

On being oriented

Strengthening transgressive orientations in transdisciplinary sustainability research through queer theory

We move from a provocative analogy: that transdisciplinary sustainability researchers are to academia what queer people are to a heteronormative and sex/gender binary world. Both may experience disorientation and need to learn how to transgress established norms. Queer people and scholars have extensively dealt with (dis)orientation and celebrated transgression. We suggest that queer theory can help transdisciplinary sustainability researchers to raise questions that intensify the transgressive orientations of their work when contributing to just and equitable sustainability transformations.

Guido Caniglia , Coleen Vogel 

On being oriented. Strengthening transgressive orientations in transdisciplinary sustainability research through queer theory
GAIA 32/1 (2023): 167–171 | **Keywords:** 2SLGBTQI+, intersectionality, justice, normativity, sustainability transformations, transgressive learning

In transdisciplinary (TD) sustainability research, we often talk about transformation-oriented as well as action-, solution-, and mission-oriented research. Whereas much is said about the complex nature of sustainability transformations (Brand 2016), emerging approaches that may assist in moving our societies towards sustainability transformations do not clarify how we may orient TD research towards transformative change. This gap calls for more deliberative reflections on how we find orientation through research in collaborative settings, such as through the methods we use when fostering change, the spaces we design to cultivate inclusion, or the processes we set up to deal with differences and contradictions. Thus, in this piece, we focus on what we mean when we say that TD sustainability research is being oriented towards sustainability transformations. As transformation-oriented research requires embracing transgressive research and learning (Lotz-Sisitka et al. 2016, Vogel and O'Brien 2021), we suggest that TD sustainability research opens itself to contributions from queer lives and from queer studies, which have made transgression their hallmark in various aspects and dimensions. Doing so, we suggest, can help TD researchers to recognize and intensify transgressive orientations needed to contribute to just and equitable processes of transformation.

The provocative analogy that informs this article is that *TD sustainability researchers are to academia what queer people (com-*

monly, but not exclusively, 2SLGBTQIA+, see box 1, p. 168) are to a predominantly heteronormative and sex/gender binary world. Most queer people in life transgress social norms, cross imposed boundaries, and promote alternative scripts to flourish in a world hostile to those who lie outside what is predefined as “normal” and “appropriate” (box 1). Similarly, many TD researchers working towards sustainability transformations may experience marginalization and have to transgress widespread academic norms (Jahn et al. 2012). This is what happens, for instance, when researchers advocate for and embrace a feminist ethos of care as an alternative to the competition-based values of most academic environments (Staffa et al. 2022).

The diverse and constantly evolving field of queer theory, or queer studies (box 1), focuses on the challenges and opportunities that emerge when transgressing predefined pathways. This is why, we suggest, queer theory may assist TD sustainability researchers to celebrate the failures as well as to seize the opportunities that emerge from not complying with the norms of disciplinary and non-transformation-oriented academic systems. We propose to use queer as a verb, signifying a way of challenging assumptions and established norms about research through anti-normative, anti-categorical, and intersectional questioning (box 1). Our proposal of *queering* sustainability research aims to strengthen transgressive orientations by raising questions about aspects of research that are often taken for granted or left unquestioned, but that might jeopardize TD sustainability researchers' capacity to contribute to the generation of transformative change with their work.

Our goal is not to exhaust the wide variety of ways in which queer studies and TD sustainability research may be connected. Rather, we provide examples of how queering may enhance TD sustainability research. After clarifying the potential of queer theory to enhance the transgressive potential of TD sustainability

Guido Caniglia, PhD PhD | Konrad Lorenz Institute for Evolution and Cognition Research | Klosterneuburg | AT | guido.caniglia@kli.ac.at

Prof. Coleen Vogel, PhD | University of the Witwatersrand | Global Change Institute (GCI) | Johannesburg | ZA | coleen.vogel@wits.ac.za

© 2023 by the authors; licensee oekom. This Open Access article is licensed under a Creative Commons Attribution 4.0 International License (CC BY).
<https://doi.org/10.14512/gaia.32.1.15>

Received June 23, 2022; revised version accepted February 16, 2023 (double-blind peer review).

BOX 1: Queer and queer theory

Queer comes from the Indo-European word *twist* and is used to describe “what is ‘oblique’ and ‘off line’” (Ahmed 2006, p. 161). Mainly, *queer* refers to the identities and practices of Two-Spirit, Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual and any other ways (2SLGBTQIA+ people) individuals might express their gender and sexual orientation outside of gender binary and heteronormativity. More broadly, the term “maintains a relation of resistance to whatever constitutes the normal” (Jagose 1996, p. 99).

Queer theory (also **queer studies**) is a diverse and constantly evolving body of thought critically addressing issues of sex, gender, sexuality, race, oppression, and discrimination (Jagose 1996). Queer theory is rooted in the queer political activism of the 1980s and 1990s which aimed to resist, transgress, and subvert the oppressive structures and norms that underpin the marginalization and discrimination of queer people. Some central conceptual aspects of queer theory are:

- **Anti-normativity and the critique of normalization:** Some identities and practices are constructed as “normal” through established social norms. Hetero- and cis-normativity refer to the characterization of heterosexuality and cis-genderism as constituting the norm, while all other orientations and genders are viewed as deviant. Queer theorists have counteracted dominant societal norms based on hetero- and cis-normativity in theory and in practice (Russell 2021).
- **Anti-categorical thought and celebration of difference:** Queer theory has deconstructed identity categories, such as gender binaries (men/women), because of their inability to account for the heterogeneity of sexuality and gender. Queer theory emphasizes that social worlds are diffuse, unspecific, ephemeral, and elusive (McGarry et al. 2021).
- **Intersectionality and marginalization:** The idea of intersectionality refers to the study of multiple dimensions of inequality, the rejection of single-axis analysis, and the development of ways to resist various forms of oppression (Grzanka 2014). Intersectionality highlights the interplay of multiple systems of oppression (such as racism, sexism, ageism, ableism) that affect the lives of marginalized individuals and groups.

research, we mobilize the works of feminist, activist, and queer scholar Sarah Ahmed (2006, 2012) to articulate how TD sustainability researchers can develop *transgressive orientations* when: 1. finding a way, 2. feeling at home, and 3. coexisting with others in their research practice. In the spirit of a provocation, we point out examples that allow for raising questions for the exploration of new research practices. We conclude by emphasizing the importance and potential to further develop interactions between TD sustainability research and queer theory.

Transformative, transdisciplinary, and transgressive research

A core aspiration of transformative approaches in sustainability research is to enable processes that create capacities and condi-

tions that empower individuals and communities to act on their own behalf (Vogel and O’Brien 2021). This aspiration necessitates recognizing the centrality of political agency to address the injustices and disproportional impacts that sustainability problems (from climate change to the loss of biodiversity) have on the most vulnerable and marginalized (Vogel and O’Brien 2021). TD sustainability research is one of the main assets of transformative research, both as a *research mode* and as a *way of being* (Rigolot 2020).

As a research mode, TD aims to overcome the fragmentation of methods and academic communities that makes it difficult to capture the complexity of unsustainability. TD sustainability research has provided new concepts and methods for conducting research on complex, real-world problems, including the integration of disciplinary and societal knowledge, and the facilitation of knowledge exchange with many stakeholders. As a way of being, TD becomes a mindset that “appears constantly and ubiquitously in real life” (Rigolot 2020, p. 4) and that grounds transformation processes in everyday researchers’ experiences.

TD in transformative research includes “a disruptive element that recognizes the many ways that most contemporary systems (e. g., social, economic, agricultural, and energy systems) are misaligned with equitable and sustainable development pathways” (Vogel and O’Brien 2021, p. 3). TD thus requires transgressing existing disciplinary, conceptual, and methodological frameworks, as well as identities, social norms, and personal boundaries or habits (Jahn et al. 2012). Transgression, though, is not always comfortable and may require learning how to be transgressive. Therefore, transformative research invites transgressive learning that “intentionally generates critical thinking and collective agency and praxis that directly and explicitly challenges those aspects of society that have become normalized, but which require challenging for substantive sustainability transformations to emerge” (Lotz-Sisitka et al. 2016, p. 51).

Similarly, queer theory is a diverse, transdisciplinary and transformative body of scholarship that maintains a “relation of resistance to whatever constitutes the normal” (Jagose 1996, p. 99) and embraces anti-normative, anti-categorical, and intersectional approaches (box 1). Queer theory invites to critically investigate the multiple dimensions of inequality and oppression that characterize social and academic systems as well as to develop transgressive ways to resist and challenge them.

In the following, we draw on literature from queer social sciences (Browne and Nash 2016, Ghaziani and Brim 2019) and from works that merge queer, feminist, environmental, and anticolonial research (Liboiron 2021, Russell 2021). Our approach resonates with those that have emphasized the role of feminism and the importance of focusing on gendered dimensions of TD research (Katz 2006). We align both with their critique of conventional societal and academic norms, and with their provisioning of alternative worldviews for sustainability science (Staffa et al. 2022). We use these alternative approaches to raise questions that may help to enhance the transgressive, and thus transformative, potential of TD in sustainability research.

Strengthening transgressive orientations in transdisciplinary sustainability research

Transgressive orientations are disorienting, question the alignment with existing norms, and usually compel one to find new ways of reconfiguring the entanglement of the bodily, the spatial, and the social. In *Queer phenomenology: Orientations, objects, others*, Ahmed conceptualizes orientations as related to “how we reside in space” (Ahmed 2006, p. 1), that is “how the bodily, the spatial, and the social are entangled” when people move in social spaces (Ahmed 2006, p. 181). Following Ahmed (2006, 2012), we look into the institutional and cultural dimensions of social spaces, rather than at their geographical and physical connotations. Such spaces are shaped by institutions and norms that determine what is normal and abnormal, natural and deviant, straight and oblique. Thus, different people can move differently in them depending, for example, on their race, sex, age, social status, class, and mental and physical disabilities (Ahmed 2006, 2012). Some can easily follow predefined lines. This is the case for white and cisgender people in predominantly white and cisgender academic environments, that have been shaped over time by their bodies, histories, and cultures. Others experience resistance and misalignment, such as when people of color or transgender people experience exclusion and dissonance because not aligned with the norm of being white and cisgender (Ahmed 2012).

Below, we extrapolate three meanings of “orientation” from Ahmed’s work and use them to define what we mean by *transgressive orientations* in TD sustainability research.

Transgressing when “finding a way”

A transgressive orientation refers to the process of following unconventional lines toward objects that enable one to take on different journeys and routes. In this respect, orientation “points to how one is placed in relation to objects, in the sense of the direction one has and takes towards those objects” (Ahmed 2006, p. 69). This is the case, for instance, when TD sustainability researchers orient their work towards sustainability transformations in academic cultures that do not praise collaboration with societal actors, or that see themselves as neutral knowledge providers (Fraude et al. 2021). The first way in which TD researchers can strengthen transgressive orientations is by queering the *objects* and, at the same time, the *directions* of their research.

Queering research objects: Ways of seeing

Research objects in sustainability research, such as a specific sustainability challenge under study (e.g., biodiversity loss in a specific ecosystem), are often defined in ways that do not leave space for alternative framings, such as those of the marginalized people who are most affected by these challenges (Vogel and O’Brien 2021). Research itself is usually defined by funders who pre-configure the research agenda through their own established framings and understanding of sustainability, such as the *Sustainable Development Goals* (Mölders 2019). Queering research objects implies learning how to move away from existing classifications and

acquiring new ways of perceiving what is often illegible within prevailing disciplinary and social schemas and perspectives.

Queering one’s way of understanding the sustainability challenges addressed requires asking, for instance: How can we critically interrogate dominant narratives used to frame sustainability challenges and that determine, among others, whose perspectives are valued or neglected? The Civic Laboratory for Environmental Action Research (CLEAR Lab), for example, shows the power of reframing dominant narratives around plastic pollution (Liboiron 2021). The lab reframes pollution as a colonial issue rather than as a technical problem as assumed by the conventional threshold model (Liboiron 2021). This shift brings land and human relationships to the center of the research process and actively involves Indigenous people into the research on plastic pollution on their own land.

Queering research directions: Methods and practices

Academic disciplines decide and give form to what counts as “normal”. Directions “take us somewhere by the very requirement that we follow a line that is drawn in advance” (Ahmed 2006, p. 16). Queering research directions implies reimagining and reinventing methods and practices outside of conventional disciplinary lines to pay attention to the ephemeral and transient aspects of situations, as well as to the microphysics of power.

Queering methods and practices in TD might mean asking, for example: How can I capture subtle interactions and dynamics of collaborative processes that elude more conventional methods? Methods used often in queer studies, such as microsociology and auto-ethnography (Ghaziani and Brim 2019), can help to capture interactions and dynamics at microscales that are relevant when designing and implementing a TD project, but that we often tend to oversee or fully neglect. Fields (2019), for instance, shows how these methods can enhance *participatory action research* involving marginalized actors in a jail, as they allow for reading bodily interactions, including sexual and erotic ones, and how they affect power-dynamics in a collaboration.

2 Transgressing when “feeling at home”

In another sense, orientation is about making the strange familiar when exploring and moving through social spaces. This cannot happen in the abstract, but depends on how people inhabit such spaces with their bodies (Ahmed 2006). Social spaces are not neutral as they are often designed for some bodies (white, male, cis-gender, able) rather than for others (black, indigent, people of color, women, transgender, neurodiverse, people with physical and mental disabilities) (Ahmed 2012). TD sustainability researchers can intensify their transgressive orientations by understanding how their own bodies, and those of others, inhabit and shape research environments and institutions.

Queering bodies: Embodied researchers

Queering bodies in research implies reflecting on researchers’ positionality with, among other things, their bodily and mental disabilities, or genders and sexualities. Feminist and queer the-



orists have shown that knowledge production rests on how bodies – of a particular age, race, ethnicity, gender, sex, and disabilities – move in places, contexts, and interactions. They invite considering the embodied nature of our interactions in research contexts.

Queering here would imply asking question that open the research space to the bodies, standpoints, and experiences of marginalized actors. This may imply asking: How can I care for and give visibility to people with disabilities in sustainability projects and initiatives? (Mölders 2019, Kosanic et al. 2022). For example, this would mean committing to reciprocity and care in research projects that impact and affect people with disabilities (such as climate adaptation projects about mobility). These projects tend to disregard the challenges that they often posit to people with physical impairments, so-called *ecoableism* (Bell et al. 2020). It is only by including people with disabilities in the design and implementation of adaptation strategies and actions that such projects can generate options that are truly inclusive and just for all.

Queering spaces: Non-neutrality of institutions

Inhabiting the non-neutral spaces of research from a queer perspective entails a commitment to learning how to deal with, and to potentially re-direct, the power dynamics and inequalities that such spaces tend to perpetrate (Ahmed 2012). As Liboiron (2021, p. 134) points out in *Pollution is Colonialism*: “Research and activism, scientific or otherwise, never happens on a blank slate. As a result, we are always caught up in the contradictions and injustices that already exist, that we have already identified as violent and in need of change”. It is thus a capacity to see and deal with such contradictions and injustices that is essential to create reflexive spaces in TD sustainability research (Fraude et al. 2021).

Queering institutions invites asking: How can I cultivate relationships while maneuvering institutional discrepancies in order to make academic institutions and spaces safe for all? TD scholarship has recognized that power can configure and distort relationships and influence integrative and inclusive processes (Fritz and Meinherz 2020), thus emphasizing the need to create *fecund spaces* where multiple paradigms, framings, and interests can be used (McGregor 2015). The idea of a *pluriversity* (as opposed to the university) offers an example of queering research spaces as communities that accommodate a plurality of unconventional knowledge and ways of knowing, at the intersection of academic research and social and environmental justice struggles that are intersectional, creative, and empathetic (McGarry et al. 2021). The *pluriversity* embodies a reflexive and evolving research practice that unleashes this plurality towards transgressive and transformative learning.

3 Transgressing as “co-existing with others”

Finally, orientations are embedded in and emerge through relationships with multiple others. Indeed, “orientation exceeds the objects they are directed towards becoming ways of inhabiting and co-existing in the world [with multiple others]” (Ahmed 2006,

p. 67). TD sustainability research has recognized the intrinsic relationality of participatory research and acknowledged the need to pay attention to mutual dependencies, responsibilities, and obligations towards practice partners or entire communities, with their divergent worldviews and value systems (Staffa et al. 2022). TD researchers can cultivate transgressive orientations by queering both the *relationships* with those involved, and the way they engage with *pluralism* as a basic principle of knowledge co-production.

Queering relationships through responsibilities

Queer theory has emphasized the need to creatively imagine and embody anti-normative lifestyles, ways of relating, and ways of generating alternative kinship models both with human and more-than-human others (McGarry et al. 2021). These range from non-heteronormative or non-binary queer families (which are not homonormative and do not follow conventional family models), to new ways of cultivating non-hierarchical relationships between teachers, students, and the environment (such as in educational settings; Russell 2021). The anti-normative relationality suggested by queer theory invites reflection on how to deal with responsibilities and obligations in TD research.

Queering relationships here may imply embracing responsibilities that come “from the admission of being in a relationship” (Liboiron 2021, p. 120) with the environment, the land, and the people involved in research. This means asking: How can I develop new ways of cultivating relationships based on my responsibility towards human and more-than-human subjects when engaging, for instance, with multiple stakeholders in a TD project? The *community peer review* process in the CLEAR Lab is an example of how to conduct TD research in ways that foreground responsibilities (Liboiron 2021). This process enables and empowers local communities to refute research results acknowledging the expertise of non-academic actors and making space for narratives often neglected in scientific research.

Queering pluralism through difference

According to queer theory, anti-normativity implies resistance and subversion from the standpoint of the identities and practices of queer people that are misaligned with taken for granted notions of what is normal or deviant (box 1). Anti-normativity invites embracing pluralism and difference, not bypassing issues of power, contestation, and historical legacies.

Queering pluralism in TD sustainability research implies being able to preserve difference even when dealing with perspectives that “cannot speak to one another, cannot be aligned or allied” (Liboiron 2021, p. 136). Attention to difference invites asking questions, such as: How can I develop capacities to work with multiple and often conflicting values, imaginaries, and knowledge systems? Also in this case, the *pluriversity* provides an example of how to imagine radically plural and intersectional departments (e.g., the Department of Intentional Paranoia) where humor and imagination inspire reflection and action based on the appreciation of others’ incommensurable worldviews.

Conclusions

Claiming an orientation towards just sustainability transformations implies a commitment to finding ways to navigate messy situations and, where relevant and appropriate, to transgress academic and societal norms built around disciplinary and non-transformation-oriented objectives. In this short piece, we follow an extended notion of orientation informed by Ahmed's work (2006, 2012) and suggest that TD sustainability researchers can learn from queer lives and theories how to enhance the potential of transgressive research. Our proposal to strengthen transgressive orientations in TD sustainability research through queer theory entails an invitation to ask critical questions about "how we do" research and "how we are" TD researchers. These questions foster reflection on how we embrace the oddity, disorientation, and discomfort that comes with the transgression of established norms. Critical questions invite learning from the histories and experiences of those who have resisted normalization, subverted hegemonic paradigms, and contributed to more just social and academic systems. Indeed, as queer theory is rooted in the subjective experiences of queer people, queering TD sustainability research implies a commitment to including, giving voice, and empowering queer and marginalized actors in TD spaces and institutions. These actors, with their histories of struggle and with their theories, have significant contributions to make in orienting research towards more just futures in times of interconnected social, political, and environmental crises.

Acknowledgement: For having inspired or discussed with us the main concepts and arguments of this piece, we are very thankful to: *Rebecca Freeth, Patrick Grzanka, Cameron Hu, Irene Iniesta-Arandia, Daniel Lang, Christopher Luederitz, Berta Martin-Lopez, Ely Merman, and Henrik von Wehrden*. We would like to thank two anonymous reviewers for their helpful comments.

Funding: This work received no external funding.

Competing interests: The authors declare no competing interests.

Author contribution: GC as primary author developed the main idea and arguments of the paper; he led the writing and revision process. CV as contributing author helped in the process of refining the arguments and in highlighting the relevance and connection of the piece to TD sustainability research.

References

- Ahmed, S. 2006. *Queer phenomenology: Orientations, objects, others*. New York: Duke University Press. <https://doi.org/10.1515/9780822388074>.
- Ahmed, S. 2012. *On being included: Racism and diversity in institutional life*. New York: Duke University Press. <https://doi.org/10.1515/9780822395324>.
- Bell, S. L., T. Tabe, S. Bell. 2020. Seeking a disability lens within climate change migration discourses, policies and practices. *Disability and Society* 35/4: 682–687. <https://doi.org/10.1080/09687599.2019.1655856>.
- Brand, U. 2016. "Transformation" as a new critical orthodoxy: The strategic use of the term "transformation" does not prevent multiple crises. *GAIA* 25/1: 23–27. <https://doi.org/10.14512/gaia.25.1.7>.
- Browne, K., C. Nash. 2016. *Queer methods and methodologies: Intersecting queer theories and social science research*. New York: Routledge. <https://doi.org/10.4324/9781315603223-1>.
- Fields, J. 2019. The racialized erotics of participatory research. In: *Imagining queer methods*. Edited by A. Ghaziani, M. Brim. New York: New York University Press. 63–83. <https://doi.org/10.18574/nyu/9781479808557.003.0006>.
- Fraude, C. et al. 2021. Creating space for reflection and dialogue. *GAIA* 30/3: 174–180. <https://doi.org/10.14512/gaia.30.3.9>.
- Fritz, L., F. Meinherz. 2020. Tracing power in transdisciplinary sustainability research: An exploration. *GAIA* 29/1: 41–51. <https://doi.org/10.14512/gaia.29.1.9>.
- Ghaziani, A., M. Brim (Eds.). 2019. *Imagining queer methods*. New York: New York University Press. <https://doi.org/10.18574/nyu/9781479808557.001.0001>.
- Grzanka, P. R. (Ed.). 2014. *Intersectionality: A foundations and frontiers reader*. Boulder: Westview. <https://doi.org/10.4324/9780429499692>.
- Jagose, A. 1996. *Queer theory: An introduction*. New York: New York University Press.
- Jahn, T., M. Bergmann, F. Keil. 2012. Transdisciplinarity: Between mainstreaming and marginalization. *Ecological Economics* 79: 1–10. <https://doi.org/10.1016/j.ecolecon.2012.04.017>.
- Katz, C. 2006. Gender und Nachhaltigkeit – neue Forschungsperspektiven. *GAIA* 15/3: 206–214. <https://doi.org/10.14512/gaia.15.3.17>.
- Kosanic, A., J. Petzold, B. Martín-López, M. Razanajatovo. 2022. An inclusive future: Disabled populations in the context of climate and environmental change. *Current Opinion in Environmental Sustainability* 55: 1–11. <https://doi.org/10.1016/j.cosust.2022.101159>.
- Liboiron, M. 2021. *Pollution is colonialism*. New York: Duke University Press. <https://doi.org/10.1515/9781478021445>.
- Lotz-Sisitka, H. et al. 2016. Co-designing research on transgressive learning in times of climate change. *Current Opinion in Environmental Sustainability* 20: 50–55. <https://doi.org/10.1016/j.cosust.2016.04.004>.
- McGarry, D. et al. 2021. The pluriversity for stuck humxns: A queer ecopedagogy & decolonial school. In: *Queer ecopedagogies: Explorations in nature, sexuality, and education*. Edited by J. Russell. New York: Springer. 183–218. https://doi.org/10.1007/978-3-030-65368-2_10.
- McGregor, S. L. T. 2015. Transdisciplinary knowledge creation. In: *Transdisciplinary professional learning and practice*. Edited by P. T. Gibbs. New York: Springer. 9–24. https://doi.org/10.1007/978-3-319-11590-0_2.
- Mölders, T. 2019. Rethinking gender: Feminist perspectives on sustainable development goals in the light of (re)productivity. *GAIA* 28/2: 95–99. <https://doi.org/10.14512/gaia.28.2.6>.
- Rigolot, C. 2020. Transdisciplinarity as a discipline and a way of being: Complementarities and creative tensions. *Humanities and Social Sciences Communications* 7/1: 1–5. <https://doi.org/10.1057/s41599-020-00598-5>.
- Russell, J. 2021. *Queer ecopedagogies: Explorations in nature, sexuality, and education*. New York: Springer. <https://doi.org/10.1007/978-3-030-65368-2>.
- Staffa, R. K., M. Riechers, B. Martín-Lopez. 2022. A feminist ethos for caring knowledge production in transdisciplinary sustainability science. *Sustainability Science* 17: 45–63. <https://doi.org/10.1007/s11625-021-01064-0>.
- Vogel, C., K. O'Brien. 2021. Getting to the heart of transformation. *Sustainability Science* 17: 653–659. <https://doi.org/10.1007/s11625-021-01016-8>.



Guido Caniglia

PhD in philosophy (University of Florence, IT), PhD in biology (Arizona State University, US). Since November 2018, scientific director of the Konrad Lorenz Institute for Evolution and Cognition Research, Klosterneuburg, AT. Research interests: epistemology and ethics of inter- and transdisciplinary sustainability science; diversity and inclusion in sustainability education and research institutions; evolutionary theories for sustainability science. Member of GAIA's Scientific Advisory Board.



Coleen Vogel

PhD in geography and environmental studies (University of the Witwatersrand, Johannesburg, ZA). Since 2015, Distinguished Professor at the University of the Witwatersrand where she previously also worked since 1983. Nobel Peace Prize (together with other scientists) for her contribution to IPCC's 4th Assessment Report 2007. Currently, chapter lead author for the *Transformations Assessment* of IPBES (Chapter 4). Research interests: using climate information and transdisciplinary research approaches for risk assessment; city climate change adaptation and decision making, youth agency and capacity enhancement; teaching and mentoring.