Sustainability accounting as a wicked problem

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Abstract
This article examines sustainability accounting (SA) in a French international construction company, viewing it through the frame of being a wicked problem. Sustainability accounting literature often assumes that reporting is a matter of institutional will. It presumes that the necessary key performance indicators (KPIs) already exist, and environmental impact can be measured with confidence. Accuracy, balance, clarity, comparability, reliability, stakeholder inclusiveness, and timeliness are all assumed to be realizable. However, the ethnographic research presented here reveals a very different picture. None of the key criteria were met. The necessary measurement tools were fallible, key definitions were controversial, and making a convincing instrumental or technical choice between relative and absolute accountability was impossible. The failures of sustainability accounting are not attributed to corporate unwillingness or greenwashing. Instead, they are a result of an inability to recognize measurement as a wicked problem. While the wicked problem as a concept is well explained in the literature, ethnographic applications are rare. Therefore, this study makes an additional contribution by demonstrating how the wicked problem concept can be used to frame real-life issues. In conclusion, we ask the question: Has the sustainability accounting literature misrepresented the challenges, ignored the pragmatics of having to deal with wicked problems, and thus failed to be sufficiently accountable itself?

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Introduction

The concept of wicked problems, introduced by Horst Rittel and Melvin Webber,[1] has gained significant traction in various fields, including policy, design, and management. Wicked problems are complex, ill-defined, and resistant to clear solutions due to their interconnectedness with other issues, the involvement of multiple stakeholders, and the presence of competing values and objectives.[2]

However, the concept of wicked problems has faced criticism and calls for further refinement.[3] For instance, Udo Pesch and Pieter Vermaas revisited Rittel and Webber's original dilemmas and argued for a more nuanced understanding of the wickedness concept, considering advancements in design theory and practice.[4]

In the field of sustainability accounting (SA) and reporting, wicked problems appear as complex sustainability challenges that organizations must address.[5] Sustainability accounting researchers have emphasized the need for innovative approaches to corporate accounting and reporting that more effectively capture and communicate an organization's sustainability performance and impacts.[6]

The concept of wicked problems provides a valuable lens for understanding the challenges organizations face when addressing sustainability issues. Sustainability accounting researchers play a crucial role in engaging with organizations, developing innovative accounting and reporting frameworks, and resolving sustainability-focused wicked problems.

This article can be read in two ways: one from right to left and another from left to right. When read from right to left, it presents an ethnographic examination of a case study of sustainability accounting in a French multinational building company, revealing sustainability accounting as a wicked problem. Conversely, when read from left to right, the article explores the category or label of a wicked problem and tests its rigor when applied to practice. Our research and writing were approached from the right-to-left perspective. The fieldwork was not intended to test the strength of the wicked problem concept but to clarify the elusive nature of sustainability accounting. The ethnographer experienced sustainability accounting as a source of biased criteria, results, and conclusions, none of which seemed to fulfill the intended purpose. Reporting was required, but reports seemed loosely connected with the sustainable actions on construction sites involved. Every time the research participant-observer at corporate headquarters tried to implement sustainability accounting, they met with opposition, resistance, and even anger from subsidiaries. The problem did not appear to be a lack of concern for sustainability but a total disbelief in the measures and tools being used. Thus, the paradox of sustainability accounting was that the means were frustrating the intended aims.

For those wanting to read the article from right to left, it can be understood as a test case for implementing the somewhat controversial concept of a wicked problem. On this level, we have applied all ten proposed criteria for the concept, which led us to an explanatory success. Instead of focusing on a theoretical dissection of the wicked problem concept, as in most articles, we have used it as a heuristic to examine practice. We are convinced that the concept has proven its use in this role.

1 Horst W. J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4, no. 2 (1973): 155–69, https://www.jstor.org/stable/4531523.

2 J. Alford and B. W. Head, "Wicked and Less Wicked Problems: A Typology and a Contingency Framework," *Policy and Society* 36, no. 3 (2017): 397–413, https://doi.org/10.1080/14494035.2017.1361634; Rittel and Webber, "Dilemmas in a General Theory of Planning."

3 Mirko Noordegraaf et al., "Weaknesses of Wickedness: A Critical Perspective on Wickedness Theory," *Policy & Society* 38, no. 2 (2019): 278–97, https://doi.org/10.1080/14494035.2019.1617970 ; Udo Pesch and Pieter E. Vermaas, "The Wickedness of Rittel and Webber's Dilemmas," *Administration & Society* 52, no. 6 (2020): 960–79, https://doi.org/10.1177/0095399720934010; Catrien J. A. M. Termeer, Art Dewulf, and Robbert Biesbroek, "A Critical Assessment of the Wicked Problem Concept: Relevance and Usefulness for Policy Science and Practice," *Policy & Society* 38, no. 2 (2019): 167–79, https://doi.org/10.1080/14494035.2019.1617971; Nick Turnbull and Robert Hoppe, "Problematizing 'Wickedness': A Critique of the Wicked Problems Concept," *Policy & Society* 38, no. 2 (2019): 315–37, https://doi.org/10.1080/14494035.2018.1488796.

4 Readers who are not familiar with the wicked problems concept may want to read the Wicked Problems section first, where we restate and apply the ten basic tenets to the original Rittel and Webber's article. Also see Richard Buchanan, "Systems Thinking and Design Thinking: The Search for Principles in the World We Are Making," *She Ji: The Journal of Design, Economics, and Innovation* 5, no. 2 (2019): 85–104, https://doi.org/10.1016/j.sheji.2019.04.001; Pieter E. Vermaas and Stéphane Vial, eds., *Advancement in the Philosophy of Design* (Cham: Springer, 2018).

5 Stefan Schaltegger, Igor Álvarez Etxeberria, and Eduardo Ortas, "Innovating Corporate Accounting and Reporting for Sustainability — Attributes and Challenges," *Sustainable Development* 25, no. 2 (2017): 113–22, https://doi.org/10.1002/sd.1666.

6 Rob Gray, "Towards an Ecological Accounting," in *Intrinsic Capability: Implementing Intrinsic Sustainable Development for an Ecological Cibilisation*, ed. Frank Birkin and Thomas Polesie (London: World Scientific, 2017), 53–69, https://

We begin by situating the discussion of Sustainable Accounting, move on to our ethnographic examination of a case of sustainability accounting engagement, and conclude with the identification and application of the wicked problem descriptor. Discussion of sustainability accounting is often ideological.[7] Gray argues that serious ecological awareness is incompatible with relegating environmental factors to "externalities."[8] He claims that the logic of maximizing economic growth, even when it includes efforts to preserve natural resources, does not lead to genuine sustainability.[9] Such debates do not form the crux of this paper. Regardless of their ideological positions on sustainability, the participants in the construction company studied here were overwhelmed by their technical powerlessness to deliver sustainability accounting. The problem was not institutional pushback or corporate unwillingness — it was a sheer inability to create satisfying accounts. The necessary techniques were not mature enough. The required key performance indicators (KPIs) were neither self-evident nor operationalizable. We illustrate the current reality of sustainability accounting by comparing it to the famous elephant metaphor, where various people touch different parts of the animal and report that it is a snake, a tree trunk, and so on. The actors we studied lacked the necessary overview and tools. They realized how incomplete their findings really were, making sustainability accounting tremendously stressful for them.

From September 2018 to June 2022, the ethnographic researcher served as a participant observer at a major French international construction company. During this time, he worked as a corporate and social responsibility (CSR) official focused on environmental accounting. He set out to understand "how things worked."[10] While the accounting literature has become more receptive to ethnographic studies,[11] more engaging research is needed to understand how nonfinancial reporting (NFR) is faring.[12] Ethnographic and autoethnographic methods have been proposed as valuable tools for studying complex organizational phenomena, including sustainability accounting practices.[13] These approaches can provide rich, contextualized insights into how organizations navigate the wicked problems associated with sustainability. They can also inform the development of more effective sustainability accounting and reporting frameworks.[14] By engaging with organizations and stakeholders, sustainability accounting researchers can contribute to the development of innovative solutions to wicked sustainability problems, while also advancing the critical accounting project.[15] This requires a pragmatic approach that balances critique with engagement and seeks to create meaningful change in organizational practices and societal outcomes.[16]

Our ethnographic study, with the ethnographer as the central nonfinancial reporting coordinator, reveals the tensions and dynamics involved in the *in situ* creation of sustainability accounts.[17] During the research period, the researcher spent four days a week at the construction company. His insider position afforded him privileged access to internal stakeholders engaged in nonfinancial reporting, which is quite rare in management literature, although some studies exist.[18] During his fieldwork, he kept a logbook of his observations, conducted twenty formal interviews, recorded and transcribed numerous meetings, and had copious informal contacts. His familiarity and insider position allowed him to question interviewees about organizational

doi.org/10.1142/9789813225589_0005; Leonardo Rinaldi, "Accounting for Sustainability Governance: The Enabling Role of Social and Environmental Accountability Research," *Social and Environmental Accountability Journal* 39, no. 1 (2019): 1–22, https://doi.org/10.1080/0969160X.2019.1578675; Stefan Schaltegger and Roger L. Burritt, "Sustainability Accounting for Companies: Catchphrase or Decision Support for Business Leaders?," *Journal of World Business* 45, no. 4 (2010): 375–84, https://doi.org/10.1016/j.jwb.2009.08.002; Stefan Schaltegger and Marcus Wagner, "Integrative Management of Sustainability Performance, Measurement and Reporting," *International Journal of Accounting, Auditing and Performance Evaluation* 3, no. 1 (2006): 1–19, https://doi.org/10.1504/IJAAPE.2006.010098.

7 See, for instance, in Rob Gray's work. Rob Gray, "Accounting and Environmentalism: An Exploration of the Challenge of Gently Accounting for Accountability, Transparency and Sustainability," *Accounting, Organizations and Society* 17, no. 5 (1992): 399–425, https://doi.org/10.1016/0361-3682(92)90038-T; R. H. Gray, "Corporate Reporting for Sustainable Development: Accounting for Sustainability in 2000 AD," *Environmental Values* 3, no. 1 (1994): 17–45, https://www.jstor.org/stable/30301373; Rob Gray, "The Social Accounting Project and *Accounting Organizations and Society* Privileging Engagement, Imaginings, New Accountings and Pragmatism over Critique?," *Accounting, Organizations and Society* 27, no. 7 (2002): 687–708, https://doi.org/10.1016/S0361-3682(00)00003-9; Rob Gray, "Social, Environmental and Sustainability Reporting and Organisational Value Creation? Whose Value? Whose Creation?," *Accounting, Auditing and Accountability Journal* 19, no. 6 (2006): 793–819, https://doi.org/10.1108/09513570610709872; Gray, "Towards an Ecological Accounting"; Rob Gray, Carol Adams, and David Owen, "Social and Environmental Accounting and the Critical Accounting Project(s): In Search of Creative Tension?," in *The Routledge Companion of Critical Accounting*, ed. Robin Roslender (New York: Routledge, 2017), 241–57; Rob Gray and Jan Bebbington, "Environmental Accounting, Managerialism and Sustainability: Is the Planet Safe in the Hands of Business and Accounting?," in *Advances in Environmental Accounting & Management*, vol. 1 (Plymouth, UK: Emerald Group, 2000), 1–44, https://doi.org/10.1016/

S1479-3598(00)01004-9; Rob Gray and Markus Milne, "Sustainability Reporting: Who's Kidding Whom?," *Chartered Accountants Journal of New Zealand* 81, no. 6 (2002): 66–70.

8 Rob Gray, "Back to Basics: What Do We Mean by Environmental (and Social) Accounting and What Is It For? — A Reaction to Thornton," *Critical Perspectives on Accounting* 24 no. 6 (2013): 459–68, https://doi.org/10.1016/j.cpa.2013.04.005.

9 Ibid.

10 Tony J. Watson, "Ethnography, Reality, and Truth: The Vital Need for Studies of 'How Things Work' in Organizations and Management," *Journal of Management Studies* 48, no. 1 (2011): 202–17, https://doi.org/10.1111/j.1467-6486.2010.00979.x.

11 Colin Dey, "Methodological Issues: The Use of Critical Ethnography as an Active Research Methodology," *Accounting, Auditing and Accountability Journal* 15, no. 1 (2002): 106–21, https://doi.org/10.1108/09513570210418923; Lee D. Parker, "Participant Observation at the Coalface," in *The Routledge Companion to Qualitative Accounting Research Methods*, ed. Zahirul Hoque, Lee D. Parker, and Kathryn Haynes (London: Routledge, 2017), 339–53.

12 Carol A. Adams and Carlos Larrinaga, "Progress: Engaging with Organisations in Pursuit of Improved Sustainability Accounting and Performance," *Accounting, Auditing and Accountability Journal* 32, no. 8 (2019): 2367–94, https://doi.org/10.1108/AAAJ-03-2018-3399.

13 Dey, "Methodological Issues"; Perley-Ann Friedman, Lorraine Dyke, and Steven A. Murphy, "Expatriate Adjustment from the Inside Out: An Autoethnographic Account," *The International Journal of Human Resource Management* 20, no. 2 (2009): 252–68, https://doi.org/10.1080/09585190802670524; Jean François Lalonde, "Cultural Determinants of Arab Entrepreneurship: An Ethnographic Perspective," *Journal of Enterprising Communities: People and Places in the Global Economy* 7, no. 3 (2013): 213–32, https://doi.org/10.1108/JEC-01-2012-0007; Parker, "Participant Observation"; Watson, "Ethnography, Reality, and Truth."

14 Adams and Larrinaga, "Progress: Engaging with Organisations"; Carol A. Adams and Patty McNicholas, "Making a Difference: Sustainability Reporting, Accountability, and Organisational Change," *Accounting, Auditing and Accountability Journal* 20, no. 3 (2007): 382–402, https://doi.org/10.1108/09513570710748553; Gray et al., "Social and Environmental Accounting"; Matias Laine, Helen Tregidga, and

tensions and workplace issues. His legitimacy was evident from the nickname he received: "the NFR expert." Practices were closely observed, and the conversations with operational staff were candid. Drawing on John van Maanen, the emphasis here will be on "second-order" content, defined as the "interpretation of interpretations" as derived from the "first-order" content (interpretations and observations).[19] The data are not mere givens — they center on the interpretations of the key informant within the specific context. In the following section, we present a condensed overview of what two key actors engaged in sustainability accounting revealed about their tasks. The two testimonials provide insight into the intricacies of sustainability accounting from the perspective of the different organizational levels and forms of expertise. We aim to present the empirical puzzle managers face to the reader. We chose a discursive account format to make it explicit that research is always made from individual perspectives. Next, we examine sustainability accounting in our ethnographic account as an object that resists successful design. Then, we analyze sustainability accounting in the construction company as a wicked problem. Finally, we discuss the consequences of our approach and study.

Doing Sustainability Accounting

As an ethnographer in a major French international construction company, the researcher aimed to understand what sustainability accounting meant to practitioners as a daily struggle, rather than what it should or ought to be. Below, condensed and translated from French, are the testimonies of two managers explaining their perspectives to the ethnographer: (i) a senior sustainability accounting official from parent company headquarters, and (ii) an expert in carbon accounting at a subsidiary company.

Key Informant 1 (from parent company headquarters):

I am responsible for consolidating various extra-financial reports from our subsidiaries and drafting the Nonfinancial Performance Declaration (NFRD) for the financial markets and media. Recipients frequently ask irrelevant questions about minor variations in the carbon footprint. These questions are irrelevant, as the variations are unexplainable. To avoid further confusion and uninformed scrutiny, we no longer specify whether CO_2 emission reduction targets are absolute (i.e., based on overall corporate results) or intensity-based (i.e., relative to specific initiatives and factors). To be honest, one rating agency even asked us to withdraw these clarifications (whether figures are relative or absolute) despite their importance as a decisive methodological element. We might reduce our intensity (for instance, by using less polluting concrete), but our total emissions may still rise (for example, due to an increase in projects). Without making this distinction, the representations can be misleading.

We are not required to base annual statements on real data — it is not a regulatory requirement. The overall trends matter most. However, when you consolidate everything at the parent company level, explaining these trends becomes challenging. We must present the figures in a way that discourages people from focusing on year-to-year carbon footprint variations.

Jeffrey Unerman, eds., *Sustainability Accounting and Accountability* (Abingdon, OX: Routledge, 2022).

15 Gray, "Social Accounting Project"; Gray et al., "Social and Environmental Accounting"; Glen Lehman, "The Language of Environmental and Social Accounting Research: The Expression of Beauty and Truth," *Critical Perspectives on Accounting* 44 (May 2017): 30–41, https://doi.org/10.1016/j.cpa.2016.11.005.

16 Gray, "Social, Environmental and Sustainability Reporting"; Karen Maas, Stefan Schaltegger, and Nathalie Crutzen, "Integrating Corporate Sustainability Assessment, Management Accounting, Control, and Reporting," *Journal of Cleaner Production* 136 (November 2016): 237–48, https://doi.org/10.1016/j.jclepro.2016.05.008; Stefan Schaltegger, Martin Bennett, and Roger Burritt, eds., *Sustainability Accounting and Reporting* (Dordrecht, NL: Springer, 2006).

17 Adams and McNicholas, "Making a Difference."

18 Friedman et al., "Expatriate Adjustment from the Inside Out"; Lalonde, "Cultural Determinants of Arab Entrepreneurship." –

19 John van Maanen, "Reclaiming Qualitative Methods for Organizational Research: A Preface," *Administrative Science Quarterly* 24, no. 4 (1979): 540–41, https://doi.org/10.2307/2392358.

Construction projects are almost always multi-year undertakings. To see real trends, this must be taken into account. The aim is to address the big pollution contributions, not to focus on short-term variations. A journalist said to me the other day, "Why has the carbon footprint dropped by five percent?" I wanted to explain what a carbon footprint really is and that the level of uncertainty involved makes his question irrelevant. Such a level of variation does not mean anything, and we cannot explain it. Maybe the government agencies just changed an emissions factor or revised the methodology. It is not like a financial tool—you cannot analyze all the variations. Every time we try, we end up with explanations based on methodological effects: someone has changed this or that. This is why we have chosen to present the figures as a proportion of each business unit within the Group, rather than presenting the emissions in absolute terms.

Key Informant 2 (carbon accounting expert at subsidiary company):

[We (the researchers) have synthesized his testimony into a single statement.] There has been a carbon strategy in place since 2016, with a twenty percent reduction target by 2030 compared with 2015. The strategy has focused on measuring the emissions avoided through virtuous actions. The carbon balance sheet gives us an overview of the main sources of emissions. Taking stock is fine, but it does not allow us to monitor our carbon performance or measure the effectiveness of the virtuous actions implemented to reduce emissions. Therefore, a different measurement method was required to convert virtuous actions into the equivalent of tons of CO_2 emissions avoided. The business units must report the actions they have implemented to reduce the carbon footprint, allowing us to calculate the emissions avoided. However, the process is very cumbersome. For instance, if you chose to pour low-carbon concrete instead of traditional concrete, you must calculate how many tons of CO_2 this action has avoided. However, there are potentially many other actions that are not reported due to a lack of data. Investor-led pressure effectively demanded a new carbon strategy because we had not achieved our objectives. We needed a cross-functional approach involving the purchasing department, the equipment department (which manages the machines used on the sites), and the engineering and technical departments. We already have a few flagship actions, such as wood construction and low-carbon concrete. We are now focusing less on directly quantifying emissions and more on monitoring flagship actions using the indicators as levers for action. We have defined around forty actions that make up the new climate strategy, and I am currently preparing the scorecard to monitor these actions. To get to the heart of the matter, you must track one hundred percent of your energy consumption. Therefore, we are deploying a wide range of measuring equipment to monitor energy consumption in real-time for all our projects. Regarding carbon, we know that focusing solely on the available carbon data is not very effective, because you are so dependent on your suppliers. However, there are plenty of virtuous actions you can implement. We realize that understanding carbon accounting is a challenge. For instance, purchasing is organized into categories. There is an exterior joinery category, a cables category, and so on. Purchasing

specializes in choosing suppliers and products to be used on projects. We asked them to assess the carbon footprints involved, but for certain categories, the necessary data is unavailable, making it impossible. Our vision is, "Okay, your data is limited, but that does not prevent you from taking action with your suppliers." You can achieve some quick wins right now. For instance, you know that if you push your supplier to use a higher share of recycled steel, it will be less carbon-intensive, even if you do not have the data to quantify it. Your carbon figure isn't a financial figure; it can change at any time. Unlike a financial figure, which is factual and final, a carbon figure requires complex justification. Each time you produce a figure, you must explain how you created it and the degrees of uncertainty involved. There is no common standard or "thermometer." For example, consider cables, where no emission factors are available. Even if the cost and volume are the same, carbon footprints will vary depending on the materials and processes used in manufacture. However, you cannot compare a change in emissions from cables with an emission figure for concrete. The measures lack similar potential exactitude. Furthermore, each time you use carbon data, the emission factor may apply to the entire lifecycle of a building or just one part.

If you are asked to model the electrification of our vehicle fleet, you can assume that the entire fleet is electric and compare current consumption with combustion vehicles. A green vehicle produces sixty grams of CO_2 per kilometer, and you can calculate it. However, for the figure to be meaningful, you must also consider the emissions of the vehicle manufacturer. You cannot just compare the emissions per kilometer of a petrol vehicle versus an electric vehicle. You must know the vehicle's weight, range, battery type, and so on. Your modeling can potentially reflect anything, depending on what you include or exclude. For instance, you might consider a ten-year use versus a twenty-year use.

The crux of the matter is that carbon accounting is constantly evolving as emission factors change. Suppliers update their processes or replace default values with real values. In carbon accounting, assumptions and parameters considered or ignored are more significant than hard given facts. We used to work with the Pareto principle (eighty percent of results come from twenty percent of the causes). We would tell project teams, "You fill in this list of materials, and since this list covers eighty percent of a building footprint, I can fill in the ratios and obtain a certain value." The methodology produced a fairly reliable value and allowed year-to-year comparisons, since we were consistently using the same method. But if you want to compare the carbon footprint with a building constructed by a competitor, it is impossible. The orders of magnitude, methodology, and emission factors will differ. For example, if one company measures business travel in kilometers and another in liters, the comparison is meaningless. Similarly, if one company calculates fixed assets over ten years and another over five years, the data is incompatible. We could determine if we have improved, but our measure was unique to us and incomparable to other data.

We were tasked with reducing our carbon footprint by thirty percent as part of the climate strategy objective, but minus thirty percent of what? With the latest regulations, there will be numerous new calculation methods and different definitions of emission factors. It will not be possible to keep 2019

as our reference year — we will have to recalculate the reference year. Minus thirty percent means nothing. You just need to change your method, to achieve minus thirty percent in Scope 1 (your direct activity) and Scope 2 (energy consumption). In one instance, we shifted part of the emissions from Scope 2 to Scope 3 (purchased materials and work contracted from third parties) because, contractually, we were not responsible. Consequently, all the emissions linked to fuel, which were enormous, moved into Scope 3. In fact, all the trade federations that have tried to establish sectoral carbon trajectories have failed. It is mission impossible because it depends on how much you allocate to Scope 1 and 2 versus Scope 3. Nobody counts in the same way, so you cannot compare companies with each other. We had to come up with a target, but it could have been less than seventy percent — it would not have made any difference. An objective must be SMART — specific, measurable, achievable, relevant, and time-bound (i.e., measurable over time). The minus thirty percent is purely arbitrary. No one on the ground had any input in target setting. I do not even know how it was decided. Top management decides without justification or consulting their own experts. We can model our way to minus thirty percent, but when we commit to reducing our energy consumption, we are committing to a figure that does not exist. For me, the minus thirty percent means absolutely nothing [*he smiles without saying more*].

Basically, to make sense, carbon accounting must be reliable, sustainable, and stable. You must get away from the carbon footprint and the idea of an absolute reduction. Instead, measure targeted virtuous actions. This way, you completely separate your strategy from your carbon footprint, but at least it is clear. You need to count in qualitative terms. You can determine what percentage of your vehicles are green without having the carbon footprint of your fleet. You may think, "I have this obligation to measure my CO2 emissions, so I will quantify the effect of my actions on the carbon footprint, and my actions will show up in the carbon footprint measurement." However, if you cannot measure the carbon footprint of your company or projects, you will not actually see the effects of your efforts!

Of course, it is important to push suppliers to provide environmental data on their products — I'm not saying otherwise. However, the most important thing is taking virtuous actions. We can find indicators to measure performance qualitatively rather than quantitatively. We can ask our project managers:

> "What are your levers? What do you have the capacity to do? You can influence your suppliers by including carbon criteria in their selection, motivating them to propose product variants, make other freight arrangements, or improve the performance of their plant. You can track the number of suppliers committed to a low-carbon approach, such as the number of sites that have implemented a specific variant in line with our specifications, or the use of recycled sheathing on cables, and so on. However, if your recycled sheathing comes from Turkmenistan and must make it all the way to France, it might not be any better."

We are evolving to focus on action levers. We meet with all the buyers and ask them what concrete actions they can take. Reliable means accepting

at least twenty percent uncertainty. The lack of data does not prevent action—that is the crucial thing.

Sustainability Accounting

Stefan Schaltegger and Roger Buritt, in a critical and slightly cynical commentary on sustainability accounting, suggested that it could be viewed in several ways: (i) an empty buzzword blurring the debate; (ii) a broad umbrella term encompassing existing accounting approaches dealing with environmental and social issues; (iii) an overarching measurement and information management concept for calculating corporate sustainability; or (iv) a pragmatic, goal-driven, stakeholder engagement process aimed at developing a company-specific and differentiated set of tools for measuring and managing environmental, social, and economic aspects, as well as the links between them.[20]

This approach suggests that sustainability accounting involves representing, to varying degrees of success, a company's sustainability performance as a dimension of corporate performance in support of decision-making. Recognizing the existence of this "object" leads to a technical approach, which extends current managerial accounting and control practices to include social and environmental issues.

Conversely, the two accounts above illustrate the challenges managers face in giving accounts on sustainability, especially when the relational and relative dimensions of the accounting are neglected. The managers experienced frustration in failing to provide the comparable and auditable accounts requested by their superiors and shareholders. *Transparent* or *direct* accounts of sustainability could not be produced because sustainability is multifaceted, and its meaning varies depending on the parties involved, the accounting relationships chosen, and the various ends in view (or hidden). There is no such thing as a transparent or self-evident given performance.

Sustainability Accounting Correlates with Relative Accountability

In our case, triple-bottom-line accounting was clearly not intended. Traditional economics—management or financial accounting—was not in play. Nor was social accounting, as corporate responsibility for social conditions our focus. Sustainability accounting is here examined through environmental accounting, and the material we have provided was limited to carbon accounting. In our empirical material, there is a comment (not quoted) where the researcher questions whether the company should bid to build an amusement park in Qatar, as it would be an air-conditioned energy-consuming monster. But he expresses his concern as a rhetorical question and does not mention worker conditions or human rights infringements. The social significance of the construction industry was just not attended to here. Since the construction industry is one of the largest emitters of greenhouse gases, the focus seems relevant and defendable. The emissions come mainly from the materials used in construction and the energy consumed during the building process. The construction company depends on its suppliers to provide low-carbon materials. In addition to contributing to global warming, the

20 Schaltegger and Burritt, "Sustainability Accounting for Companies."

21 Laine et al., *Sustainability Accounting and Accountability*.

construction significantly impacts biodiversity, waste production, and water scarcity. These effects are related to choices made during the commercial and design phases. Spreading the reporting over the entire duration of the project complicates accounting and action, as many players are involved at different stages. Most of the time, sustainability accounting is reduced to quantifying impacts in terms of physical flow (tons of CO_2, tons of waste, cubic meters of water). Such quantification does not easily lead to action because it does not indicate what steps could be taken. Even in the actual act of construction, the focus is very limited. The key informants realize and state that how a building is used is crucial to its sustainability, and how the building will be experienced is important to how it will be used. Buildings have physical and symbolic characteristics. The potential importance of how a building is experienced, used, and even popularly imagined is not explored in the ethnographic accounts as part of understanding sustainability.

To illustrate the complexity, we refer to a real building rather than to tons of concrete. The Rem Koolhaas Netherlands Dance Theatre, built in 1987 in The Hague, was demolished in 2015. It had a very different carbon footprint from the Zuiderstrandtheater (2014–2023), which temporarily replaced it while the new Amare theatre complex was being built. The Zuiderstrandtheatre was designed to be constructed, dismantled, and reconstructed elsewhere (in Oss). The original Netherlands Dance Theatre was architecturally brilliant and also cost-effective, being constructed for eight million euros using very economical materials. However, the local government wanted a massive signature building rather than a playful postmodern one. Symbolic issues of self-importance, prestige, and municipal identity determined the fate of the Netherlands Dance Theatre building, not sustainability. Notably, the new Amare theater has a large carbon footprint and cost 240 million euros to build. Circular construction clearly remains the exception rather than the rule. How the identity of a building is made, redefined, and implemented may have a greater environmental impact than the construction process itself. Sustainable buildings may not always correlate with sustainable construction.

Broad definitions of sustainability accounting require us to consider accountability, stakeholders, materiality, and externalities.[21] However, our field accounts show that in practice, actions can only focus on relative interventions, not absolute ones.

Four Problems for Sustainability Accounting

We must address four key problems:

Problem (i): Accountability is to whom or to what, and in what measure? Accountability is defined by governments and top management with little or no connection to the operational level. Reductions in carbon footprint can become very biased when there are no trustworthy measures. Current specifications, for instance, into Scopes 1, 2, and 3, enable fantasy bookkeeping. The construction industry is organized into distinctly separate design and execution stages. This separation often leads to the abandonment of less carbon-intensive alternatives chosen during the design phase due to uncertainties arising during execution. However, the carbon footprint is often measured based on the plan rather than actual on-site activities. Data for what is done

on-site is frequently unavailable. Efforts are underway to measure real (rather than estimated) project emissions, but there is still insufficient historical data to understand the significance of the differences between design and actual construction.

Accountability requires creating appropriate accounts in response to the relevant themes involved.[22] However, for instance, accounts of waste disposal at construction sites often neglect local context, such as the organization of waste management and available waste treatment facilities. There is an almost total disconnect between daily construction practices and the conceptualizations of accountability. The implications of on-site waste production are unclear to site managers. When photos of wild dumping and irresponsible waste disposal were shown to site management, and they were asked whether they were responsible for the blight, it led to a better understanding and improved actions. However, this was an entirely qualitative intervention, which was significant and important but divorced from official goals, figures, and reporting.

Connecting sustainability accounting with on-the-ground operations is a challenge for practice. Sustainability accounting relies on comparability and stability, while on-the-ground operations constantly face unique and emergent conditions, as no two building projects are ever the same. Bringing sustainability accounting closer to real practice requires a change in approach to norms. Viewing a norm as a target to be reached often overlooks or minimizes emergent factors and the realities of the construction site. A deviation from the norm can be more productive if seen as a hint for investigation and a trigger for accountability. Such a gap is not necessarily a failure (if unfavorable) or a success (if favorable), but rather a warning and a call to investigate the reasons behind the gap and relevance of the norm. This approach requires allocating more resources to interactive control.[23]

Problem (ii): Who are the stakeholders of a construction firm, or perhaps more accurately, who are not their stakeholders? Our accounts highlight differences in construction practices between Poland and France. There is significantly more bureaucratic government control and a longer tradition of environmental concern in France. Does this mean that the higher French norms should be applied to the Polish subsidiary? And is such a policy feasible in terms of cost and social impact? Furthermore, the company has projects in the Ivory Coast, where environmental awareness and control are minimal. When the head office imposed carbon footprint demands on the Ivory Coast subsidiary, they were accused of being (neo-)colonial. Furthermore, stakeholder feedback often reaches the firm only through the press and is perceived as ill-informed. The stakeholder dialogue is, at best, underdeveloped and, at worst, ineffective and counterproductive. This highlights the need to pluralize accounting, enabling the co-existence of multiple performance accounts and the inclusion of various voices in the corporate report. This entails a risk of discord, but also increases the need for stakeholder accountability, as each narrative must be justified and the reasons for favoring one over another must be explained.

Problem (iii): Materiality is crucial, meaning it is important to focus on the continued economic ability of the company to function. Carbon footprint

22 Gray, "Towards an Ecological Accounting"; Gray and Bebbington, "Environmental Accounting"; Gray et al., "Social and Environmental Accounting"; Gray and Milne, "Sustainability Reporting."

23 Interactive control is characterized by the manager's strong and direct involvement in the management control process. This control lever involves a systematic and regular review of changing information identified as potentially strategic by the entire hierarchical line during face-to-face discussions and debates. These discussions should lead to debates on data, hypotheses, and action plans. See Robert A. Simons, "Control in an Age of Empowerment," *Harvard Business Review* 73, no 2 (1995): 80–88, https://hbr.org/1995/03/control-in-an-age-of-empowerment.

and broader sustainability accountability issues have not yet directly affected corporate materiality. There is a risk of delegitimizing the construction industry in general—and this company in particular—as it is a very large international player relying on a global value chain. Climate change threatens current building practices. However, climate change presents a business opportunity, as the transition requires building infrastructure, such as public transport and nuclear power stations. However, construction is now one of the sectors that emit the most CO_2. Investors are critical of their potential risk positions, but in general, the building industry is defined as potentially sustainable.[24] Showing that the sector can be genuinely sustainable is rapidly becoming a business necessity. However, defending raw material choices, energy use and material sourcing, and waste disposal is very limited, as these are embedded in a global value chain with customers and suppliers beyond the control of the company.

There is no clarity about the lifespan or future use of what is built. Building requires material extraction, manufacturing, distribution, and waste disposal. The supply chain is complex, vast, and lacks transparency. As materiality impacts the figures, monetization becomes an issue. Should and can sustainability accounting be monetized? Can the key parameters be expressed in quantitative financial terms? We think that there is currently too much ambiguity for monetization to be realizable. How to translate social conditions and human rights, or economic justice, into comparative figures remains unclear. What costs more or less, and why? What is the life of a Nepalese construction worker in Qatar worth? We are confronted by the limits of technical accountability, which mainly focus on quantification.

Finally, problem (iv): Corporate opposition to the internalization of externalities has dominated. Companies insist that being held financially accountable for their environmental impacts would endanger their economic viability. The focus on profit maximization and shareholder value continues to outweigh all environmental and social governance (ESG) concerns.[25]

Unable to define or implement the necessary KPIs, the key informants chose the fallback of relative environmental measures. There is little reason to believe that these will produce comparability, even internally, let alone externally. Such measures can be initiated close to actual operations and be a significant alternative.[26] But relative initiatives offer very few assurances. The environmental impact of construction can be improved through better choices of cement, steel, and energy. However, this may simultaneously increase the total environmental impact (rebound effect). To illustrate, Air France-KLM can replace its fleet with aircraft that have a much-improved carbon footprint while increasing the number of its flights. Total pollution is increased, while relative improvement is a success.

Environmental and social materiality can be ignored as building techniques become more environmentally friendly. The key informants claimed that they had proposed a powerful agenda for feasibility, but they may be leaving nonfinancial reporting with empty hands. Justifiable accounting may be limited to qualitative case studies of specific actions, as quantifying the company's ecological impact is neither possible nor certain in terms of its consequences.

24 see Technical Expert Group, "Taxonomy Technical Report" (report, published by European Technical Expert Group on Sustainable Finance, 2019), 108, https://finance.ec.europa.eu/system/files/2019-06/190618-sustainable-finance-teg-report-taxonomy_en.pdf.

25 Rinaldi, "Accounting for Sustainability Governance."

26 Stefan Schaltegger, "Linking Environmental Management Accounting: A Reflection on (Missing) Links to Sustainability and Planetary Boundaries," *Social and Environmental Accountability* 38, no. 1 (2018): 19–29, https://doi.org/10.1080/0969160X.2017.1395351.

Wicked Problems

Based on Rittel and Webber's discussion on the characteristics of wicked problems, Pieter Vermaas and Stéphane Vial summarize that "Wicked problems are essentially unique problems for which: (i) there is no definite formulation (stakeholders cannot agree on the definition); (ii) solutions are not true-or-false but better or worse; (iii) solutions are numerous and, when implemented change the way to formulate the problem."[27] Rittel and Webber's original definition of wicked problems includes ten attributes, which we will explore below in terms of our ethnographic account:[28]

1 There is no definitive formulation of a wicked problem. We could seem to reach closure when examining sustainability accounting, focusing on one construction company. But sustainability accounting has continually expanded to include accountability, social ethics, democratization, dialogue, and participation. We may begin with the carbon footprint of building materials, but to explain that focus, we must expand to consider the construction process, then to the nature and uses of buildings, and even the future of the built environment.
2 The object of design defies specification because there is a no-stopping rule. The boundaries are uncertain and can expand indefinitely. Do we revisit decisions and motives to build? Do we look ahead to the future of housing? Do we accept "the right to housing" as a basic human right? Do we focus on the Anthropocene and the threat to humanity posed by environmental degradation? Does Bruno Latour's insistence prevail that self-understanding as Terrans, or existential earth boundness, forms the necessary criteria of judgment, including his defining of climate-change deniers as the "enemy"?[29] Or do we focus on meaning versus meaninglessness in work?[30]
3 Solutions are not true or false, but good or bad. As indicated, it may be more accurate to speak of better or worse. In terms of nonfinancial reporting, as focused on carbon footprints, we can propose a certain number of actions, as demonstrated. We can assume that they are virtuous. However, we do not believe that construction firms have come close to sufficiently addressing the environmental crisis. We must not fall into the "big jump or nothing" trap.[31]
4 There is no immediate or ultimate test of a solution. All evaluations are partial, incomplete, and circumstantial. What nonfinancial reporting is supposed to provide simply is not achievable. We lack the necessary criteria and the operational framework for an effective reporting system. Short of writing qualitative case studies, European Financial Reporting (EFR) appears to lack possibilities for realization.
5 Every solution is a one-shot operation. When construction site managers were made aware of the severity of wild waste dumping and were motivated to responsibly dispose of waste materials, progress was made in environmental care. This was a real success. It was achieved by showing photographs of wild dumping and its negative effects. The method was not quantitative but qualitative. The evidence was circumstantial, and no claim was made that it was representational. Nor do

27 Pieter E. Vermaas and Stéphane Vial, "Towards a Philosophy of Design," in *Advancement in the Philosophy of Design*, ed. Pieter E. Vermaas and Stéphane Vial (Cham: Springer, 2018), 6, https://doi.org/10.1007/978-3-319-73302-9_1. Also see Pesch and Vermaas, "Wickedness of Rittel and Webber's Dilemmas"; Pieter Vermaas, "Transparency in Responsible Design: Avoiding Engineering Overconfidence and Supporting Societal Acceptance," in *Proceedings of the 22nd International Conference on Engineering Design (ICED19)*, (Delft University of Technology, Netherlands, August 5–8, 2019), https://doi.org/10.1017/dsi.2019.350.
28 Rittel and Webber, "Dilemmas in a General Theory of Planning."
29 Bruno Latour, *Facing Gaia: Eight Lectures on the New Climatic Regime*, trans. Catherine Proter (Cambridge: Polity Press, 2017); Bruno Latour, *Down to Earth: Politics in the New Climatic Regime*, trans. Catherine Proter (Cambridge: Polity Press, 2018).
30 Roy F. Baumeister, *Meanings of Life (New York: Guilford, 1991);* David Graeber, *Bullshit Jobs: A Theory* (New York: Simon & Schuster, 2018); Richard Sennett, *The Corrosion of Character: The Personal Consequences of Work in the New Capitalism* (New York: Norton, 1998).
31 Alford and Head, "Wicked and Less Wicked Problems."

we know if this approach would work in general or if it was a lucky intervention.

6 Solutions and actions cannot be fully counted or described. Relative actions can be unlimited, but absolute solutions are undefinable. This can be seen as an invitation to action and a factor of uncertainty that can paralyze intervention. You can never be sure that you have chosen the best, most important, or even a very relevant response. You are doomed to process thinking and planning, which is indefinite, situational, and incomplete.

7 Every wicked problem is a unique problem. Each construction situation is unique, with specific actors and circumstances affecting the carbon footprint. However, the problems of pollution and environmental degradation are more general. Each situation has its own context. No construction site is the same as another. The workers, engineers, site management, clients, architects, and materials are specific to each site. But there is a general climate and environment crisis.

8 Problems are symptoms of other problems. The carbon footprint accounting crisis is a symptom of a broader sustainability crisis, which can be thought of as a symptom of Modernism, industrialization, and capitalism. We are dealing with symptoms of political, economic, social, and environmental crises. If we try to capture all the big picture points while addressing one particular building site, we will drown in the complexity. We do not want to simplify falsely, but we realize that if we lose focus, our ability to make a difference disappears.

9 Choices of explanations and solutions are somewhat arbitrary. Some, like Gray,[32] focus on the social-historical context of the environmental crisis. Others, like Schaltegger,[33] are more pragmatic. Gray emphasizes the need for a global political-economic paradigm shift to truly address sustainability. The other focuses on the daily pragmatics of sustainability interventions. It may be tempting to pit one against the other and claim that it is a structural change that is needed, or that immediate action is demanded. But the choice is arbitrary. In the context of a wicked problem, it is most truthful to admit that the choice of aggregation level — for example, global and historical versus immediate and applied — is a pragmatic decision and should not be confused with principles.

10 In science, hypotheses are proposed and can then be falsified. Proving an assumption or idea wrong can be a very good research result. But our sustainability accountant has no right to be wrong. Sustainability accounting is not a scientific investigation but entails taking highly charged action in the real world. Environmental responsibility is immediate and urgent in the present crisis. We are not merely experimenting. We are dealing with the potential future(s) of humanity.

Discussion and Conclusion

We must conclude that sustainability accounting within nonfinancial reporting is a wicked problem. Sustainability refers to multiple causes, complex

32 Gray, "Social Accounting Project"; Gray, "Social, Environmental and Sustainability Reporting"; Gray, "Towards an Ecological Accounting."

33 Schaltegger et al., "Innovating Corporate Accounting"; Schaltegger and Wagner, "Integrative Management of Sustainability Performance"; Schaltegger and Burritt, "Sustainability Accounting for Companies: Catchphrase or Decision Support for Business Leaders"; Schaltegger et al., "Sustainability Accounting and Reporting: Development, Linkages and Reflection."

events, and uncertain goals. In the ethnographic accounts we have presented, the complexity threatens to overwhelm the actors and the organization. The simple logic of setting clear goals and monitoring movement toward those goals has proven unworkable. Senior management initiated goal setting in response to pressure from investors, governments, and public opinions. However, the managers and staff tasked with translating the goals into practice found the process meaningless. There was no baseline from which to measure and no adequate or significant scales to apply. Goal setting led to conflict rather than clarity. Business units reacted angrily to senior management demands. The imposition of false causality and pseudo-clarity may appeal to those at the top, but it is highly frustrating for those who have to produce and analyze the figures. We often heard, "What you are demanding of me is meaningless and a waste of my time." Senseless procedures demotivate and create conflict.

The key informants proposed the active pursuit of sustainability measures, coupled with case-study evaluation. In effect, this was a strategy of what has been called "simple guiding principles."[34] It calls upon management to tell the construction site practitioners that they should do something environmentally meaningful and that they will be rewarded for doing so, and then to let them get on with it. We need to recognize that the form of rationality that acts in pursuit of generalized universal solutions without considering local circumstances is more responsible for the sustainability crisis than for solving it. Circumstantial awareness and local strategies can better respond to environmental contexts, whereas the "one best answer" mindset cannot.

Wicked problems logic creates space for localization and specification. For those who equate "generalizability" with "truth," the concept of wicked problem thinking is anathema. Since the publication of Rittel and Webber's 1973 article, there has been resistance to its ideas from both managerial and social science communities. Catrien Termeer and colleagues' paper is notably critical, arguing that wicked problems merely refer to situations where there is insufficient problem definition with disagreement about appropriate actions to take.[35] The article claims that complexity, diversity, and uncertainty may pose real problems but that they do not produce a "special ontological class of policy problems."[36] The term "wicked problems" is often considered an excessively complex way to describe "messy" situations. It is suggested that we might be better off without the label. Similarly, Nick Turnbull and Robert Hoppe criticize the wicked problems concept, claiming that what is really needed is improved "problem structuring" to facilitate better problem-solving.[37] The Rittel-Webber article emphasizes the distinction between wicked and tame problems, suggesting they are two mutually exclusive categories. Supposedly, tame problems can be broken down into their parts and lend themselves to such procedural analysis and manipulation. Wicked problems, however, resist being broken down into simpler parts and do not respond to straightforward causal analysis or manipulation. Turnbull and Hoppe argue that since STS has come to dominate the epistemological assumptions of the social studies of technology, the "scientism" of tame problems is now outdated. The dichotomy of science and interpretivism, which aligns with the differentiation between tame and wicked problems,

34 Hugo Letiche, *Making Healthcare Care: Managing via Simple Guiding Principles* (Charlotte, NC: IAP, 2008); Kathleen M. Eisenhardt and Donald Sull, "Strategy as Simple Rules," *Harvard Business Review* 79, no. 1 (2001): 106–16, https://hbr.org/2001/01/strategy-as-simple-rules.

35 Termeer et al., "Critical Assessment of the Wicked Problem Concept."

36 Ibid., 171.

37 Turnbull and Hoppe, "Problematizing 'Wickedness.'"

has supposedly lost its significance across the board. Therefore, wicked problems — as a term — is no longer required because we all know and accept that all problems are wicked. We do not think that this accurately represents the paradigm debates in the social sciences. Our focus here is on sustainability accounting and its relative lack of implementation in practice.

The article by Mirko Noordegraaf et al.[38] poses questions relevant to our concerns. The authors assert that the wicked problems literature (i) does not address daily experience, (ii) overstates the cooperative and learning possibilities to be found in problem resolution, and (iii) does not provide managers with solutions. Our article addresses all three of these themes. First, we note that while Noordegraff et al. complain that practitioner awareness and activity have been absent from the wicked problems literature, they have left this at the complaint level. We believe that the ethnographic studies of experienced problems are necessary, and we have taken the necessary steps to do so. In our article, the reader is brought much closer to a problem situation and the ambiguities of the efforts to address it than in Noordegraff et al. We believe that the Rittel-Webber criteria for defining wicked problems have proven their validity here, even better than we had expected.

As for the theme of cooperative learning possibilities, we have highlighted the complexity of aggregation level shifts. Construction site managers could experiment with new approaches, but headquarters resisted on-site actions and direct engagement with activities on building sites. Learning from the action level to the policy level was nearly impossible. Although headquarters could potentially empower on-site management to undertake sustainability actions, it was very unlikely they would do so or be open to learning from bottom-up interaction. They likely fear having to recognize the loss of control. Wicked problems may offer potential for cooperative learning, but organizations are reluctant to pursue this. Books like Marco Tavanti's *Developing Sustainability in Organizations*[39] seem to us to be idealistic fantasies.

Finally, the third theme is that we do and do not offer managerial solutions. We argue for acknowledging wicked problems as a pragmatic approach to managing. By legitimizing partiality and acknowledging strategic limits to command and control, effective action is not sacrificed but energized. Simple guiding principles can be very effective in getting things done. We are convinced that managerialism is exactly what the wicked problems literature opposes! Our argument is that sustainability accounting is only a source of significant action if situated close to practice (here, the building site) and if loosely coupled with senior management. Efforts to couple sustainability accounting with headquarters fail because abstract or universal sustainability criteria miss the point. These criteria cannot be operationalized and thereby hinder innovation.

If there was no crisis of sustainability, there would be no reason for us to want to develop sustainability accounting. Sustainability accounting exists to respond to the information needs created by the Anthropocene crisis. If there was no crisis, there would be no focus on sustainability. In a stable situation of sustainability, there would be little need to problematize the environmental consequences of construction and or account for such matters. It is the absence of environmental sustainability that creates the need for sustainability

38 Noordegraaf et al., "Weaknesses of Wickedness."

39 Marco Tavanti, *Developing Sustainability in Organizations: A Values-Based Approach* (London: Palgrave Macmillan, 2023).

accounting. Therefore, it is entirely logical that sustainability accounting is ambiguous, messy, inexact, and at risk. If sustainability accounting succeeds — meaning sustainability triumphs — then sustainability will no longer be a problem. Sustainability accounting is now part of a wicked problem; it may or may not remain that way. If sustainability refers to environmental threats and the dangers to the existence of humanity, it will remain a wicked problem. If sustainability ceases to be a risk, it will fade from consciousness and no longer seem "to be there." Although it will not disappear entirely, and could potentially return, it would no longer be perceived as a major problem.

Doing nothing about environmental sustainability is a suicidal option for humanity. Therefore, we subscribe to a sense of urgency. But as our key informants insisted, designing for absolute response(s) is unrealistic. Some will want to use the wicked problem label as an excuse for inaction. Because we cannot quantify the carbon footprint of a building with precision or demonstrate which building is better, or worse (if we look beyond CO_2 to various non-commensurable criteria), we supposedly have no right to make demands. Such manipulative sophistry deserves all the ire Latour cast upon it.[40] Designing in the real world involves dealing with uncertainty and taking on ethical responsibilities based on a specific situation. Indeed, we cannot quantify the effects of our environmental interactions in the same way as traditional financial accounting. The possible relative action is precarious and requires constant attention to its consequences. Sustainability accounting requires a design effort because it addresses a wicked problem. This does not delegitimize sustainability accounting but focuses our attention on what is required.

Arguing that sustainability accounting is a wicked problem has several implications for practice. We focus on two. First, the role and understanding of the norms must change. The gap between organizational levels we describe calls for a different approach to norm-setting. A "one best way" approach will not produce honest, transparent representations. Considering that sustainability accounting is a wicked problem means that, in practice, managers need to be trained in accountability — they must be able to justify why they do what they do. A focused awareness of whom they are accounting to and for what purpose, as well as understanding the differences it makes, are required. Comparability must be replaced by commensurability. Giving an account is not about fitting personal experience into a predefined box; it requires descriptive proficiency and comparative skills. In terms of management control, this means having the ability and resources to manage different accounts and value alternative narratives.

Second, there is a need for new ways of rendering accounts to and with external stakeholders. The current model of the scriptural report is problematic because its comprehensiveness and technicality require expertise to understand. It assumes that merely publishing a report fulfills the duty of accountability. There is current attention to the interdisciplinary and imaginative rendering of research results.[41] However, (i) research and experimentation are needed in this area, and (ii) new work is required to address how wicked problems can be best rendered.

40 Latour, *Facing Gaia*; Latour, *Down to Earth*.

41 see, for instance, The 11th Art of Management and Organization Conference in Nancy, August 21–24, 2024, https://artofmanagement.org/.

Declaration of Interest

There are no conflicts of interest involved in this article.

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