeway in deciding who should participate in TDTR as they must consider the legitimate claims of epistemic agents and justify their decisions in a way that is acceptable to all.

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