Sustainability (ESG) reporting: Tracing materiality's visionary and relational role over 25 years through boundary objects and boundary work

ABSTRACT

The concept of materiality has acquired great significance in sustainability reporting. Through the theoretical bricolage of boundary objects and boundary work and drawing upon 91 interviews, we trace materiality's evolving role across four interconnected episodes. Our findings show that materiality begins as a multi-visionary object that draws the attention of largely unconnected groups. As different actors become more aware of each other, materiality becomes a meeting point object, and then a discursive and bridge-like object for them to talk about their relationships. However, the subsequent escalation of competitive boundary work turns materiality into a divisive institutional object that inhibits cooperation. Moving beyond a view of materiality as a way to distinguish significant information within corporate reports, our analysis fleshes out the visionary and relational roles that materiality has performed in sustainability reporting for a broad range of field-level actors to see themselves and their relationships to others in new lights.

I. INTRODUCTION

There has been a dramatic increase in the prominence of corporate sustainability (ESG)[1] reporting. According to KPMG's survey of sustainability reporting (2022) – one of the most oft-cited sources for the trend of corporate sustainability reporting, ten years ago 64 percent of the world's largest corporations reported sustainability-related information and by 2022 this rate has risen to nearly 100 percent. As the amount of the sustainability-related information that companies now disclose is considerable and continues to increase, a more sophisticated understanding of corporate sustainability reporting requires a discrimination between material and immaterial ESG information (Christensen et al. 2021; Gibbons 2024; Khan et al. 2016; O'Dwyer and Unerman 2016). Nonetheless, the materiality perspectives that have been adopted in research, practice and policy debates to distinguish material ESG information have differed significantly.

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[1] We appreciate that these two terms – "sustainability" and "environmental, social, and governance" (ESG) are not synonymous with each other. Sustainability denotes the ideal of sustainable development that has not been realised (Gray 2010) and this concept suggests the need to pay greater attention to corporate impact, which is also known as "impact materiality" or the "inside-out perspective". Whereas the concept of ESG predominantly refers to the efforts by individuals and organisations to address the financial materiality of environmental, social, and governance issues, which is akin to the rationale of the "outside-in perspective" (Dechow 2023). We include both terms, because materiality is broadly defined in this paper including both "impact materiality" and "financial materiality", among others, and we will engage with both the "inside-out" and the "outside-in" perspectives.

A stream of literature adopts the financial materiality perspective to examine whether firm value is affected by their reporting of material ESG information (Ahn et al. 2024; Khan et al. 2016). Most studies in this stream follow the Sustainability Accounting Standards Board (SASB) standards, which are argued to provide a clear set of rules for the attribution of material versus immaterial ESG information. Several studies went further and take what we term a dynamic understanding of the financial materiality perspective, as they seek to uncover the process, through which immaterial ESG information evolves over time and becomes financially material (Gibbons 2024).

Moving beyond financial materiality, another stream of literature draws attention to the perspective of double materiality, which the European Commission proposed to underscore that the information regarding corporate impact on broader stakeholders and the natural environment is equally as important as the ESG information that is financially material (Christensen et al. 2021). Going even further, the Global Reporting Initiative (GRI) endorses the impact materiality perspective as a way to signal the exclusive focus of its standards on the information regarding corporate impacts (Dechow 2023).

Whilst taking very different materiality perspectives, these literatures outlined above have in common an orientation towards mobilising the informational functionality of materiality to adjudicate which set of information is more significant. This use of materiality as a filter for significant information is functionally equivalent to the way materiality has long been treated in financial accounting (see, Bernstein 1967). However, another stream of thought has recognised the potential distinction between this conventional thinking about materiality that is deeply rooted in financial accounting versus the amplified complexity of this concept as it is exported to other domains such as sustainability reporting (Edgley 2014; O'Dwyer and Unerman 2020). This observation, by implication, suggests that a straightforward equivalence between materiality for financial accounting and its use in sustainability reporting should not

be assumed and the role that this concept plays in newer domains requires further examination. Along this line of reasoning, in this study we seek to address the two interrelated research questions (RQs) as follows:

RQ1: What roles has materiality performed in the field of sustainability reporting?

RQ2: What types of work shape materiality into these roles and potentially influence their evolution over time?

To explore these questions, we conduct a longitudinal field study involving 91 interviews with a broad range of field participants and an analysis of a substantial amount of relevant documentation. Based on the "bricolage" (Gendron 2018) of the theoretical perspectives of boundary objects and boundary work, we structure an account of materiality's evolving role over 25 years (1999-2024) across four interconnected episodes. We develop a conceptualisation that views the roles that materiality performs as different subtypes of boundary objects (Star and Griesemer 1989). This concept was designed to facilitate the study of communication and cooperation across different groups of actors. Further to this, we bring in the adjacent boundary work literature, which draws a distinction between collaborative, competitive and configurational boundary work (Langley et al. 2019), to help us to differentiate the various types of work that accompanies and potentially influences materiality's evolving role as a boundary object.

In this paper we look beyond the prevalent scholarly and policy view of materiality as a way to distinguish significant information within corporate reports. Our analysis fleshes out the visionary and relational roles that materiality has performed in sustainability reporting, which enable a broad range of field-level actors to see themselves and their relationships to others in new lights. Further to this, we speak back to the discussions in the literatures regarding boundary objects and boundary work. For instance, The introduction of the concept of competitive boundary work allows us to trace in our fourth episode how the communication and cooperation role of the boundary object is stretched to its limits, as the adversarial framing

of "ethical space" serves to inhibit previously fruitful engagement between parties. Additionally, in our third episode, we identify a novel situation featuring the combination of simultaneous collaboration and competition, which allows us to flesh out the skeleton of the concept of configurational boundary work as proposed by Langley et al. (2019). In the spirit of Gendron (2013), we choose to elaborate these proposed contributions in the conclusions along with the discussion of policy implications after familiarising readers with the details of our field materials.

The rest of this paper will proceed as follows. In Section 2, we introduce the concepts of boundary object and boundary work to theorise materiality's evolving role. This will be followed by Section 3, where we illustrate the details of our interviews and data analysis. Field materials will be presented in Section 4 and further discussed in Section 5 to draw conclusions.

II. THEORISING MATERIALITY'S EVOLVING ROLE THROUGH THE BRICOLAGE OF BOUNDARY OBJECTS AND BOUNDARY WORK

For the purpose of theorising the roles performed by materiality in sustainability reporting and better understanding the various types of work that shapes materiality into these roles, we identify the complementarity in the two different but adjacent theoretical literatures – that of boundary objects and boundary work. Thus, in this section we attempt to integrate them into a "theoretical assembly" through "bricolage" (Gendron 2018). In so doing, we see a parallel between the objective of our study and the efforts by Chahed (2021) and Young (2014) to trace the evolution of other prominent concepts of accounting. Therefore, the theoretical assembly that we seek to develop in this section might apply to understanding how other accounting concepts evolve over time more generally.

Boundary object was a concept proposed by Star and her colleagues to study how actors, in particular scientists, might communicate and cooperate with one another in the absence of complete consensus (Star and Griesemer 1989; Star 2010). Although "boundary"

often indicates an edge of something or a line between different actors, much communication, debate and cooperation between these different actors may also happen at these boundaries. In this sense, "boundary" also means a shared space that allows these actors from different communities with different interests to engage in communication and interaction (Star 2010). In this way, notwithstanding the apparent concreteness of the label "object", in her study "objects" are not necessarily physical, but include conceptual ideas and visual devices that potentially provide a shared space (Star 2010). As opposed to an idea whose definition has been controlled and standardised by, for instance, a regulatory body, boundary objects must have both a robust aspect to maintain a common identity across actors and a plastic aspect to adapt to local circumstances (Bowker and Star 2000; Star and Griesemer 1989).

In the context of accounting, Briers and Chua (2001) theorise Activity-Based Costing (ABC) as a boundary object. They find that while the name – ABC is common to all organisations adopting this accounting technology (robust aspect), its meanings and internal contents such as the cost drivers differ substantially among these organisations (plastic aspect). Likewise, we view materiality as a boundary object. It has a shared name – materiality to provide a common identity, whilst carrying different meanings such as "financial materiality", "impact materiality" and "double materiality", etc. in different social worlds.

Prior literature has identified a list of boundary objects that take on different forms. These subtypes of boundary objects include but are not limited to repositories such as a library, visualised objects that are also theorised as "ideal types" such as a diagram (Star and Griesemer 1989), visionary objects (Briers and Chua 2001), meeting point objects (Dechow and Mouritsen 2005), discursive objects (Power 2005; 2007), and bridges (Carlile 2002). In what follows we will explain those boundary objects that are more relevant in clarifying the roles that materiality takes on in different episodes in more detail.

Briers and Chua (2001), for instance, identify that some emotive language such as "being more efficient" or "becoming a world class corporation" have the potential to act as "visionary objects", as it provides a vision that people from different communities can all aspire towards. At the same time, such "visionary objects" are broadly defined and plastic enough so that they can be customised to suit the needs of a variety of communities and take on different meanings in each of these communities. In one organisation, "becoming more efficient" might suggest the need for a balanced scorecard while in another organisation it means the purchase of an enterprise resource planning system (Briers and Chua 2001, 242).

Moving beyond a vision that can be flexibly mobilised by people to articulate their own ambitions, boundary objects are also capable of bringing their users from a variety of communities into the discussion and debate about their different purposes and interpretations. In this regard, Dechow and Mouritsen (2005) and Power (2005) characterise boundary objects as a "meeting point" of diverse interests and perspectives. Power (2005), in particular, shows how the concept of "operational risk" becomes a meeting point for banking regulatory bodies, corporations and professional groups to start a conversation about their different perspectives.

Moving further beyond the potential of boundary objects as a "meeting point" for people with different perspectives to start a conversation, Carlile (2002) and Power (2005; 2007) find that certain subtypes of boundary objects such as "discursive objects" and "bridges" are more powerful in terms of allowing people with different perspectives to develop a sense of unity and relatability and thus become willing to cooperatively engage with one another. Power (2005; 2007), for instance, finds that concepts such as "internal control" and "reputation" as "discursive objects" have the potential to posit the "unity of an abstract community", and so regulators, corporate representatives and professional groups, who are talking about their own concerns and identities under such common umbrella concept, are likely to feel connected with one another and become willing to cooperate with each other.

Carlile (2002) finds that some boundary objects can act as a bridge between different actors and even enable those that have opposing views to cooperate. Such bridge-like object has the capacity to show the difference and interdependency of each actor, which makes it more likely for their potential relationship to be understood. This enables divergent views to be reconciled and offers the possibility of cooperation between these different actors. Therefore, as with discursive objects, this bridge-like object also has the potential to enable people with different perspectives to engage with one another more cooperatively.

To better understand the work that accompanies the shift in the role that materiality plays as different boundary objects, we now introduce the adjacent literature regarding boundary work. This boundary work literature also seeks to understand complex social situations at "multiple levels of analysis (individual, group, organisational, occupational, and institutional)" (Langley et al. 2019, 705). It does this by focussing upon the nature of the specific patterns of activity (work) undertaken by different groups as they seek to variously understand, communicate and defend their positions and perspectives in relation to other groups. Following the typologies developed by Langley et al. (2019), we draw a distinction between collaborative, competitive and configurational boundary work.

Collaborative boundary work is more likely to emerge when different groups seek to achieve a collective goal, whose accomplishment is dependent upon the collaboration between them. In this situation, members of different interest groups may purposefully downplay the boundary between them in order to work collaboratively to get things done (Langley et al. 2019). Ybema et al. (2012), for instance, demonstrate how a Dutch human rights organisation seeks to downplay the difference between themselves and their "Southern" partners operating in South-America, Africa and Asia in order to create a collective identity – a "we" and build partnerships across social and cultural boundaries.

In contrast, competitive boundary work involves the efforts by actors to defend or create a boundary, which is capable of displaying their own uniqueness and superiority over those on the other side of the boundary and thereby giving themselves a competitive advantage. This classic stream of the boundary work literature flows from the foundational paper by Gieryn (1983), which shows how scientists engage in ongoing work to demarcate science from non-science with the aim of making visible the objective nature of their own intellectual activities and protecting their autonomy from being challenged by other professions.

Competitive boundary work can take the form of definitional work, where the efforts by groups to draw conceptual distinctions play a major role in differentiating themselves from others (Lamont and Molnár 2002; Liao 2016). Competitive boundary work can also escalate to take on a much stronger and even adversarial form. Hobson-West (2012), for instance, demonstrate how people seek to differentiate through the construction of an "ethical space" in order to make it visible that their own work belongs to this "ethical space" whereas the work conducted by people from the other side is morally problematic.

Competitive boundary work can also be found in the accounting literature (see, Hazgui and Gendron 2015; Young 2014). Hazgui and Gendron (2015), for example, demonstrate how specific boundary work tactics are mobilised by the French audit profession to defend their role boundaries that are being challenged by new regulations from the government. These boundary work tactics include withholding information that is important for the regulatory body to carry out its work, downplaying the need for the involvement of this regulatory body and subsequently becoming supportive in order to achieve a form of co-regulation.

The third pattern of activity identified by Langley et al. (2019) is termed configurational boundary work. A defining feature of this form of work is that it involves elements of both collaborative and competitive boundary work, but at the same time a "meaningful equilibrium" between competition and collaboration is found for collective purposes (Langley et al. 2019).

Langley et al. (2019) draw upon a range of illustrative examples including O'Mahony and Bechky (2008) to show how some shared space may be created to achieve this "meaningful equilibrium" by allowing different actors to cooperatively engage with each other at least temporarily despite their ongoing competition. Langley et al. (2019, 725) conjecture that configurational boundary work might involve an outside influence and the potential agency "at a higher level" to bring "people, objects, and ideas into new configurations". Relative to collaborative and competitive boundary work, they also suggest that configurational boundary work has received less attention in the literature and requires further specification.

In summary, we have now introduced the boundary object and boundary work literatures. Combining these two adjacent theoretical resources, we seek to sensitise ourselves to the possible interactions between objects and work and how they together might enable us to see the evolving roles that materiality takes on in sustainability reporting. Such theoretical sensitivity prepares us to address our research questions as articulated in the introduction and provides a guide for our fieldwork that will now be illustrated in the following section.

III. RESEARCH METHODS

In this study we adopted qualitative research methods (Power and Gendron 2015), to engage directly with field participants and chose interviews as our primary method of data collection. Before commencing the interviews, a detailed research proposal was developed and taken through the lead author's University research ethics approval process to ensure reasonable protections are in place to provide anonymity for research participants.

In the nine years between 2016 and 2024, we conducted 91 interviews in total and endeavoured to ensure that the pool of interview participants is heterogeneous[2]. Our interviews,

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[2] The materiality debate becomes increasingly heated with participants approaching it from very different, if not contradictory, standpoints. In order to look at this phenomenon more broadly and avoid being biased by a particular materiality perspective, we worked to ensure that our interview participants come from different sides of the materiality debate and so the interview pool as a whole is heterogeneous.

therefore, cover a broad range of field participants. The general profiles of interviewees are included in Table 1. With the permission of interview participants, all interviews were audio-recorded and were transcribed by a professional transcription firm.

For consistency, the conduct of interviews was led by the lead author, who attended all 91 interviews. Efforts were made to build rapport with interview participants throughout the fieldwork process. This includes the approaches that have been commonly used in qualitative research such as meeting interviewees in person and signing a consent form (non-disclosure agreement) to reassure interviewees about the confidentiality of the data they provide. We endeavoured to meet as many interviewees as possible in-person to make them feel our preparedness for and seriousness about the conversation. As a result, the vast majority of the interviews conducted before early 2020 were in person. Where an in-person meeting was not possible during the Covid pandemic, we conducted interviews via Teams/Zoom video conferencing. To ensure the successful completion of the virtual interviews we made a number of preparations. For instance, the lead author set up a wired network to support working from home and avoid connectivity issues from the wireless network.

For these virtual interviews, we attempted to develop rapport and trust with interview participants through two novel approaches. First, we are fortunate to have a co-author, who can be described as an academic-oriented practitioner. He serves on the expert working group of the European Financial Reporting Advisory Group (EFRAG) to co-review proposals for the European Sustainability Reporting Standards. This involvement in the work of EFRAG allowed him to develop a good relationship with standard setters, government policy officers, corporate managers, and stakeholders. This pre-existing relationship gave us a rare opportunity to access many significant players in this field. In effect, approximately one third of the participants of virtual interviews were recruited through this practitioner author's professional contacts. This pre-existing relationship brings a "natural rapport" with these interviewees, and

helped us to get open and candid accounts from them, who might otherwise be more guarded and careful in interviews, given the rise in the tensions among these groups.

Second, around the topic of materiality, we see a confluence of interest between us as researchers and many field participants, who are also keen to make sense of the roles that materiality plays in sustainability reporting. This resonance with interviewees and our efforts to emphasise the relevance of our research project to the wider materiality policy debate enabled us to develop shared concerns and values with many field participants. Perhaps due to such shared concerns and authenticity, many interviewees showed interest in our research output during interviews and expected us to share the paper as it is finalised. We therefore published an early draft of the paper on the Social Sciences Research Network (SSRN) website both to discharge our accountability to field participants and as an opportunity to collect feedback from them. Such efforts to gather feedback from field participants fall within the scope of what Malsch and Salterio (2016) term "member checking", which has the potential to enhance the trustworthiness of the fieldwork. Having field participants as one of the reader groups of this paper also encouraged us to write in plain English as much as we could in order to make the paper more accessible.

To complement and substantiate the insights from interviews, we also collected and reviewed a wide range of secondary materials including corporate reports, policy papers and books and articles written by practitioners and thought leaders. These materials include reports published before the start of our fieldwork, even though some of them are no longer available on the internet. For instance, we accessed and closely read BP and Ford's sustainability reports (2004), which according to our analysis is where the two-by-two materiality matrix made its public debut. We also reviewed reports produced by "AccountAbility", which was a significant sustainability reporting standard setter in the early stage. These materials in total are more than

4000-pages in length. We have listed these in Online Appendix 1 as a separate file to enable accessibility to interested readers.

The other source of information that contributes to our understanding of the status of materiality before the start of our fieldwork comes from a small number of interviews (in particular with interviewee 64, 69, 70, 71), where we discussed the policy papers published before 2016. We had two authors in attendance during most of these (virtual) interviews, so that one of the authors had the time to share the screen of the early policy paper under discussion. This aims to help interviewees to recall[3] the details of the past activities and ensure that the follow-up conversations are based on "factual questions". After the interviews, we also treated these retrospective accounts with more care to ensure that they will not be used if they contradict the contents of the original policy paper. We also took care to ensure that these retrospective accounts were not biased by their most recent experience. We feel reassured, for example, when seeing the contrast between interviewee 71's interest in sharing the details behind the publication of the early policy papers versus his disinterest in the most recent materiality debate.

As is often the case in qualitative research, our data analysis proceeds together with the process of data collection. To remain open to the emerging themes, we did not attempt to approach data based on a particular theoretical framework until the mid-stage of our fieldwork. Instead, our data analysis process was guided by a broad research interest in understanding materiality's evolving role. Given the longitudinal nature of our fieldwork, we first drew upon Langley (1999) to tease out the activities, events, human actors, and objects that accompany the evolution of materiality in chronological order. Specifically, we adopted a "temporal bracketing" strategy to help us to partition the process data into four temporal brackets. So, as

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[3] As Stolowy et al. (2013) in their method section suggested, a potential risk of talking retrospectively about past activity is that interview participants may not be able to remember every detail of the past.

a result the key activities around materiality are more homogeneous within each temporal bracket but there are certain discontinuities between them. For instance, the defining feature of the third temporal bracket is that many interested actors actively engage with the materiality perspectives proposed by others, whereas in the fourth bracket these actors around materiality are increasingly disengaging from each other.

This temporal bracketing strategy clarified field-level background trends and helped us put the very large amount of raw data into a processually-organised dataset. The resulting four temporal brackets work as a scaffolding tool that gives a tentative starting point for us to conduct further and a more detailed analysis through the use of "coding", memo writing and "composite narratives" (Pratt, Sonenshein and Feldman 2022).

As part of our coding, we assigned summative names to different blocks of texts, which could be several words, sentences, paragraphs, pages or even the whole document to highlight the issue of interest. Sometimes, interview participants have a well-organised thinking about materiality and thus kept our conversation focused on a small number of central points. As a result, we only assigned a limited number of codes to these interviews with each code covering many pages of the transcript. The same applies to the coding of some policy papers. Some of them such as Faber (2022) were written in a very concise and unambiguous way. So, we only assigned one code – COMMON LANGUAGE to the whole document.

However, at other times some policy papers such as de Cambourg (2019) can be as long as more than 300 pages. The analysis of these lengthy (but also potentially informative) reports was led by the practitioner author. His ongoing engagement with the materiality policy debate and active participation in sustainability reporting conferences made it possible for him to help us approach these documents from an insider's perspective and single out the sections that received most attention from the field. On some occasions, we reached out to the authors of these policy papers for further clarification. Fortunately, most authors we contacted responded

and some of them were even willing to share their own notes about these policy papers and the presentation slides they prepared based on these papers for the subsequent public debate. These additional materials were valuable in helping us better understand where and how field actors selected their attention in relation to these documents and thus gave us an opportunity to conduct the first-order analysis through the eyes of insiders as much as possible.

Interview transcripts and documents were coded through a process of highlighting with coloured marker pens, making notations on post-it notes, and transferring these into alphabetically-organised notebooks. We encourage interested readers to understand the "coding" that we conducted for this study in its broadest sense, because this process also involves the writing of analytical memos and "composite narratives". We wrote analytical memos as a way to record the reasons behind an assigned code at a particular point in the process, and used "composite narratives" to capture the interconnection between different codes and the dynamics across different episodes. One of the key "composite narratives" that we created, for instance, is "competitive work moving materiality into a negative role".

The shift towards the second order analysis would be best explained as a process without a clear cut-off point. This process was undertaken over a period of approximately two years and features the gradual introduction of theories into our group discussion and "thought experiments" (Lukka 2014). We worked to assess the theoretical fit on two grounds – that of the principle and details. Our choice to draw upon boundary objects was made, because we found it appropriate on both grounds.

On the level of details, we found that the key codes that were set up to capture the roles that materiality played in different episodes such as PURPOSE, COMMON LANGUAGE and BRIDGE map intuitively onto different boundary objects (visionary objects, discursive objects, and bridge-like objects). On the principle level, the core issue addressed by the boundary object literature relates to how the same object/concept can take on very different interpretations and

can be simultaneously employed by actors in potentially very different situations. In this we see a good theoretical fit with the sustained interpretive flexibility that materiality takes on in sustainability reporting. The same process was undertaken in order to relate our codes to the categories from the boundary work literature and capture the interactions between object and work. The theorised field materials will now be presented in the following section.

IV. FINDINGS

Episode 1: Materiality emerging in sustainability reporting as a multi-visionary object

The widespread debate about materiality today in the field of sustainability reporting commenced with the inclusion of this accounting[4] principle in the first sustainability reporting guidelines that the GRI proposed in 1999. In these guidelines, GRI (1999, 10) considered that "Financial reporting also has adopted a set of underpinning assumptions. These have, with some necessary modifications, been adopted by the GRI as underlying assumptions for sustainability reporting". One of these principles is the "concept of materiality or significance" (GRI 1999, 10). This principle was further illustrated later in the guidelines with several paragraphs suggesting that the materiality concept for sustainability reporting is more complex and context-dependent than used in financial reporting and that "continuing interaction with stakeholders" (GRI 1999, 24) could be an effective way to identify material issues.

As an explorative idea that was gaining traction in the field of sustainability reporting, materiality also drew the attention of several other interested parties including AccountAbility, thought leaders (see, Zadek and Merme 2003), big four accounting firms (see, KPMG 2005), and some large corporations (see, Ford 2004). They showed greater interest in the concept of materiality, but the "visions" (Briers and Chua 2001) they projected onto this umbrella concept varied considerably.

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[4] By accounting principle, we mean that the way the GRI looked at materiality at this starting point was influenced by financial accounting/reporting, because in its first sustainability reporting guidelines, the GRI drew a parallel between financial reporting principles and the principles that could be used for sustainability reporting.

One of their visions was about the potential of materiality to enhance the quality of sustainability reporting and resolve the potential issue of information overload. Zadek and Merme (2003, 5), for instance, argued that "useful reporting is not about dumping ever-increasing volumes of data into the laps, and laptops, of unprepared investors and other stakeholders". They proposed materiality as a solution to this problem: "Tomorrow's effective corporate social, environmental and economic reporting must communicate information that is material to stakeholders" (Zadek and Merme 2003, 3). This was echoed by KPMG (2005, 20), which also pointed out that effective corporate responsibility reporting is "not about volume" of disclosed information and called for large corporations to undertake materiality analysis to make their sustainability reporting more focused.

Others with a broader vision envisaged the potential of materiality to go beyond serving the purpose of reporting, to inform corporate governance and decision-making by incorporating material social and environmental issues (AccountAbility 2006). Zadek and Merme (2003, 27), for instance, talked about "Governing Materiality" as part of their visionary project to position the identification of material social and environmental issues within the wider corporate governance framework and argued that the responsibility of achieving this resides with the board of directors.

Relatedly, materiality was envisioned as an opportunity to address the issues that were emerging in risk management. Zadek and Merme (2003) and AccountAbility (2006) suggested that enterprise risk assessments are often restricted to events that generate short-term financial impacts or have legal consequences. Corporate materiality assessments, therefore, have the potential to complement traditional enterprise risk management, by fostering greater corporate engagement with key stakeholders and thereby helping companies to identify a broad range of social and environmental issues that may affect their long-term performance (AccountAbility

2006). A seasoned interviewee who was involved in the materiality debate right from the start recalled this vision in relation to risk management during the interview:

> As I recall, in redefining materiality, they are like a sort of an opening out, from something quite narrow to something quite broad…there's a spectrum and the spectrum shifts over time and shifts as one begins to look at the difference between short term risk and long-term performance. (Interviewee 71)

Alongside this debate on the purpose of materiality among standard setters and thought leaders was the phenomenon of an increasing number of large corporations conducting a materiality assessment as part of their sustainability reporting process. According to KPMG's international survey of corporate responsibility reporting (2005), more than 20% of the world's largest companies mentioned in their sustainability reports that they had systematically conducted stakeholder engagement to identify their material issues. Some leading-edge reporters such as Ford and BP went so far as to position materiality as central to their reporting approach and sought to define materiality through a two-by-two matrix.

In the matrix created by Ford (2004), as illustrated in Figure 1, its y axis represents "concern to external stakeholders" and the x axis is labelled "current or potential impact on company". Materiality is, therefore, defined as those issues that could meet both criteria and so are those issues that fall into the top-right (red) corner of the matrix.

Figure 1. Materiality matrix in Ford Motor Company's 2004-05 sustainability report

The publication of this two-by-two materiality matrix by Ford (and similarly by BP) was not an unremarkable organisational practice; it had policy implications[5]. Based on our own analysis as well as the views of some interviewees (Interviewee 69, 70), this was the first time the matrix as a format was publicly used to define materiality in the field of sustainability reporting, which predates the publication of the GRI G3 Guidelines in 2006 where a matrix was also used.

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[5] By "policy implications", we mean the subsequent debate between Ford and BP's version of the materiality matrix and the matrix proposed by the GRI G3, which will be discussed in the second episode.

Overall, we see that from this initial episode materiality emerges in the field of sustainability reporting as a multi-visionary boundary object (Briers and Chua 2001) that symbolically unites disparate and fledgling efforts. Under the common name – materiality, interested actors were portraying very different visions and priorities, which can be an imperative to resolve the issue of sustainability reporting information overload, an opportunity to improve corporate risk assessment, an aspiration to create new forms of corporate governance, and an ambition to represent significant issues more visibly. There was some communication among these interested actors about their different visions behind materiality (see, AccountAbility 2006 as an example for such discussion), but compared with the following episodes, the key actors in this episode were focused more on their own perspectives and did not appear to be overly concerned with the visions proposed by others.

Episode 2: Materiality becoming a "meeting point" and definitional boundary work

In this second episode, we see that the connection between the diverse interests and perspectives under the umbrella concept of materiality begins to be established. Many key actors paid greater attention to the perspectives proposed by others, as they sought to elaborate their own views. The role of materiality was therefore shifting towards a "meeting point" (Dechow and Mouritsen 2005; Power 2005) for these diverse communities of interest to kick-start the debate about their different perspectives. Part of this shift relates to the rise[6] of the GRI, which increasingly acquired the status of a core actor in sustainability reporting during this episode (KPMG 2011). In 2006[7], the GRI published the third version of its guidelines – G3, where materiality was placed in a prominent location and positioned as the first of the four

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[6] See Etzion and Ferraro (2010) and Larrinaga and Bebbington (2021) for a more detailed account of the factors and actors that contributed to the success of the GRI during this episode including the legitimacy it borrowed from financial reporting; the win-win scenario that the GRI skilfully created to garner support from both NGOs and the corporate sector; and the favourable historical and institutional context in which the GRI grew.

[7] The shift in the role of materiality as the boundary object from visionary to a meeting point did not occur instantaneously, but roughly from the mid-2000s when the 2x2 materiality matrix became the shared location for the debate about different perspectives.

principles for defining reporting content. As with Ford, the GRI in G3 also attempted to define materiality through the visualisation of a two-by-two matrix as illustrated in Figure 2.

Figure 2. Defining materiality (GRI 2006, 8)

This visualisation of materiality shows how non-material issues are those that are in the bottom left corner of the matrix, and that material issues have a relatively higher priority as they are deemed to be more influential to "stakeholders' assessments and decisions" "or" more significant in an organisation's "economic, environmental and social impacts" (GRI 2006, 8). This GRI's definition differs substantively from that of Ford (see, Figure 1) in two aspects. First, G3 used "or" as opposed to "and" to describe the relationship between the two criteria. This "or" is important, as it means that issues are deemed as material as long as one of the two criteria is met. Material issues, therefore, are not just those falling into the top-right corner but also include issues in the top left and bottom right areas of the matrix.

Second, Ford labelled the x axis of their matrices "impact on company/organisation", which is today understood as an "outside-in" perspective that is centred on how business value is affected by social and environmental issues. The GRI in G3, however, altered this x axis' definition to "the organization's significant economic, environmental, and social impacts" (GRI 2006, 8), which is now the so-called "inside-out" perspective that is focused on the impacts of business activities on the natural environment and society. Taking these two differences together, it is apparent that this definition of materiality in G3 is broader and more progressive in terms of sustainability (Interviewee 34, 37, 69, 70).

However, in 2011 GRI published the next version of its guidelines G3.1 and in its technical protocol the broader version of the materiality matrix in G3 was replaced by the one we see in Figure 3. Although the vertical axis remained relatively similar, the definition for the

horizontal axis was altered from "the organization's significant impacts" to "significance to the organisation" (GRI 2011, 9).

Figure 3. Determining materiality (GRI 2011, 9)

This materiality matrix in G3.1, thus, becomes more in line with the one proposed by Ford. According to the sources closer to the GRI, there were two main forces that drove the GRI to align its position with the corporate sector. First, it is suggested that the GRI "was under financial pressures, so we need to have as many reporters as possible first. Let's keep the bar low, keep the entry point low and we can still deal with sustainability impacts at a later stage" (Interviewee 69); Second was "the influence from Big Four accounting firms" (Interviewee 69), which tended to support the materiality matrix in G3.1. This is because it is easier for them to assess "significance to the organisation" in monetary terms and thus this perspective is more "assurable" (Interviewee 69, 70).

Compared with the first episode, the debate between these different materiality perspectives has notably increased. Proponents of the G3.1 perspective argued that the focus of G3 on corporate impacts, although important, was not easily operationalisable in practice at the time and even the GRI itself did not provide clear guidance for how to assess corporate impacts (Interviewee 29, 35). In contrast, supporters of the G3 version often made the point that the materiality matrix in G3.1 Technical Protocol was seeking to make a business case for sustainability (see, McElroy 2011) and its focus on "significance to the organisation" was ultimately serving the interests of shareholders:

> I've been fairly critical of not just the format but the concepts that lie behind it. It seems to me that this matrix [the one in G3.1Technical Protocol] as we see it fails to address the issue of impacts that organisations may already be having or that they ought to be having. So, my view of the matrix is, the x axis focuses on potential impacts to the business, right?...It focuses mostly on, in effect what is material or relevant to shareholders and only shareholders. (Interviewee 34)

Perhaps to address the concerns of these critics, two years later in 2013 GRI published the fourth version of its guidelines G4, where the G3.1 version of the materiality matrix was dropped and instead the GRI reverted to the broadly defined matrix proposed in G3. As with G3, materiality in the G4 Guidelines was defined as those issues "that reflect the organization's significant economic, environmental, and social impacts, or that would substantively influence the assessments and decisions of stakeholders" (GRI 2013, 11). In addition to this refocus on an organisation's outward impacts, under G4 a further emphasis was also given to the concerns of stakeholders – a perspective represented by the vertical axis of the materiality matrix. Whilst stakeholder engagement has long been the focus of the GRI, G4 emphasised it further, expecting stakeholder engagement to be conducted throughout the materiality process. This was confirmed by a member who was involved in the development of G4. After the interview, she wrote the following to us:

> In terms of the overall process of doing a materiality assessment, there has been a significant increase on engagement of stakeholders as part of the process. Under the GRI G3 model stakeholders were required to be consulted, but engagement was only required at selected parts of the process, however G4 requires stakeholder engagement throughout the entire process. In the identification phase engagement focuses on what the issues could be, in the prioritisation phase engagement identifies topics that are most important to stakeholders, finally after you publish the report re-engaging stakeholders to confirm, did we cover those issues adequately. Overall, it's a much bigger focus on stakeholders involvement. (Interviewee 21)

This version of materiality with a bigger focus on stakeholder engagement under G4 aroused a further debate with the idea of "context-based materiality". The concept of "context-based materiality" has its roots in the Sustainability Context Group, which was founded in 2012 by a group of people, who are seen by other interviewees as "thought leaders" in the field of sustainability reporting. Under the label of "context-based materiality", they aim to bring science to sustainability reporting (Interviewee 9, 34, 70). Therefore, their point of divergence with the materiality defined by G4 is the idea that engaging with stakeholders is necessary but insufficient. Companies should go further and assess their sustainability impacts based on scientific approaches and the local context (see, McElroy 2011). Here water issues are a good

case in point. Although it is important for a company to engage with its local stakeholders to ensure that their access to safe drinking water would not be affected by their business activities and operations, such engagement with stakeholders is insufficient in terms of demonstrating that their operations are sustainable. To demonstrate this, "context-based materiality" would require the company to go further and assess, for instance, whether the amount of water they extracted is within the capacity of the river and aquifer based on scientific and hydrological approaches and evidence (Interviewee 26, 27, 28, 34).

What has been described so far shows the progressive construction of the two-by-two materiality matrix as a "meeting point" (Dechow and Mouritsen 2005; Power 2005), which appeals to an increasing number of interested actors and becomes a shared location where they can allow themselves more space to describe and communicate their positions and perspectives in relation to other groups. What surrounds this meeting point is competitive work to define the two-by-two matrix in a way that these actors' own concerns and ambitions can be represented (Power 2005). Such definitional work has been understood as a form of boundary work (Langley et al. 2019; Liao 2016), where people seek to differentiate their own perspectives from that of others through drawing conceptual distinctions.

The efforts by the GRI, thought leaders and large corporations to define materiality through the two-by-two matrix, although prominent, only form part of the overall materiality debate during this episode. Other standard setters also brought their own perspectives into the materiality debate one after another. In 2013, the International Integrated Reporting Council (IIRC 2013, 18) published its first Integrated Reporting (IR) Framework, where materiality is defined as "matters that substantively affect the organization's ability to create value over the short, medium and long term". In a similar vein, SASB in its conceptual framework (2017) defines materiality as sustainability issues that are likely to affect corporate value and a reasonable investor's decision-making. Also, the Climate Disclosure Standards Board (CDSB

2018) proposes that environmental information is material if environmental impacts are expected to have a significant positive or negative effect on the organisation's current, past, or future financial condition, or could influence decisions that users of mainstream reports make about the organisation. The concept of materiality also attracted other standard setters including CDP, which was previously known as Carbon Disclosure Project, the Financial Accounting Standards Board (FASB), the International Accounting Standards Board (IASB) and the International Organization for Standardization (ISO) (Corporate Reporting Dialogue 2016).

Such definitional activities again recall definitional boundary work (Lamont and Molnár 2002). These standard setting bodies tried to keep their own jurisdiction and differentiate it from that of others by drawing conceptual distinctions. For instance, in defining materiality, CDSB placed more emphasis on the location of material information, expecting material sustainability-related information to be disclosed in the mainstream financial statements. Whereas the location of material information matters less for SASB, which instead puts more focus on developing the criteria to assess materiality at the industry-level.

Despite such distinctiveness of their positions, our analysis shows that the key actors of this episode increasingly realised that the definition of materiality proposed by others may be familiar and relatable to their own perspectives and became more willing to find connections between their different materiality perspectives (see, CDSB 2018; IIRC 2015). The most prominent effort to build such connections is perhaps the project that the Corporate Reporting Dialogue (2016) initiated in order to find a common ground between the major sustainability reporting standard setters at the time. In the following excerpt, a representative from one of the standard setters that participated in this Corporate Reporting Dialogue Project shared with us her understanding of the role that materiality played therein:

> The corporate reporting dialogue was the first attempt to bring together — well not the first attempt but one of the first attempts of bringing together the different standard setters to agree upon commonalities that would demonstrate alignments. What we wanted to do

was we wanted to try and remove any complexities and confusions in the market so that companies would be able to report…This particular paper was the one around materiality and trying to demonstrate again where the commonalities were but also where the differences were in order to help companies understand which perspective they wanted to use. We started with materiality, because it is something we all share. (Interviewee 64)

Similar to the aforementioned two-by-two materiality matrix, which has been progressively constructed as a shared location for debate, this account indicates that the concept of materiality as "something we all share" also became a "meeting point" (Dechow and Mouritsen 2005; Power 2005) that assembled many major sustainability reporting standard setters for a better understanding of how their different perspectives might relate to each other.

Another equally important but slightly less prominent debate surrounding materiality during this episode relates to the approaches to determining the scores of material issues that are plotted in the two-by-two matrix. The different views surrounding this debate could be broadly mapped onto a preference for calculation versus qualitative judgement (WBCSD 2014). These two perspectives were also reflected in our interviews. On the one hand, when it comes to how materiality scores are determined, the responses from some interview participants displayed a clear tendency to mobilise the power of numbers to capture the reality of material issues. Interview participants in this category often argue that this quantitative approach could make their materiality assessment and potentially sustainability report as a whole look more "scientific" and "objective" (Interview 6, 14, 22). Some of them went so far as to claim that they will quantify material issues "as much as possible" (Interview 6).

On the other hand, many other representatives acknowledge the messy and discretionary nature of their materiality assessments, regarding the process of assigning materiality scores as "quite subjective" (Interviewee 18), "largely qualitative rather than quantitative" (Interviewee 12), "not rocket science" (Interviewee 14), on the basis of "discussion" (Interviewee 12), "judgments, approximation, and averaging" (Interviewee 9) and even "intuition" (Interviewee 14). As one of our interviewees put it during this episode,

"materiality is partly a science but it's also largely an art" (Interviewee 30). They argue that overattention to the calculation of material issues (and the design of the matrix) misses the point that materiality may serve the purpose beyond corporate reporting to foster better relationships with broader stakeholders (Interviewee 14, 21, 31):

> You would have seen lots of graphs in people's report with the matrix and their understanding of what that means and how materiality scores are determined. I think there is more education to be done on understanding not being so focused on the graph but focusing more on the process to engage with stakeholders to create longer lasting relationships with our stakeholders and to understand what value did we create by doing that…I think these are the things that are being discussed…and can be done better in organisations. (Interviewee 21)

The determination of materiality scores, therefore, is far from being merely a technical issue but relates back to our observation in the first episode that materiality could potentially serve different purposes, and people with different purposes will approach materiality assessment differently and talk with each other about their differences. The passage above therefore provides further evidence that during this episode the tensions and interactions between people with alternative perspectives and purposes have increased as compared with before. The concept of materiality as something all actors share becomes a natural meeting point (Power 2005), which allow them to define their own perspectives whilst starting a conversation with their counterparts, even though (unlike the following episode) at this point they had not been able to articulate their relationships regarding who does what within a coherent framework.

Episode 3: A common language, building bridges and configurational boundary work

In this third episode, the previous debate coalescing mostly around the two-by-two materiality matrix was over time giving way to an even more vigorous debate between impact materiality and financial materiality. This shift was a gradual process taking place roughly from the late 2010s, when numerous sustainability reporting standard setters commenced another round of definitional work (Langley et al. 2019; Liao 2016) around the concept of materiality and began to align their own identities and scope of responsibilities with a particular materiality perspective defined by themselves.

Among their definitional work, a prominent activity is the efforts by the GRI to adjust its position on materiality. In its most recent standards, the GRI decided to remove the two-by-two materiality matrix (GRI 2021) and instead focused upon "doubling down on one perspective" - that of corporate impact (Interviewee 37). According to a source close to the GRI's leadership team (Interviewee 37), there were two reasons for this definitional shift. First, it was partly due to the concern that there were too many versions of materiality matrices available in the market that may cause confusion. Second, it was partly influenced by the Organisation for Economic Co-operation and Development (OECD) and its publication of "OECD Due Diligence Guidance for Responsible Business Conduct" that put emphasis on corporate responsibility for adverse impacts. As a result, materiality is redefined by the GRI as an organisation's "most significant impacts on the economy, environment, and people" (GRI 2021, 8), a perspective which is widely referred to as "impact materiality" or an "inside-out" perspective thereafter.

At the same time as the formation of the impact materiality perspective, several other standard setters including SASB, CDSB and IIRC also conducted definitional work and proposed the concept of financial materiality to valorise their own identities and distinguish their purposes from that of the GRI:

> The thing we had done is that if you look at the early SASB documents, we talked about materiality in the way that we think of it in US security regulation but then later in our communications we started to say financial materiality, financial materiality, financial materiality, because we were having a hard time with when we said materiality and GRI were saying materiality, like did you mean the same thing or did you mean something different? So, we added financial. (Interviewee 48)

The growing prominence of the category of financial materiality also benefited from the launch of the Task Force on Climate-related Financial Disclosures (TCFD) initiative. Due to the political support from the G20 and the promotional efforts from highly-regarded individuals, and also because its framework is more focused, within a short period of time the TCFD initiative swiftly acquired prominent significance in the market of sustainability reporting

standard setting (O'Dwyer and Unerman 2020). The success of the TCFD initiative soon induced other standard setters including CDP, CDSB, GRI, IR and SASB to showcase how their definitions are aligned with the perspective that the TCFD takes (Rowbottom 2022). As the TCFD initiative is focused on climate-related financial risks (TCFD 2016, 13), it is clear that its perspective is in the same camp as those standard setters who are uniting around financial materiality, such as SASB, CDSB and IIRC. Therefore, the prominence that the TCFD initiative achieved also contributed to the rise of financial materiality.

Thus, as with the second episode, the definitional work as a form of competitive boundary work continues in this third episode as we outlined above. Part of this work includes the efforts by various sustainability accounting standard setters to build alliances and coalitions (Langley et al. 2019) with more powerful players such as the OECD and the TCFD initiative and mobilise their definitional connection with these powerful actors to valorise these standard setters' own materiality perspective.

However, our field evidence shows that at the same time the collaborative dimension (Langley et al. 2019) in the space of materiality and sustainability reporting continues to grow as well. Many key actors of this episode become more willing to cooperatively engage with their counterparts from the other side of the boundary. As a prominent example, in his article titled "About materiality, connectivity and more", Faber (2022) – the Chair of the International Sustainability Standards Board (ISSB), highlights the importance of cooperation and connectivity between ISSB standards and the work on the other side of the border by the GRI.

The "Group of Five" is another high-profile example, where the five major standard setters – CDP, CDSB, GRI, IIRC and SASB (2020) officially stated their "intent to work together" in order to avoid a siloed "alphabet soup" situation and create a comprehensive sustainability reporting framework, despite the distinctiveness of their own focus. Such simultaneous competition and cooperation fall within the scope of what Langley et al. (2019)

characterise as configurational boundary work. In proposing this label, Langley et al. seek to draw attention to the possibility that despite the ongoing competitive boundary work by actors to keep their own jurisdictions, they at the same time may be willing to cooperatively engage with their competitors from the other side of the boundary in order to achieve a collective goal, whose accomplishment is dependent upon the collaboration between both sides.

Further to this, our field evidence shows that the reconfiguration of the field towards a more collaborative situation relates to the role that materiality plays as a discursive boundary object (Power 2007), which as a common language provides an increasing sense of unity to give these key actors more capacity to see things in a more cooperative way. For instance, in talking about cooperation between the two sides, Faber (2022) refers to the GRI as "impact materiality" and uses "financial materiality" as a proxy for the work of the ISSB. He further signals that financial materiality and impact materiality could combine to form "holistic materiality". Here, the language of (holistic) materiality posits the "unity of an abstract community" (Power 2007), so that people on both sides might feel connected as being part of a unitary whole and become willing to engage with each other cooperatively.

Likewise, the language of materiality features very prominently in the policy paper of the "Group of Five". When it comes to why materiality appeals to them during interviews, members of these participating standard setters saw materiality as providing "some language" that "facilitated working together" and "allowed us to have conversations":

> I think that the role that materiality played was by coming to some language that we could use to talk about what we're trying to do as separate organisations, that facilitated working together, because before that people didn't necessarily know, were we trying to do the same thing or were we trying to do something different, can't there just be one? I think inherently we recognised we were trying to do different things and we were also doing it in different ways and so those can serve complementary purposes, but we hadn't written that down in one place, like the group of five work. (Interviewee 48)

> Materiality is a key differentiating factor. It allowed us to have conversations about where we are similarly, where we are different. It did help where we were having conversations between for example Climate Disclosure Standards Board, SASB integrated reporting around converging between us. Before International Financial Reporting Standards even

signalled that they were interested in doing this we were having conversations between the standard setters about whether we could or should come together conceptually and organisationally in order to create two standards. You had the Global Reporting Initiative the impact materiality side and then you'd have this financial materiality centre which then became Value Reporting Foundation. (Interviewee 64)

This account speaks volumes about materiality working as a discursive object (Power 2007) – a common language for a variety of standard setters to talk about their roles and identities. This common umbrella concept led these standard setters to see their proximity and complementarity to one another and thus made it more likely for them to soften their boundaries and work together more cooperatively.

The expansion of the cooperative dimension (Langley et al. 2019) during this episode also benefits from the invention and promotion of double and dynamic materiality by a series of outside actors[8] including but not limited to the European Commission (2019), OECD, the World Economic Forum (2020), the International Organisation of Securities Commissions (IOSCO), the Principles for Responsible Investment (PRI), the European Securities and Markets Authority (ESMA) and the Taskforce on Nature-related Financial Disclosures (TNFD) initiative. Their promotional efforts contribute to the wide circulation of the concepts of double and dynamic materiality, which as a bridge-like object (Carlile 2002) in a variety of interrelated fields projects an image of connection that makes people from different sides feel that their work is meaningfully relatable.

In the field of sustainability reporting, double and dynamic materiality creates a bridge (Carlile 2002) between those who were promulgating financial materiality and others that focused more on corporate impacts, by showing that in the medium to long-term corporate impacts are likely to turn around and come back to affect reporting entities financially. In the following excerpt, the interview participant, who was at the time working at the Treasury

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[8] These regulatory bodies and transnational organisations are regarded as outside actors, because there is no strong evidence to suggest their active involvement in the materiality debate before this episode.

Department of a Member State within the European Union (EU), shared with us how she sought to convince her colleagues of this connection between financial materiality and corporate impact:

> I went to some member states' capitals to actually present the report's recommendations and convince the member states to agree with us on the need to standardise extra financial information. A lot of member states were more or less opposed to that, for instance, Germany, Luxembourg and Eastern Europe were not really convinced, because they think that you only need to disclose what stops the financial materiality. Actually the whole debate I had with them was that it's actually pre-financial information for most of it, because when you think about it, the impact of any human activity, social, industrial, whatever, has an impact on the planet and the environment. And climate change and environmental degradation more than any other ESG topic is having already a financial impact and will have greater financial impacts. I think it's a feedback loop, in my view, double materiality at least for climate and environment. (Interviewee 42)

In the field of finance and investment, double and dynamic materiality are also likely to create a bridge (Carlile 2002) between "sustainability-related risks" and "principal adverse impact". The Sustainable Finance Disclosure Regulation (SFDR) was put in place in March 2021, requiring asset managers to assess and disclose the "sustainability-related risks" and the "principal adverse impact" of their investment. Because these two perspectives – "sustainability-related risks" and "principal adverse impact" under SFDR intuitively map onto the divide between financial materiality and impact materiality, double and dynamic materiality are often used by finance regulatory bodies to highlight to investors that the "principal adverse impact" of their investment and those "sustainability-related risks" already posed to their portfolios are not unconnected and the former may evolve into the latter at a later point (interviewee 44, 52, 55, 57). As an example, in its response to the European Commission's consultation on a Renewed Sustainable Finance Strategy, the European Securities and Markets Authority (ESMA) wrote the following:

> Traditionally, the integration of material sustainability factors in portfolios, with respect to both their selection and management, has considered only their impact on the financial position and future earning capacity of a portfolio's holdings (i.e., the "outside-in" or "financial materiality" perspective). However, asset managers should take into account also the impact of a portfolio on society and the environment (i.e., the "inside-out" or "environmental/social materiality" perspective). This so-called "double materiality" perspective lies at the heart of the Disclosure Regulation, which makes it clear that a

significant part of the financial services market must consider also their adverse impacts on sustainability (i.e. negative externalities). (ESMA 2020, 69)

In the field of risk management, double/dynamic materiality creates a bridge (Carlile 2002) between the perspective of "outside-in" and "inside out". The Taskforce on Nature-related Financial Disclosures (TNFD) initiative, for instance, in its initial framework, used the logical path that double/dynamic materiality established to demonstrate the need to extend from the current focus in risk management on the "outside-in" perspective towards understanding the importance of "inside out" impacts. This is because corporate "impacts on nature become relevant to enterprise value when assessed over a future time horizon":

> Double materiality is associated with the approach that organisations should disclose not only how nature may impact the organisation's immediate financial performance (so-called 'outside-in') but also how the organisation impacts nature ('inside out'). The concept of 'dynamic materiality' emphasises that there is a path for issues (including impacts) to become material over time…In line with the gradual convergence in the perspective on materiality in the market, the TNFD framework recognises that consideration of both nature-related dependencies and impacts is required for a comprehensive assessment of risks and opportunities, and that impacts on nature become relevant to enterprise value when assessed over a future time horizon (e.g. through scenario analysis). (TNFD 2022, 73-74)

In this way, double and dynamic materiality as a bridge-like object (Carlile 2002) establishes an interdependency between two sides and thus has the potential to enable a range of interested actors who are traditionally preoccupied with risk and financial performance to cooperatively (Langley et al. 2019) engage with individuals and organisations from the world of impact.

Additional examples include investors interviewed, for example, who revealed that they found double and dynamic materiality appealing, because these concepts helped them build bridges (Carlile 2002) between "stock prices" and the impact of their investment on society and the natural environment. For illustration of this, the two excerpts from the interviews with the Chief Investment Officer of a large UK-based pension fund and the Head of ESG research of a leading American financial service firm, are presented as follows:

> Double materiality is a concept that we have been socialising with our own mind as part of the training, to explain the rationale as to what we actually do. It's a mindset. It's a helpful thing to have in your head…It is a concept that we actually use ourselves to

explain, that as owners of lots of assets globally, it's not just the risks to the company but the companies how it can create risks to the economies and society. Because of the damaging impact on society, that may have a damaging impact on the economy, that broader economic damage is damaging me as a pension fund collectively. Big pictures thing. So, at some point impact will often come full circle. (Interviewee 67)

So, this is why double materiality to me is the centre of everything. In my day to day work I don't want anyone telling me why do you write about biodiversity; it's not moving stock prices. Establishing double materiality is the starting point for me to be able to say yes, it's not moving stock prices. It doesn't mean it's not important; it doesn't mean it's not going to move stock prices in the future. (Interviewee 45)

These findings are not restricted to our interviews. Publications from the International Organisation of Securities Commissions (IOSCO 2021) and the Principles for Responsible Investment (PRI 2021), whose members are influencing the world's financial and securities markets, also found the potential of dynamic materiality to bridge (Carlile 2002) the gap between financial risk/return and the social/environmental impact of investment:

The majority of asset managers emphasise the importance of financially material sustainability information that helps them assess a company's future prospects. These may also be affected by the company's external sustainability impacts on people or the planet, though some external impacts may not be immediate. Many asset managers explained that they do not view materiality as a 'binary' concept. They note that materiality is 'dynamic'. (IOSCO 2021, 20)

Double and dynamic materiality also become an object of interest for many professional groups on the finance side of the business such as risk managers and Finance Directors (Interviewee, 40, 50, 53, 56, 60). For similar reasons, they engage with double and dynamic materiality, as these concepts bridge (Carlile 2002) their boundary with the impact perspective and allow them to see that impact is not unrelated to their finance work:

I've felt it's [double and dynamic materiality] an important discussion. Because I think, especially as a bank, we have more effects from sustainability. We have both, and both are relevant. I think the inside-out perspective is as the same relevance compared with the outside-in perspective. We are affected by what our clients do, what our customers do. If they pollute the environment and if they have a serious incident and so on, we have risks that they cannot pay back our loans. So, this is an important criterion about how risky their business is. (Interviewee 53)

Therefore, the concept of double and dynamic materiality conveys to a multitude of interested actors that financial performance and corporate impacts are neither operating independently nor mutually exclusive. There is rather a bridge between the two sides. In this atmosphere, the

cooperative dimension is more likely to prevail among these actors despite their ongoing competition to keep their own jurisdictions (Langley et al. 2019).

Overall, this episode sees a dramatic increase in the level of attention to the concept of materiality and the continuation of the competitive (definitional) boundary work performed by standard setters to keep their own jurisdictions. However, at the same time it seems that many key actors become more willing to cooperatively engage with people from the other side of the boundary, even though they have their own distinctive focus. This "reconfiguration" (Langley et al. 2019) towards a seemingly cooperative situation benefits from materiality as a discursive and bridge-like object. These objects, invented and promoted by a series of outside actors such as the EU, OECD, IOSCO, ESMA and PRI, project a sense of unity and relatability that further encourages many people and organisations to prioritise collaboration over competition at least temporarily. However, as Langley et al. (2019, 724) also point out, holding together actors with different perspectives requires great care and ongoing efforts to maintain their connections, which otherwise can be very fragile and temporary.

Episode 4: Competitive (adversarial) boundary work and the construction of an "ethical space"

In this most recent episode, we begin to see the cooperative relationship forged around materiality coming to an end and turning into a much more competitive or even adversarial mode of interaction, as people seek to mobilise materiality more aggressively against counterparts with alternative perspectives. It is not uncommon to see at conferences and webinars, for instance, how impact materiality and double materiality are mobilised as an ethical stance to issue a normative statement about how its proponents belong to the ethical and sustainable category, whereas its opponents such as those supporting financial materiality do not. We spoke to some vocal critics of financial materiality, who were strongly worded during the interview as well: "They [proponents of financial materiality] are shooting themselves in the foot by ignoring [sustainability] context and impact" (Interviewee 69). Such mobilisation

of double materiality to question those who support financial materiality initially produced some meaningful effects. It led the ISSB, as a representative of the financial materiality viewpoint, to acknowledge that its framework is not the only legitimate international standards for sustainability reporting and that the GRI standards could play an important complementary role (see, IFRS Foundation 2022).

Nevertheless, with the passage of time the repeated narrative of the same point (superiority of double materiality over financial materiality) has the risk of being perceived as having less to do with a genuine effort to improve cooperation between different standard setters and more to do with an act of taking the "moral high ground" with the concept of double materiality. Perhaps no one feels this ethical framing of materiality more strongly than those on the side of financial materiality. In the excerpt below, an interview participant, who was part of the leadership team of a sustainability reporting standard setter that generally supports financial materiality, gave us an honest account of her discomfort with this:

> It almost becomes, and I really don't like this because I'm a technical person not a political person. It almost becomes a matter of political preference. I'm sure you've seen our debates with [Name who passionately promotes double materiality] and others, these debates get very heated because people almost interpret materiality as the position of moral high ground. Like my side of the argument is superior, because I want to get information for all stakeholders and intergenerational equity and so on, which I'm in favour of, don't get me wrong, but we're also talking about clarity of information here, we can't solve all of our moral problems by aligning ourselves with a particular position of materiality. It becomes counterproductive. (Interviewee 63)

Her account of how double materiality is being mobilised as a "moral high ground" is strongly reminiscent of Langley et al. (2019, 709) and Hobson-West (2012), who suggest that actors on one side of the boundary might engage in competitive boundary work to construct an "ethical space", where they themselves can be seen as taking a more ethical position, whereas the position their opponents take is morally problematic.

As this ethical space of materiality continues to make visible the limitations of financial materiality, our findings show that in response, standard setters, thought leaders and University

professors in favour of financial materiality adopted what we might term an avoidance strategy as a form of boundary work tactic (Hazgui and Gendron 2015). They begin to leave the materiality debate to avoid being hostilely framed. This tendency to withdraw from the materiality debate is typified by the following interview excerpt from another representative of the financial materiality viewpoint:

> Every single public panel I speak on, the question of materiality and double materiality comes up and we're stopping to speak, we're actually now saying we won't speak on double materiality publicly on panels because we find it's too politically divisive and it could cause political problems between ourselves at [standard setter in favour of financial materiality] and the EU so we are trying to steer away from it. It makes it [our distinction] more visible but doesn't need to make it more visible[9]. So, it could be seen as complementary approaches with a few tweaks but instead they're seen as kind of competing values so that's why we're not publicly talking about it because we don't want political signals to get out of whack and cause more international tension than is needed. (Interviewee 66)

As a result of their withdrawal, it seems that the long-standing materiality debate is dying down at least temporarily. Our most recent interview with a representative from the side of double materiality also confirmed that their counterpart has lost interest in the open debate on materiality:

> I think for the past year, at different conferences and public events, when there was someone from the ISSB, and people look at me as someone from [standard setter in favour of double materiality]…I felt no openness from them. I mean, when they were speaking I usually heard them reading loud press releases from the ISSB and so I don't feel that they want to discuss any more about materiality. (Interviewee 73)

At the same time, although the proponents of double materiality failed to convince the IFRS foundation to change position, the EU's double materiality approach at least at this point was not changed by the momentum of financial materiality as well. As the following interview excerpt shows, the concept of double materiality has been signed into the EU law and continues to influence other jurisdictions internationally:

> There is no ongoing debate whatsoever about okay should we go on with financial materiality versus double materiality. That's because that's the difference between when we were developing in Europe and the IFRS foundation. The IFRS foundation does

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[9] This interview participant was suggesting that the heated nature of the debate between financial and double materiality, which appears to be two mutually exclusive political values, overstates the conflict between their own approach and that of the EU, and makes their distinction more visible than intended.

whatever they think is good, whereas in the EU standard setting we have our own priorities, because of the public mission of the EFRAG…There is no ongoing debate about basically changing the EU approach [from] double materiality as well, because you can't overrule the legislation. If anything jurisdictions around the world are picking up the issue, I mean the Shanghai Stock Exchange guidelines recently kind of endorsed this concept [double materiality]. (Interviewee 72)

As this interview excerpt further demonstrates, the positivity to engage as articulated in the first three episodes is now replaced by a sense of disinterest in each other's perspective and the previously cooperative environment around the concept of materiality gives way to a go-it-alone attitude. Therefore, our conclusion is that 25 years after performing a series of unifying roles in the first three episodes, the concept of materiality in this final episode slides into the state of not being a boundary object and even the opposite of it. It embodies the character of the "ethical space" (Langley et al. 2019) that can also be understood as a "divisive institutional object[10]", which gets in the way, stirs negative emotions in people on both sides and makes them focus too heavily on the distinction between their approaches and between the stakeholder groups that they are seeking to represent (shareholders versus broad stakeholders). This demarcation influenced by double versus financial materiality was questioned by some corporate reporting managers interviewed (Interviewee 50, 51, 59, 60), who argue that this boundary is artificial and may overstate the differences between actual expectations of different stakeholder groups that are converging at least on some issues:

We see a lot of discussions out there whether the ISSB's focus on financial materiality is the right way to go or whether the impact materiality approach of the EU Commission is the preferred approach. And I would say from a practitioner's point of view, it's more or less an artificial distinction. An artificial distinction because we do not see that there is much of a difference between what investors ask us for instance and what NGOs ask us. So, looking at NGO or looking at investor's questions, of course investors expect us to have human rights due diligence approach in place and the reason why they ask us is they want to avoid risks in their portfolio; they see the business risk when there are human rights issues in a specific supply chain. And NGOs - they ask us exactly the same. So, they also expect us to have human rights due diligence management in place and the reasons are different. So, they ask this due to an ethical point of view. And from a business perspective, we also state that we have human rights due diligence management systems in place because we want to avoid supply chain disruption and so on and so forth.

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[10] This concept of divisive institutional object is inductively proposed as the opposite of boundary objects to explain how materiality inhibits cooperation in this final episode.

> So, we want to keep on collaborating with very important suppliers. So, three different motives but the same result at the end. (Interviewee 51)

The question of whether and how actors on both sides of the materiality debate are able to reengage brings us to the final concluding section.

V. DISCUSSION AND CONCLUSION

To better understand the evolving roles that the concept of materiality plays in the different episodes of sustainability reporting, we reported a field study that drew upon the "bricolage" (Gendron 2018) of the boundary object and boundary work literatures. As a result, we unveiled a visionary and relational role that materiality takes on in sustainability reporting and provided a comprehensive articulation of these roles across four interconnected episodes.

The concept of materiality begins in the first episode as a multi-visionary object, which projects a symbolically unified relationship among different actors who were at the same time largely independent in pursuing their own visions in relation to sustainability reporting, stakeholder engagement and corporate governance. Materiality then shifts to take on the role of a meeting point in the second episode, with greater interactions between different actors as they begin to position their own perspectives in relation to that of others through definitional boundary work. This relational role becomes even more evident, as materiality then shifts to become a common language (discursive object) and a bridge-like object, which inspire the key actors in the third episode to coordinate their relationships through configurational boundary work and thus better understand who does what within a more coherent framework.

This relational role persists in the fourth episode albeit in a much more competitive sense. In this final episode, the intensity of competitive boundary work by actors on both sides leads to significantly reduced engagement between them and results in the emergence of the "ethical space" as a crystallisation of this intensive debate. This "ethical space" continually reminds each side of the pointed critiques they exchanged, thereby continuing to fuel their tensions and prompting them to perceive their relationships through a competitive lens. An

overview of the core concepts and findings discussed in each of the four episodes can be found in Online Appendix 2.

These visionary and relational roles played by the concept of materiality in sustainability reporting have been hitherto underappreciated. Perhaps influenced by the way materiality is used in conventional financial accounting, prior sustainability reporting literatures predominantly focus on materiality's informational role, mobilising this concept as a threshold to support the attribution of material versus immaterial information for the purpose of corporate reporting (see, Ahn et al. 2024; Christensen et al. 2021; Gibbons 2024; Khan et al. 2016). The identification of these visionary and relational roles enables us to comprehend the full range of ways in which materiality functions. As a result, we now see that the concept of materiality in sustainability reporting goes much beyond influencing the way corporate reporting managers and auditors determine significant information within corporate reports to enabling a multitude of field-level actors including standard setters themselves as well as finance regulatory bodies and even transnational organisations to see things in a new light.

As another proposed contribution, we speak back to the discussions in the sociological literatures concerning our core concepts of the boundary object and the adjacent literature on boundary work. In the boundary object literature, for instance, there is a rich discussion about how different subtypes of boundary object are distinguishable from one another and how they are able to facilitate cross-boundary communication and cooperation in different scenarios (Briers and Chua 2001; Carlile 2002; Dechow and Mouritsen 2005). However, the change depicted in these studies primarily focuses on the relatively minor evolution of a boundary object from one of its subtypes to another. Therefore, we still have a limited understanding of the broader transformation from a boundary object functioning effectively to facilitate cross-boundary cooperation to something else that no longer fulfills this role. The introduction of the boundary work literature helps us to make this broader transformation visible. In particular, the

inclusion of competitive boundary work in the final episode allows us to discern this broader transformation where materiality turns from a discursive and bridge-like boundary object towards an "ethical space", which no longer functions as a boundary object and even produces the opposite effect that inhibits communication and cooperation. The addition of the boundary work literature to boundary objects therefore has the potential to help us better understand the evolution of other accounting concepts more comprehensively, because they together could capture both the unifying and divisive effects these concepts may produce along the way.

In addition, our findings add insights to the boundary work literature and in particular the concept of configurational boundary work. In coining this term, Langley et al. (2019) draw support from a collection of studies (see, O'Mahony and Bechky 2008, as an example), which, in common, focus on understanding how a shared reflective and experimental space can be constructed to allow cooperative relationships to prevail despite the simultaneous competition between people from different sides. However, these studies that Langley et al. (2019) draw upon are not designed to develop configurational boundary work and many of them did not explicitly engage with this notion. Perhaps because of this, Langley et al. (2019, 725) themselves argue that this notion of configurational boundary work remains "more abstract, coarse-grained, and apparently black-boxed" and requires further specification.

In the third episode, we have demonstrated that although the key actors continue with competitive (definitional) boundary work to keep their own jurisdictions, many of them become willing to cooperatively engage with actors from the other side of the boundary to develop a better understanding of their relationships. This reorientation of the boundary landscape towards more cooperative relationships allows us to expand upon the understanding of this concept of configurational boundary work and the various elements that were attached to it by Langley et al. (2019). For instance, Langley et al. (2019) conjecture that the enablement of configurational boundary work might involve an outside influence and the potential agency

at a higher level to bring the boundary space into new configurations. Such outside influence is very evident in our third episode, where we have shown how outside actors such as the EU, OECD, IOSCO, ESMA and PRI work to promote the concepts of double and dynamic materiality, which as a common language and a bridge-like object allow both sides of the issue to feel that they are dependent upon each other to tackle the grand challenge of sustainability. Such boundary objects invented and promoted by these outside actors contribute to the creation and expansion of the shared experimental space that allows for temporary collaborative work even amidst concurrent competition. In this way, we fleshed out the skeleton of the concept of configurational boundary work and its various elements as proposed by Langley et al. (2019).

We now proceed with a discussion of the policy implications that might flow from this study. Our presentation of the four interconnected episodes reveals that despite a long period of interactions, engagement and bridging, instead of moving towards greater consensus among key players, the rise of competitive boundary work leads to contradictions, disagreements and much reduced engagement between them. It shows the precariousness of the situation and indicates that the materiality debate as well as sustainability reporting more generally remain a relatively early-stage phenomenon, whose diversity in meanings and purposes have not hardened into a concrete and agreed perspective that can be applied universally. In this regard, the account below from Dechow (2023, 492) is instructively significant in terms of drawing a parallel between the current status of sustainability reporting and the early days of financial reporting:

> This all means that there is an opportunity to influence sustainability reporting, as it is still in the early stages. It is at a similar stage to the early days of financial reporting in the 1920s. At that time, there were no rules, and there was much disagreement regarding measurement systems. It is the same with sustainability reporting: there is still a lot of disagreement about the best way to measure and report greenhouse gas emissions, recycling, and measuring equity and inclusion.

Positioning materiality for sustainability reporting as an early-stage phenomenon makes it even more important that we avoid overstating the power of any single player alone in resolving the

grand challenge of sustainability. Our analysis has shown that even in the second episode, where the GRI was largely regarded as the core actor, it has to carefully manage the boundary of their (G3.1) materiality perspective in order to bring the corporate community on board and survive. The influence of the GRI was further diluted in later episodes as an increasing number of actors stepped into the field to stake a claim.

Likewise, although the financial materiality perspective acquired increasing momentum, its increased significance did not stop double materiality from taking root and spreading. The key actors behind financial materiality had to adopt the avoidance boundary work tactic in order to protect their vision. Therefore, sustainability reporting is far from reaching a mature stage where there is an ultimately dominant actor that can hold the umbrella concept of materiality to influence the global market consistently. We therefore join Dechow (2023) with substantial empirical evidence to find our place, which remains in an unsettled period of the history of sustainability reporting.

As a relatively early-stage phenomenon, a particular materiality perspective may be more familiar to actors from one jurisdiction, but other perspectives are also available around the globe and may be favoured by actors from other jurisdictions. Therefore, it is important that we move beyond the reduced engagement between different perspectives, as seen in the fourth episode. Key actors refusing to engage with alternative perspectives may produce two types of losses, both of which will hinder the progress towards sustainability.

First, embracing impact materiality only without engagement with financial materiality is likely to produce "very important wishful thinking"[11]. "Very important" because we cannot stress more how urgent it is to address corporate impacts. "Wishful thinking" because, even from a strategic point of view, attempting to move forward without involving supporters of

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[11] We acknowledge that this idea of "very important wishful thinking" came out of our conversation with the interview participant 61 through the process of "member checking".

financial materiality such as the large investment community which possess the resources required to bring about change is unrealistic.

Second, embracing financial materiality only without engagement with the impact side may result in what Bromley and Powell (2012) term a "means-ends decoupling". This "means-ends decoupling" explains that when the formal policy/vision set as a means is inadequate in achieving (or even decoupled from) the desired ends, then even the full implementation of this policy/vision still cannot bring people closer to the desired ends. Espousing financial materiality as a vision may produce this perverse outcome, where even if people strive to capture every sustainability-related issue that is financially material, the desired ends – sustainability may still not be realised because many urgent sustainability issues that are high on impact but low on shareholder value will be missed out.

We conclude with our suggestions on the ways in which key actors on both sides of the materiality debate might reengage in the standard-setting process. First, we propose that the resolution of such tension might benefit from the further involvement of transnational organisations such as IOSCO, OECD or even the United Nations. These "meta-regulatory bodies" as pillars of the international order are in the position to influence actors on both sides of the materiality debate. On one side, for instance, we have demonstrated at the beginning of the third episode that, in doubling down on the impact perspective, the GRI took inspiration from the publication by the OECD. Likewise, on the other side, interview participants in favour of financial materiality also have expectations for transnational organisations to join the debate as a mediating force. Such expectation is typified by the quote below which interview participant 63 expressed during the "member checking" process:

> I always felt we needed the OECD to become involved in these discussions. I always recommended that because what they're really really really good at is a dilemma resolution system. If you do have a dilemma, then OECD is really good at helping to unravel those things. It's almost like we need an independent chair for the discussion that takes some of the heat out of the positions that people now hold very dear.

Will the involvement of these transnational organisations bring about a reconciliation, or as mainstream actors, will their involvement risk bringing the materiality debate within the financial framework of neoliberalism (Rodrigue, Diouf, and Gendron 2023)? These offer some avenues for future research.

Second, we propose the benefits of rebalancing that involves a switch from the intense conceptual debate between different materiality perspectives as we see in the fourth episode towards the possibility of cooperating around the "technical" work of developing specific sustainability reporting standards. In proposing this, we build upon Young (2014) contrastively. Young (2014) presents a situation where financial accounting standard setters seek to draw a boundary between the "technical" aspect of standard setting such as the development of accounting measures and the "political" aspect that is laden with values, perspectives and debate. This boundary makes it possible for standard setters to direct attention primarily to technical matters while the debate over the alternative values and perspectives (political aspect) is silenced (Young 2014). By contrast, what we present in the fourth episode can be understood as a polar opposite, where energy, attention and resources are disproportionately devoted to debating alternative values and principles represented by different concepts of materiality. The construction of the "ethical space" indicates that over-attention to the distinction between different values (political aspect) is equally problematic, as it may result in an adversarial and ideology-oriented mode of interaction. In this highly politicised situation, we suggest that key actors on both sides may be able to reengage through a discussion of more "technical" issues in relation to concrete sustainability reporting standards. For instance, ISSB (2022) and EFRAG both support the inclusion of standards for Scope 3 Greenhouse Gas emission disclosures. Such commonality might act as a new "meeting point" between these key actors and give them greater scope for cooperation at the level of specific standards.

Third, the other obstacle that hinders understanding is that standard setters, in particular those on the side of financial materiality, are inclined toward the use of materiality as an information filter, because this is the role that International Accounting Standards Board (IASB) and the Supreme Court of the United States designate for this accounting concept. They embrace materiality's informational role whilst thinking that the use of (double) materiality interchangeably with sustainability to talk about the vision that people aspire towards is unorthodox and may cause confusion about this concept. We hope that this study could contribute to the clarification of the visionary and relational role that materiality takes on in sustainability reporting. These novel roles are not necessarily a problem to be eliminated but can be understood, disentangled from and meaningfully parallel materiality's informational role. To achieve this, we propose the addition of three qualifiers that of "information", "vision" and "relation" to the concept of materiality such as "materiality – information", "materiality – vision" and "materiality – relation" when it serves these roles, respectively. We argue that this clarification has the potential to alleviate the tensions between these roles in the materiality debate and thus paves the way for the beginning of a re-engaged relationship between these key actors when the next episode of sustainability reporting arrives.

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TABLES
Table 1. Chronological listing of the interviews undertaken

	Participant main role at the time of interviews	Length in minutes	Month/Year	Number of interviews
1	Corporate Water expert	49 | 52	2/2016 1/2017	2
2	Non-financial reporting standard setter	41	2/2016	1
3	Non-financial reporting standard setter	54 | 23	3/2016 11/2017	2
4	Sustainability reporting manager	53 | 34	3/2016 12/2016	2
5	Sustainability reporting manager	56	4/2016	1
6	Head of Sustainability	50 | 29	4/2016 11/2016	2
7	Local community specialist	76	4/2016	1
8	Sustainability reporting manager	30	5/2016	1
9	Director of Sustainability	50 | 38 56 | 37	5/2016 9/2017 7/2021 11/2021	4
10	Head of Water	44 | 33	5/2016 3/2017	2
11	Head of Sustainability	80	6/2016	1
12	Sustainability reporting manager	52	6/2016	1
13	Director of Sustainability	58	6/2016	1
14	Sustainability reporting manager	66 | 34	6/2016 5/2018	2
15	Sustainability reporting manager	67	6/2016	1
16	Corporate sustainability advisor	28	6/2016	1
17	Sustainability reporting manager	37	7/2016	1
18	Sustainability reporting manager	81	7/2016	1
19	Head of Sustainability	40 | 25	7/2016 10/2021	2
20	Community specialist	24	7/2016	1
21	Multiple roles	37	7/2016	1
22	Reporting manager	48 | 32	7/2016 11/2016	2
23	Senior sustainability manager	46 | 30	8/2016 1/2018	2
24	Sustainability reporting manager	44	9/2016	1
25	Director of Reporting	33 | 20	10/2016 6/2018	2
26	Head of Water	52	11/2016	1
27	Environmental NGO	47	1/2017	1
28	Environmental NGO	49	1/2017	1
29	Vice President	51 | 20	5/2017 6/2017	2
30	Head of Reporting	39 | 37	10/2017 3/2020	2
31	Sustainability reporting manager	42	2/2018	1
32	Sustainability reporting manager	30	3/2018	1
33	Manager at an ESG rating agency	30	6/2018	1
34	Thought leader	61	7/2018	1
35	Thought leader	56	7/2018	1
36	Sustainability reporting manager	60	7/2018	1
37	Member of a major standard setter	50	4/2021	1
38	ESG Director	83 | 36	5/2021 8/2021	2
39	CSR manager	74	6/2021	1
40	Corporate Risk Director	34	7/2021	1
41	Head of a regulatory body	65	10/2021	1
42	Government policy officer	35	10/2021	1
43	Member of a large rating agency	52	10/2021	1
44	Source close to PRI	46	11/2021	1
45	Head of ESG Research - investment firm	58	11/2021	1

46	Head of ESG Strategy of an investment firm	51 | 40	11/2021 2/2022	2
47	Industry association	38	12/2021	1
48	Chair of a major standard setter	37	1/2022	1
49	Corporate Vice President	70 | 50	1/2022 1/2022	2
50	Head of Accounting Group	53	2/2022	1 (together)
51	Sustainability Strategy Manager			
52	Officer of an EU securities regulatory body	37	2/2022	1
53	Corporate Financial Accounting and Policies	42	2/2022	1
54	Managing Director - large investment firm	50	2/2022	1
55	Member of an EU regulatory body	16	2/2022	1
56	Head of Risk	74	3/2022	1
57	Member of an EU regulatory body	45	3/2022	1
58	Vice President of a consulting firm	49	3/2022	1
59	Managing Director of an investment firm	45	3/2022	1
60	Head of Group Accounting	65	3/2022	1 (together)
61	Head of Sustainability Relations			
62	Chief Investment Officer - investment firm	39	3/2022	1
63	Director of a major standard setter	29 | 31	3/2022 8/2023	2
64	Member of a major standard setter	49 | 30	3/2022 4/2022	2
65	Director of a UK accounting body	32	4/2022	1
66	Director of a major standard setter	38	5/2022	1
67	Chief Investment Officer of a Pension Fund	47	6/2022	1
68	Member of a major standard setter	61 | 31	4/2023 2/2024	2
69/70	Two thought leaders	87	10/2023	1 (together)
71	Thought leader/standard setter	50	10/2023	1
72	Member of an EU regulatory body	56	5/2024	1
73	Member of an EU regulatory body	59	6/2024	1
Total		4195		91

Figure 1. Materiality matrix in Ford Motor Company's 2004-05 sustainability report (reproduced with changes made to the font size of the labels for the two axes for the purpose of improving readability)

Concern to external stakeholders (vertical axis)

Current or potential impact on Company (horizontal axis)

SETTING THE AGENDA FOR OUR WEB REPORT AND FUTURE REPORTING

SETTING THE AGENDA FOR THIS REPORT

Social issues
• Community disruption and land use

Environmental issues
••• Smog-forming tailpipe emissions

Social issues
••• Diversity and nondiscrimination
••• Marketing and customer information
• Mobility: access, new models, especially in emerging markets
• Traffic congestion

Environmental issues
••• Greenhouse gas emissions from vehicles; fuel economy

Social issues
••• Public policy stances
••• Vehicle safety
•• Human rights/working conditions in Ford facilities and supply chain

Social issues
•• Noise
• Economic viability of public transport

Environmental issues
••• Non-renewable resource consumption

Social issues
•• Contribution to local welfare
• HIV/AIDS
• Living wage
• Infrastructure

Economic issues
••• Governance: Compensation issues, Committee on Ford family conflicts of interest, Increased BOD independence, Statement of Director candidates in proxy, Need for Business Principles
•• Dealer services

Environmental issues
••• Material use and recycling
••• Environmental compliance

Social issues
••• Health and safety (workplace)
••• Employee satisfaction
•• Emerging markets products and services

Economic issues
••• Vehicle quality
••• Vehicle performance and value
•• Brand value and reputation
•• Ford cost to provide health care
•• Business case for sustainability

Environmental issues
••• Manufacturing emissions including VOCs
••• Manufacturing waste
••• Land use (Ford properties)

Economic issues
•• Excess capacity
•• Pricing pressure
•• Consumer spending trends
•• Interest rate risk
•• Counterparty risk
• Commodity price increases
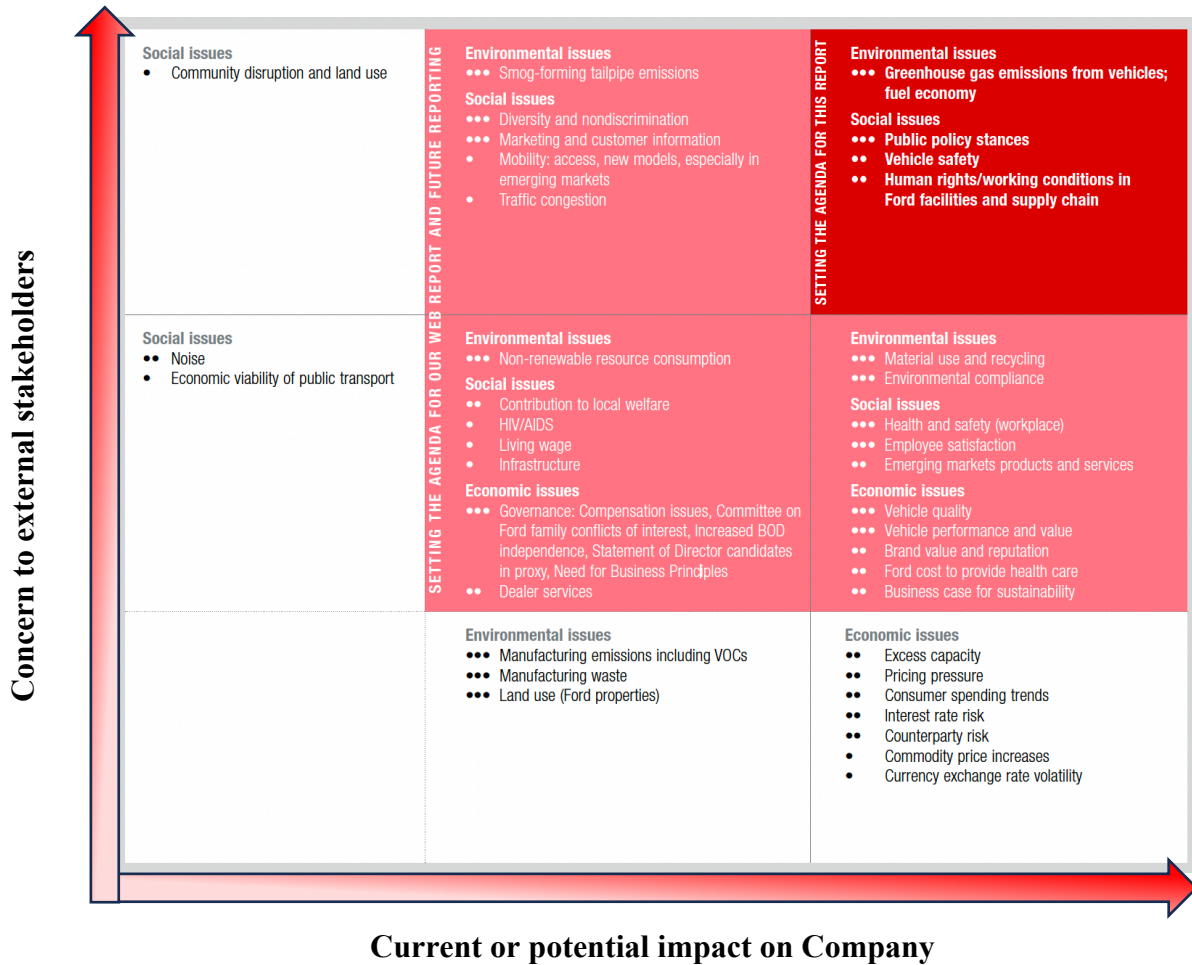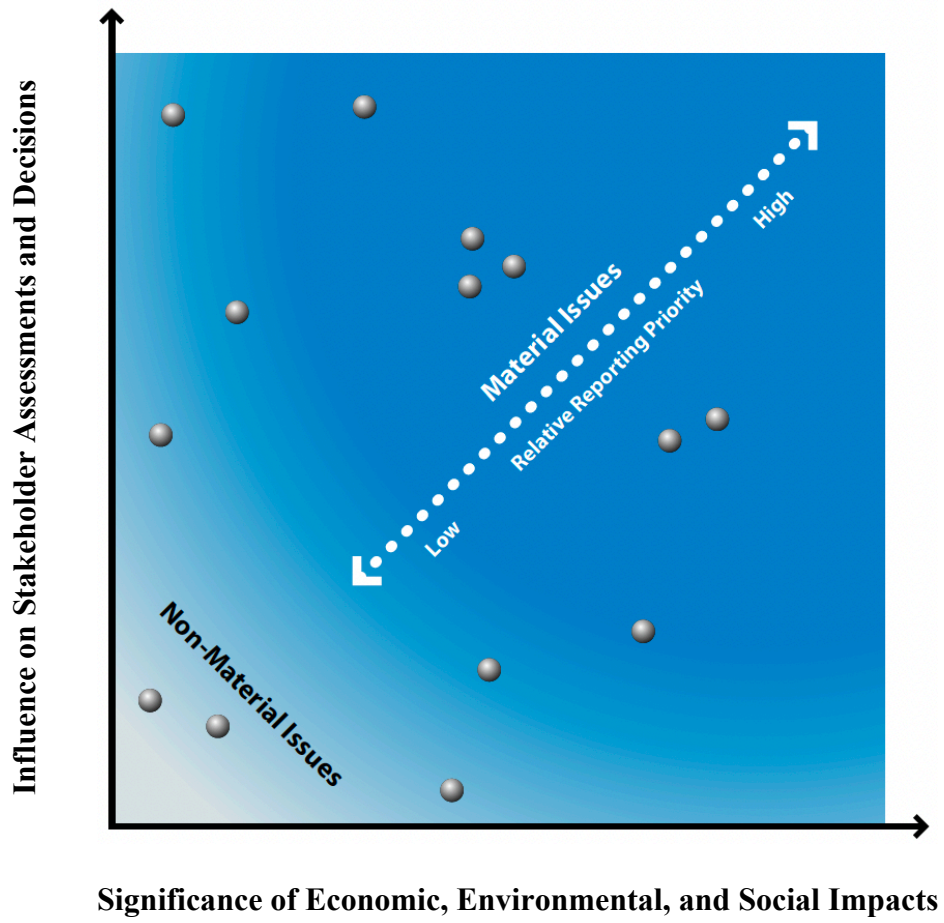• Currency exchange rate volatility

Figure 2. Defining materiality (GRI 2006, 8)

Figure 3. Determining materiality (GRI 2011, 9)