

## Article

# New Departures—Or a Spanner in the Works? Exploring Narratives of Impact-Driven Sustainability Research

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**Abstract:** This article analyses the narratives of impact-driven transition research in the field of sustainability studies. It reconstructs patterns of narrations at a discourse level. Departing from the understanding that narrating is a fundamental mode of communication and education, this contribution is ultimately driven by the commitment to understand how narrativity can be improved in order to reach more effective rhetoric for sustainability research. The article starts by describing the dilemma sustainability researchers might find themselves in regarding their position vis-à-vis society and politics. This dilemma seems to shape the narratives researchers use for describing their work. After conceptualizing narratives on a structural level, findings from a comprehensive qualitative interview study are presented and discussed. We find that sustainability researchers can be clustered in five different types, depending on their affinity or distance to real-world sustainability processes, their propensity to either incremental reforms or transformative change and the relationship between environmental and social concerns in the context of the sustainability concept. Furthermore, we find that critical-constructive transformative research encounters challenges when narrating about its position vis-à-vis society and policy-making in the process of formulating goals and working towards them. We identified a tension between leaning stronger either towards independent, critical goal formulation or towards an engagement with actual political processes. Maintaining the ability to change roles between the process-involved and the process-observing sustainability researcher might be a promising way out for those dedicated to workings towards sustainability transitions.

**Keywords:** narratives; rhetoric; sustainability research; transition; transformation

## 1. Introduction

Researchers dedicated to supporting sustainability transformations operate in a contested public arena where effective rhetoric is rewarding. We depart from the understanding that narrating is a mode of communication that every participant in the discourse exerts, more or less intentionally, and more or less effectively. Being interested in how this plays out in the field of sustainability research, we set out to reconstruct narrative patterns of speech. This effort is ultimately driven by the commitment to understand how narrativity can be improved in order to reach more effective rhetoric for impact-driven sustainability research.

While calling for a comprehensive societal transformation towards sustainability has become commonplace in parts of society, this has also shaped a field of research that aims not only at describing and understanding sustainability but actually tries to contribute to sustainable development (SD). Yet, this societal engagement of researchers comes with complications. Impact-driven research finds itself in a tension field between scientific objectivity and societal and political relevance. In Section 2, we

reconstruct the genesis of the research field and explore different strategies applied for the legitimization of its position vis-à-vis classical science and society. We argue that the dilemmas researchers might face become observable when narrating about their ideas regarding SD and SD research. These dilemmas may hamper the persuasiveness of their ‘stories’.

In Section 3, we present our methodological approach to analyzing the narratives of sustainability research. We ask what ‘narrativity’ is and how degrees of ‘narrativity’ are related to effective communication. Based on previous research [1–3], we consider “experientiality” and the potential for a reader or the audience to immerse themselves in a story as fundamental for higher narrativity, also in political and non-fictional contexts [4]. In addition to identification with narrative characters (agents), we assume that also the acts these agents are shown to carry out play a significant role in shaping narrative rhetoric, as do the purposes attributed to those acts, the respective means (agencies) and their contexts (scenes). Together, these five elements form what we call with Kenneth Burke a “dramatistic pentad” [5]. Based on an empirical study comprising 40 interviews with sustainability scholars and thorough qualitative content analysis (QCA), we identify sets of pentads or “micronarratives” that we aggregate then into narrative patterns of discourse.

Our results, presented in Section 4, focus on understandings of sustainability as well as on the role of research, including that of the individual researcher, in the context of sustainable development. We find that the tensions identified in the beginning provoke different strategies to position oneself rhetorically in this challenging field. Five different types of SD researchers at the science-policy interface emerge from empirical exploration. The typology reflects tensions along the dimensions of outspokenness about substantial SD goals, on one hand, and affinity or distance toward ongoing political processes under the sustainability heading, on the other. Central to our interest is the fact that these types correspond to different degrees of narrativity. We find that procedural open goals, blurry formulations of contexts as well as narrations about intermediate acts result in a limited degree of effective rhetoric. We conclude in Section 5 by discussing prerequisites for a more convincing communication of impact-driven SD research.

## 2. Conceptual Genesis and Tensions of Impact-Driven SD Research

Before we explore the narrative substance of sustainability researchers’ interventions, we ought to describe their peculiar position as compared to other fields of research. Researchers aiming at contributing to sustainability transitions have to deal with particular challenges derived from their approach towards society and policy. The dilemma we describe emerges between scientific neutrality and political modesty on the one side and normative commitment and political relevance, which may lead to legitimization challenges, on the other. The Section also discusses different strategies to deal with this dilemma.

### 2.1. From Research about Sustainability towards Impact-Driven Transition Research

While calls for a comprehensive societal transformation towards sustainability become more urgent in times of the Anthropocene [6] and increasingly obvious multiple ecological and social crises [7,8], concrete efforts often take a backseat in day-to-day decision-making as the sustainability agenda has to compete with concurrent short-term challenges. This is why parts of the scientific community have accepted the challenge to develop a comprehensive SD research agenda in light of the transformation concept.

Research about sustainability is not a new phenomenon. Ever since the 1960s and especially 1970s, researchers have contributed to developing solutions to crises that have simultaneous environmental, social, and economic roots and impacts. What is rather new is the call for research to get involved in attempts towards a sustainability transformation, and to align oneself with both the term and the processes that have spun off from the Brundtland report and the Rio summit. The very term “sustainable development”, and its normative impulse toward reconciliation between environment and development, is of political—not scientific—origin. The scientific engagement with SD has forced

research to politicize. This trend is, for instance, observable in the calls for ‘transformative research’ in the German-speaking countries. In the sustainability context, this term is not to be confused with Thomas Kuhn’s notion of scientific revolutions that has become prominent particularly in academic debates in the US. The influential 2011 Report of the German Advisory Council on Global Change called for nothing less than a new social contract for a collectively desired Great Transformation towards sustainability [9]. A prominent role is designated to transformative research and education in this endeavor. While the latter, in the form of the education for sustainable development concept (ESD), was criticized by many [10,11] but ultimately reaffirmed as an integral part of the SD agenda [12] (p. 17), the part about transition-oriented research and its communicative functions has not yet reached a consensual status.

The call for a comprehensive societal transformation towards sustainability is based on early Earth system science work addressing unsustainable tendencies, e.g., through the report to the Club of Rome [13] or the concept of the ecological footprint [14]. Natural limits and the danger of overshoot and collapse provided the reasons for radical change. The order of the day, thus, was rather ‘revolutionary’ than reformist—without worrying much about the political and institutional implications of such an agenda. It is here where the term transformation first (re-)emerged [15]. Later, consideration of the process dimension led to more incremental, cooperative approaches, supported through the social sciences. This was a reaction to the Rio process which strived for reconciliation between environmental and economic development concerns, as well as for global justice through the expansion of “participation”, a keyword of the Agenda 21 [16]. The advent of the global governance concept [17] also bears testimony to this tendency.

The call for a more committed, critical-constructive sustainability research did not stay uncontested in the research communities. Critics of the new research strand workings towards SD transitions lamented the danger of complete commissioning of research through the sustainability transformation agenda, characterized by ‘solutionism,’ research-extrinsic societal problem definition, and the repression of research-inherent methodological curiosity [18]. However, this critique fails to acknowledge the considerable spectrum of normative and research-ethical standpoints associated with an orientation toward SD transitions. The most modest ones could be described as transdisciplinary research with governance implications [19–21]. Emphasis on process optimization while refraining from giving normative directions is prevalent here, the transformation rhetoric is less pronounced. Schneidewind and Singer-Brodowski’s approach could be described as governance and transformation research. It rather embraces the normative implications of SD. Schneidewind and Singer-Brodowski [22] (pp. 72–74), for instance, speak of a “normative turn” and an “institutional turn” through transformative research, which means that research makes its own value judgments explicit and therefore discussable. They further suggest including (civil) society as a driver of knowledge production and political change [22] (p. 123). Even more explicit about the advocacy component of their work are scientists that aim at governance through transformative research. Loorbach [23] (p. 37), for instance, suggests: “While many scientific disciplines (such as policy sciences) often shy away from normative approaches, transition research makes this ambition explicit”. Depending on their placement along the spectrum, transition-oriented research scholars tend to be more or less explicit about their normative position. In the following, we will review different strategies to position contemporary, impact-driven research in the tension field between scientific neutrality and societal and political relevance.

## 2.2. *Changing or Observing the Game*

The debate about the role of research in dealing with societal problems is not new. Research has been enmeshed in modernity’s quest for innovative progress on one hand and found itself in the role of a fundamental critic and warner on the other. The Anthropocene and its accelerating crises have increased the urgency for finding and defending a position here.

Critical-skeptic distance and normative abstinence have traditionally been guiding principles in the classical self-perception of social research (see e.g., [24]). They were contested from early on [25],

sometimes in heated debates like the German *Positivismusstreit* [26], contributing to a high public profile but partially also to a disintegration of the field of social sciences itself [27] (pp. 65–96). While over the course of the 20th century many philosophers of science (e.g., [28,29]) joined in the choir of critics of the idea of value-free science, many continued to defend and refine the idea of the latter, e.g., during the so-called Science Wars in the 1990s [30]. On the whole, at the least methodological skepticism has prevailed as a necessary firewall between research and other functional systems in society [18] (p. 181). It still represents the yardstick for most social researchers to position themselves vis-à-vis policy and society, with notable dissent for instance in postcolonial studies or post-positivist political science [31].

Yet at the same time, research has actively been engaged in innovative progress at all times. Major parts of research have driven this progress forward without assuming an explicitly normative role, for instance, the technical sciences, tying their values to those of sponsors and costumers [32] (pp. 19–20), [33,34] (pp. 16, 26). While this engagement of science in ongoing transformations possessed a high educational and demonstrative power in itself [35], it was not necessarily self-reflexive. Yet, there is also a long history of—predominantly social—research that is more conscious and explicit about its own normative involvement while contributing to problem-solving. These critical-constructive strands of research often share an emancipatory emphasis on procedural justice. Sometimes, even more positivist social scientists recognized this need and sought to reform or complement their research practices through participatory designs [29]. Thus, action research [36], notions of ‘co-production’ between science, technology and society (STS, see e.g., [37]) in which public involvement ought to become more reflexive, or parts of the governance research are among those that paved the way for ‘mode 2’ science [38–40]. This new paradigm of knowledge production is marked by application orientation, transdisciplinarity, greater diversity of knowledge produced, high reflexivity, and novel forms of quality control [25].

These forms of critical-constructive research have to respond to the question of whether a stronger embedding of research in society leads to a loss of scientific neutrality and a subsequent loss of authority. The fear of a ‘de-differentiation’ in the event that scientific quality and relevance for SD are equated [18] (p. 182) is an indicator of that. Another is the worry about genuinely innovative, “contributory” expertise receding in favor of mere “interactionism” [41]. The shift that is intended by Mode-2-research is very similar to the education paradigm shift from teaching to learning, where teachers assume new roles as process facilitators and designers, and also as “learners” [42]. Impact-driven transition researchers have to answer the question what their role is in spelling out specific sustainability goals. Here, challenges in narrating the road to such goals might appear if that role is not clear.

Impact-driven transition researchers face a dilemma: if they are to adhere to societal demands regarding political prioritization and conduct, they are in danger of losing their objectivity and of being drawn into bargaining modes of communication [43]. However, if they set out to lead the way in sustainability transformations, criticism regarding a lack of legitimacy will result. What we observe are two ways to deal with this dilemma: first, leaving the articulation of sustainability goals to real-world ‘processes,’ thus deferring them into nebulous futures and negating a distinct normative contribution of science itself (beyond process facilitation), and second, reverting to environmentalist notions of danger prevention, as in the planetary boundaries concept—with limited communicative impact in local policy arenas. In the next Sub-section, we take a closer look at these two strategies.

### 2.3. Transdisciplinary Solution Finding vs. Scientific Insistence on Boundaries

Different strategies exist to position transition research vis-à-vis policy formulation and societal debate, among them, emphasizing transdisciplinarity on the one hand or pointing to scientifically determined boundaries on the other. Regarding the first option, the focus is on processes that include stakeholder participation and the integration of different forms of knowledge. This transdisciplinary approach attributes a facilitating role to researchers. However, it can also imply avoiding normative

goal formulations. Thus, the question is whether a firm focus on procedures can sometimes be at the expense of substance.

More than two decades of transdisciplinary research have seen different manifestations of the concept in theory and practice. What is more or less undisputed is that transdisciplinarity “deals with relevant, complex societal problems and organizes processes that relate knowledge and values of agents from the scientific and the non-scientific world” [44] (p. 477). However, there is a huge spectrum in variants of transdisciplinarity [19] (pp. 376–378). Especially in conceptions where scientific research takes a backseat vis-à-vis other voices in the agora of arguments [45], the question arises what contribution it has to make beyond systematization and facilitation. Developing ideas and approaches for SD in a collective process can mean that the specification of long-term goals and strategies is neglected for the sake of keeping the process going. Further, while transdisciplinarity certainly fosters participation and thus helps to create socially robust knowledge [39,46], this does not per se mean that its societal impact is transformative, i.e., tackling the structures of unsustainability.

From a narrative point of view, the question is how it is possible to tell a convincing story about sustainability transformation if the serving role of research means that goal formulation takes place in a complex, all stakeholder-encompassing process. The danger of ending up with the smallest common denominator is real, which makes the telos of the story, its “object of desire,” [47] hard to grasp. The examples where transdisciplinary research plays a damage-averting rather than a transformative role are numerous while finding precedents of effective, truly transformative involvement of social SD research is more difficult indeed. Symptomatic are, for instance, efforts to reach SDG 14 on the conservation and sustainable use of the oceans. While agenda-setting and avoidance of the most harmful practices can partly be counted towards the successes of transdisciplinary research, the overall deterioration of marine environments persists. This is what we mean by throwing a spanner in the works: the best research seems to be able to achieve here is to prevent even worse devastation. In addition, the researcher finds herself relegated to the narratively ancillary position of being merely the “helper” [47] to an agent or hero—the deliberating “stakeholder” collective, a position which is hard to pin down if the heroes themselves have no unified purpose.

A contrasting strategy to deal with the delicate question of research’s role in normative goal formulation is to retreat to seemingly externally-induced environmentalist concepts of restriction. Sustainability transformation then stands under imperatives such as from “limits to growth” and “the state of global equilibrium” [13], the Earth’s “carrying capacity”, the “ecological footprint” [14], “Earth’s systems planetary guard rails” [48–50], or “planetary boundaries” [51], some of which have found the way into international politics (e.g., the 2 °C-limit for global warming).

Referring to science-based environmentalist concepts of restriction may carry problematic implications, both from a conceptual and from a narrative point of view. When the Earth system dictates the limits, the room for maneuver for societal goal determination becomes smaller [52]. Even if the environmentally given limits were as clear as they seem, the means to stay within them are not. Here, new questions arise which require both a foundation in ethical understandings, e.g., on issues of fair burden-sharing in climate policies [53], as well as political focus, e.g., on how to spur effective policy implementation ‘on the ground’ [54]. Both requirements can be obscured by a fixation on absolute limits [55]. Problems of narrativity also ensue. Environmentalist concepts of restriction remain often defensive or even fatalistic, with limited engaging effect (we will elaborate on this later).

Nevertheless, these concepts also offer advantages. They make it plausible to determine “specific point(s) related to a global-scale environmental process beyond which humanity should not go” [7] (p. 61)—as long as you acknowledge that “should” entails value judgments. From a narrative point of view, the concept at least engages in goal formulation—which more deliberative approaches of transdisciplinary research tend to avoid. Stories of limits or boundaries are clear and tangible, as they provide a purpose, namely stability. This does not per se create convincing stories but lays a foundation for them.



This Section touched upon the dilemmas of transformative research that could influence corresponding narratives. We described the tension between transformative change and reformism, between new departures and the deferring intervention of throwing a spanner in the works. The next section will introduce our structural approach to narrative analysis.

### 3. Approaching Narratives: Methodology and Material

#### 3.1. Conceptualizing Narratives

When talking about narratives of impact-driven transition research under the angle of sustainability, it is important to note that we follow neither an argumentative discourse analysis approach like the one employed by Maarten Hajer in his reconstruction of “story lines” about acid rain [56] nor the one employed by Willy Viehöver in his description of “plots” about climate change [57]. What distinguishes our cognitive interest from these approaches is mainly a twofold focus on effective and adequate political rhetoric: (a) What is it, and how are degrees of ‘narrativity’ related to it? (b) Are “more narrative” texts and utterances in some way ‘enabled’ or hampered by objective factors that are not entirely at individual speakers’ disposal?

With regard to (a), we stand in principle close to approaches that emphasize “experientiality” and immersive potential of stories [1,2]. Further, we share the assumption with important parts of the narratological tradition that it is the understanding of characters—like the hero or the villain—that is central to assuring those qualities. Beyond narrative characters (agents), we assume that also the qualities of the acts these agents are shown to carry out play a significant role in shaping a narrative rhetoric, as do the purposes attributed to those acts (setting intentional action apart from mere motion), their specifications (agencies) and their contexts (scenes). Together, these five elements form what we will call with Kenneth Burke a “dramatistic pentad” ([5], see Figure 1), we methodologically assume that any text contains passages that may be considered intrinsically dynamic “micro-dramas” or “micro-narratives”, in the sense that they take the shape of pentads. The more they do so, and the more complete the pentads, the higher is that the text’s “narrativity” in the sense of persuasive narrative rhetoric [58]. Conversely, this means that if micro-narratives show gaps in their pentadic structure, e.g., by missing a purpose or a concrete context/scene, the overall narrativity suffers. By systematically distributing pentadic cells of analysis over the texts, and qualitatively detecting and quantitatively aggregating their individual elements and blanks, we can, therefore, detect narrative patterns of discourse by inference from the paragraph to the text or even the corpus level. For this, an element of quantification is necessary, while the analysis itself remains qualitative.

<b>Agent</b>	Who is involved in the action?
<b>Act</b>	What is being done? What is the action?
<b>Purpose</b>	Why do the agents act?
<b>Agency</b>	By what means does the action occur?
<b>Scene</b>	In which context does the action happen?

Figure 1. The Dramatistic Pentad after Kenneth Burke [59].

Regarding (b), it is important to note that while (meta-) narratives and other factors of social interaction, material constraint, relations of power and the like may structure discourse, they are not directly observable at the level of individual texts. One text can make fragmentary use of a narrative, it can even make use of different or even contradicting narratives. Utterances can be produced by a person that has to play conflicting roles and might be informed by these roles in different degrees. The narrative patterns of discourse are only to be inferred from the pentads we observe at text level. Such inference will always contain a speculative component, but this component can be controlled

through quantitative aggregation of codings when using data analysis software. Qualitative, exemplary text corpora of sustainability texts by certain public speakers, e.g., institutions, can then be used to at least plausibly suggest public narratives [60] (p. 619) that they present or represent. When doing so, and when observing, for instance, a recurring pattern of heroic agents (e.g., NGOs) narrated to perform certain acts (e.g., confronting business) in order to serve certain purposes (e.g., environmental or health protection), the shape of a certain ‘narrative’ of sustainability ambitions and struggles emerges quite clearly. Inference to non-discursive conditions that strengthen that narrative, on the other hand, cannot be done within content analysis alone. Our remarks on the latter, in the present article, remain speculative, although informed by the historical and analytical remarks made in Section 2.

### 3.2. *Methods and Data*

We analyzed micronarratives (pentads) at text level through qualitative coding and aggregating patterns at the corpus level, with the corpus presuming to represent a range of narratives that pertain to a broader discourse. The main corpus base used for our observations on impact-driven transition research and its positioning vis-à-vis society, politics, and sustainability, stems from a study we carried out in 2017. It was conducted in a major German sustainability research institute with more than 100 employed researchers. The corpus comprised 40 in-depth, semi-structured interviews, each lasting approximately one hour. Sampling to select interview partners took place through a quota system. The data generated equaled 300,000 words.

Topics in the interviews were selected to represent both the individual as well as the professional aspects researchers face in the sustainability field. Ranging from biographical questions to issues of practical work at the research-society interface, we included a range of subjects to generate material for analyzing (micro-) narratives of sustainability and sustainability research. At the end of each interview, we further asked interview partners to rank ten values frequently associated with sustainability according to the importance they should have in society. All in all, the interviews bore a very informal, confidential character and, notwithstanding their focus on the researchers’ job, went for personal worldviews rather than project descriptions.

Interviews were recorded, anonymized, transcribed and subsequently analyzed through a net of more than 4100 codings, almost half of them pentads. The QCA was performed using the software MaxQDA. Codes were developed incrementally during the analysis by a team comprising four researchers. We decided to do the coding by humans rather than using topic modeling or other computer-based approaches as we consider context-sensitivity as well as awareness for latent content highly relevant for our analysis. Developing the code system as well as ensuring the appropriate and comparable application of codes to the material was ensured through regular coding conferences in the team. We further ensured inter-coder reliability through performing several coding rounds, ensuring all passages were coded by different researchers. In our analysis, we identified more than 300 ‘micronarratives’ from which we could deduce patterns of underlying (meta-)narratives of impact-driven sustainability research at the science-policy—or science-society—interface. Also, this observed us to allowed systematic pentadic gaps, ensuing in problems of narrativity as explained in the previous sub-section.

In order to enhance validity, we triangulated the pentadic codings with other, more topical ones, covering, for instance, affirmative and critical references to values, and with lexicometric elements as well (regarding, for instance, the predominance of a more environmentalist, economist, or socially oriented vocabulary). This triangulation also permitted grouping the interviewees according to certain dimensions, allowing for a typology of SD approaches which we unfold in the next section.

## 4. Results

In our study, sustainability set the overall thematic frame. Findings depict how researchers approached sustainability (Section 4.1) and how they described their own role as well as the role impact-driven research should have in the context of SD (Section 4.2). Both aspects are not neatly

separable from each other, and both are relevant to the present paper. For a better overview, though, we will assign them to separate Sub-sections.

#### 4.1. *Struggling with Sustainability Goals and Engagement*

An illustrative way to address the range and distinctions in how SD engagement was understood, defined and talked about is to move along what we refer to as five ideal types of SD researchers. We differentiate between conservationists, green humanists, ‘transformers,’ socially engaged researchers, and process observers. While these ideal types were hardly encountered in reality, our interviewees nevertheless showed a clear tendency towards one or the other position. As a first approach to the diversity of positions and perspectives present among researchers engaged in sustainability research, we can assume each of these types to be influenced by a specific set of metanarratives about sustainability and the role of the sciences therein.

The typology reflects certain tensions apparent in contemporary SD research, namely

- between affinity and distance toward ongoing political processes in the sustainability field, and
- between taking ownership or showing the distance to scientifically founded SD goals.

The point of departure for the latter in terms of narrativity is the propensity to engage in any SD goal formulation at all. Here, we find a third distinction, namely between the emphasis on environmentalism and social concern. While this is not the main dilemma when exploring implications of the SD agenda for researchers, it still informed the typology building.

The conservationist type shows a clear, affirmative goal articulation, strongly emphasizing environmental criteria such as clean air and a stable climate as defining characteristics of sustainability. Social criteria are not explicated, the need to reconcile declining environmental consumption with the preservation or enhancement of living standards is acknowledged but in an abstract and often lukewarm manner. At the same time, conservationists express distance to political processes in the sustainability field, in the sense that they underline the autonomy research should maintain. Conservationists perceive lifestyle changes as an important means to stay within planetary boundaries, a corresponding change in social structures is acknowledged as a political task but not substantiated. Put somewhat drastically, one could say that conservationists would not really miss something if they had to dispense with the term “sustainability”. In our sample, the conservationist position was exceedingly prominent among natural scientists.

The green humanist position rather takes a central position in both respects, looking for middle ground between affinity and distance to political processes as well as between decisiveness and reluctance towards SD goals. In terms of goal formulation, environmental criteria are again prevalent. These researchers, however, pay more attention to conflicts related to resource usage. When discussing these aspects, they resort to political semantics but tend to avoid strong advocacy positions. Compared to conservationists, green humanists express a need to balance environmental conservation with human needs. Yet, while trying to balance the ‘social’ and the ‘environmental,’ they treat the two dimensions as parallel, i.e., disconnected, rather than interlinked. Sustainability is not articulated as a concept of integration. This becomes obvious when an interview partner from an energy-related project points out that

“The energy transition (‘Energiewende’)—if you take Germany as an example for energy transitions in general—has an energy policy target triangle [...] and there are of course different aspects of sustainability in it, namely on one hand the ecological side, thus greenhouse gas emissions, on the other hand social sustainability which is strongly interpreted economically in terms of affordability, for one thing, and then again that the distribution effects do not develop into a too negative direction, and [finally] security of supply.”

In conflictive situations, green humanists tend to assume the task of argumentatively strengthening the environmentalist point of view. Again, the green humanist position was mainly taken by researchers with a natural science background.



The “transformer” type, on the other hand, is again determined by a more positive reference to SD goals. This group provides a solid reference to environmental dynamics and processes, for instance when it comes to discussing the planetary boundary approach. Unlike the two other types, however, the transformer position strongly recognizes social needs as sustainability criteria. Sustainability is understood as a question of different dimensions of justice. The most distinguishing feature of this group is that we find firm attention to political processes and a conviction that one should actively engage in them. Transformers try to avoid any prescriptive position regarding specific policy outcomes of these processes—they prefer to “facilitate” them. This can be illustrated by the following passage:

“The question is how far does the normative claim go with regard to the concreteness of the goals? I am a little reticent about that. I don’t feel able to set and represent these goals myself. But I want to be a facilitator for a process that somehow makes this negotiation more meaningful. But that we say at all: ‘We, the world and the people are dear to our hearts, and that’s why we take care that as much biodiversity as possible is preserved and that the oceans remain protected and that the climate does not tip and that all people have to eat’—of course this is a normative commitment. And, I can’t pretend to say: ‘I stand for sustainability, but it’s not a normative statement that I say it’s dramatic that thirty thousand children die a day because of hunger’, right? So sustainability is deeply normative. The question is really, how far does this normative claim go when it comes to concrete goals? That is where I have the feeling that as an individual I cannot represent or define that.”

Despite their moderating role when it comes to goal formulation researchers from this group recognize at the same time they need for substantial change, e.g., in the form of an energy transition or an agricultural turnaround. Transformers stand out in terms of their highlighting of freedom and diversity, but also of responsibility. Distribution and conflict issues, on the other hand, are less present than in the following groups.

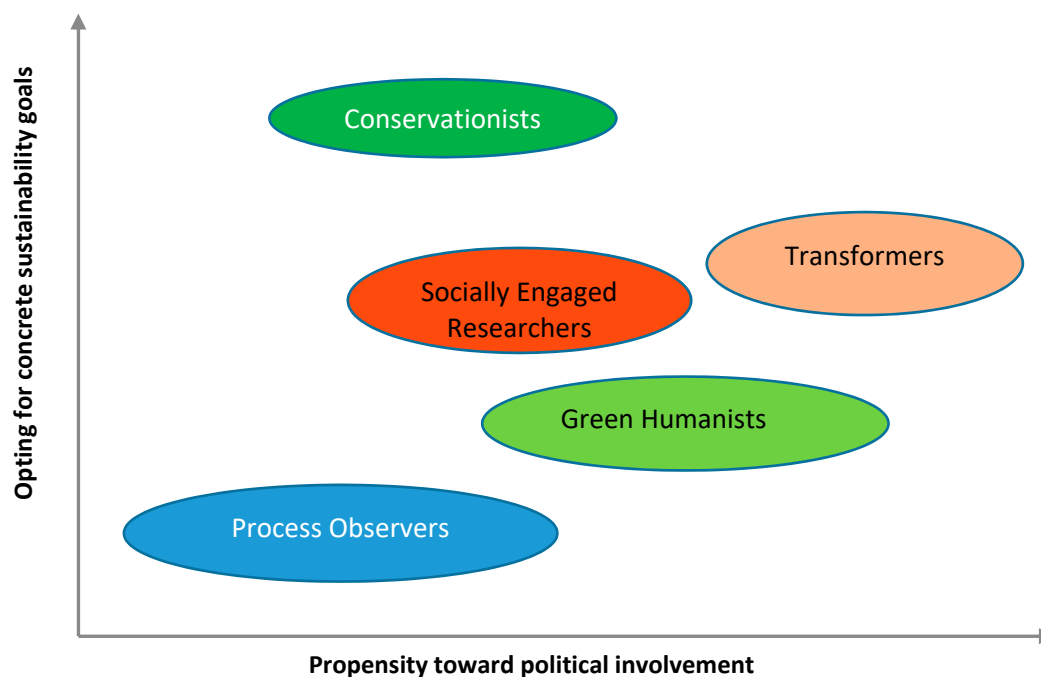
The socially engaged researchers do not share the transformers’ belief in political processes. While mentioning specific sustainability policies, they do so less often and in a less elaborate manner. A fairly clear reference to SD goals is present here, although environmental aspects are less prominent than in the three groups mentioned so far. At the same time, the socially engaged type emphasizes social motives more than any of the other. This holds true for motives such as combating poverty, but even more so for concepts of equal opportunity. The concept of justice—being prominent in the overall discourse of the interviews—appears most frequently here, often connoted with concrete material issues of distribution such as access to education, and to political participatory processes. Negotiating solutions to sustainability problems are perceived as essentially conflict-laden, as this interviewee points out:

“If every country, i.e., on an aggregated level, globally [ ... ] if we were to use resources sustainably, and sustainability was a universally accepted goal, then some conflict drivers would at least be reduced, the world would be more peaceful.”

Nevertheless (or precisely for that reason), sustainability as a substantial global goal that integrates social and environmental aspects is more often explicated than in the other groups. The primacy in this context clearly lies with the “social question”. Further, aspects of economic viability are more commonly raised than among the other types. Socially engaged researchers perceive a truly integrated SD approach as inherently conflictual and in need of resolving trade-offs. This might be the reason that these researchers are a bit more skeptical of real-world SD processes which are perceived as too conciliatory.

The last type, the process observers, exhibits a considerable degree of critical distance to the political domain. Representatives of this position also spend little time on articulating ideal forms of SD, neutrally depicting it as a real-world struggle instead. Social motives of justice, participation, and access to resources appear at above-average frequencies but are not systematically integrated into an

SD conception. Environmental motives tend to be rather weak. Process Observers are primarily—and critically—concerned with how the concept of sustainability is used in practice, for instance in the sense that it may serve to balance interests or facilitate communication, or—in a frequent pessimist reading—that it may prevent any genuine understanding and achievement of goals. Both “sustainable development” and “transformation” are met with a certain degree of ideology suspicion. The five ideal types are placed in Figure 2 below.



**Figure 2.** The ideal types of sustainable development (SD) research.

When abstracting from the social vs environmental emphasis dimension, which helped us to construct the ideal types, we can position them in a coordinate system that portrays their propensity to engage in sociopolitical processes on one hand, and the clarity of their fundamental transformation ideas or goals on the other. As we can see in Figure 2, the transformers—who, in our study, made up for one-fifth of the respondents—at least come close to the spot in the upper right: engaging in societal transformation with relatively clear-cut SD goals in mind. The next Sub-section, however, will show that even in this group both engagement and goals are narrated in a less than coherent, ultimately unconvincing way.

#### 4.2. Narrating about Impact-Driven Sustainability Research: What Is Told, and What Is Left Out?

In Section 3.1, we have already introduced the categories of “pentadic” analysis, we apply them here to the narratives of the entire interview corpus, only from time to time discerning between the types established in the previous subchapter.

Throughout our interviews, we found that the scenes in impact-driven SD research often tend to remain abstract and vague. The corresponding stories are mostly localized in institutional fields, e.g., in “democratic processes”, “the public”, or “sustainability communication”. These non-concretized contexts are almost more common than concrete spatial scenes, say, at the local or at the international level. In addition, there are many narrative situations in which the context remains completely unnamed. This poses a problem for narrativity, as arguments that unfold in a void remain lofty and intangible. Interestingly, when an omitted context is at least implied, it is mostly the national level, as in the following example, directed against too much academic advocacy:

“Problem-oriented science or policy advice will not succeed if your perspective is too narrow, e.g., if you focus on environmental protection exclusively. This will certainly please the Green Party, and they might even include it in their party platform, but it will not us lead to implementation.”

Since we conducted the study in a sustainability institute with numerous international projects and staff, such a narrative attraction toward national scenes is certainly not a trivial finding. Those who showed it the least were the SD-distanced process observers. Regarding the propensity to leave things uncontextualized, ‘in the air,’ transformers came first, while conservationists spoke in relatively ‘grounded’ pentads.

The over two hundred different acts that were described throughout our interview series could be organized into several categories, under which three meta-categories stand out: research, facilitation, and communication. While traditional research activities—such as testing, studying, modeling or comparing—persist to be perceived as being important, they are surpassed by the other two, especially by “facilitation”. The respective micro-narratives describe the interviewee’s interaction with actors outside of the science community, i.e., stakeholder interaction, in terms of “finding useful solutions together”, “building bridges”, “authorizing change agents”, etc. They contrast with a more traditional ‘truth speaks to power’ model which we assembled under the “communication” category: “taking a stance,” “influencing”, raising awareness”, etc. Researchers who subscribe to the latter model rather reject providing specific policy proposals. Such a rather conventional understanding of policy advice is more or less evenly spread among the aforementioned types—with a slight, non-surprising peak among conservationists and green humanists: It is, however, surpassed in overall quantity by notions of facilitation and joint solution-finding. While these notions peak in the transformers’ discourse, they rather surprisingly shape the discourse of all others as well, even those of the process observers. The prominence of process-oriented facilitative acts hints to a normative assumption and/or institutional mandate that “science [should] function as a catalyst of societal discourse”, as one interviewee put it.

The micro-narratives furthermore reveal a vast number of different purposes, i.e., descriptions of the ‘ends’ that agents at the science policy interface on sustainability are claimed to pursue. In this case, the agents are mostly researchers themselves. Purposes could be organized into the meta-categories: political goals, knowledge, understanding, and contributions (see Figure 3 below). While political goals and knowledge can mostly be understood as self-contained purposes (i.e., ends in themselves), this is not the case for the other two, also quite prominent categories. As open procedural purposes, they tend to imply a strong process orientation in the sense of “intermediate steps” towards other downstream and possibly higher-ranking follow-up goals.

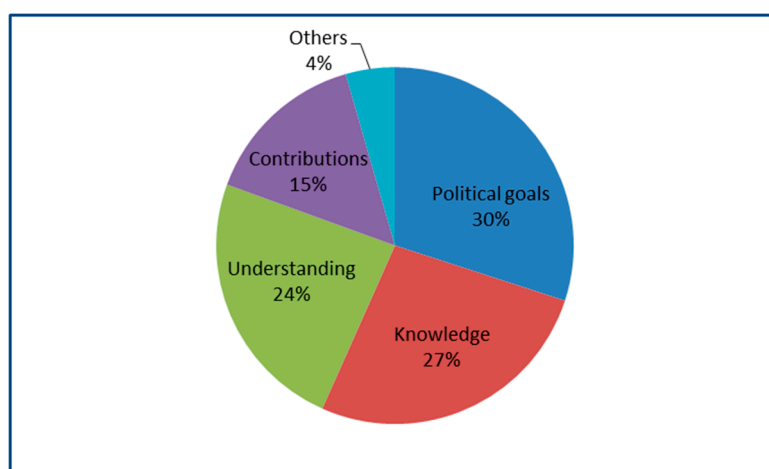


Figure 3. Purposes of SD researchers ( $n = 180$ ).

Open procedural purposes were oftentimes discussed in relation to a vague superior follow-up goal from another thematic category, most notably that of political goals. For example amongst the purposes connected to creating knowledge, there were quite a few that directly related to subsequent political goals that in themselves were not explicated. Knowledge shall be made available, for instance, to support and facilitate a political process whose ultimate ends are not further specified. Similarly, most of the understanding-and contribution-related purposes tend to be discussed in connection to attempts at facilitating an only vaguely specified science-policy interface. This can be illustrated by the following quote in which the interviewee—preoccupied daily with discourse analysis and event facilitation in the realm of climate engineering debates—points out that

“... helping to map the types of logics and ... or the types of narratives behind knowledge creation [ ... ] is useful to be able to then use narratives to improve communication, perhaps ... on certain very complex issues such as climate change, sustainability.”

In contrast, the category of political purposes certainly contains manifest socio-ecological goals such as the ‘transition to sustainable mobility’, ‘the improvement of air or water quality’, or ‘good nutrition for all’. At a second glance, however, even some of those purposes are again framed as open and provisional, e.g., in the sense of “advancing discussions”, “capacity building” or, especially interesting in the context of this paper, a not further specified “transformation”.

To sum up, procedural open goals permeate all four purpose categories and thus characterize a majority of narrations of the science-policy interface on sustainability. By way of alluding to a no further specified higher-level purpose, those goals tend to have the character of a contribution towards a (missing) end. While focusing on intermediate goals, the interviewees’ discourse tends to neglect, omit or postpone higher-level transformation goals. It is rather ‘transformative research’ itself, or more precisely, a contribution made by the researcher to an ongoing process, that appears as the primary goal of action. It remains open, however, from which situation or with what justification the process has emerged as well as where exactly, under whose participation, and for what purpose it takes place.

On a final note, science-society interface descriptions only seldom refer directly to values. This is especially true compared to the rest of researchers’ discourse (about their own life, the world, and sustainability in general), where values abound and that of justice prevails. If the science-society interface is addressed with reference to a value, it is mostly that of knowledge. This finding is striking, it is in accordance with the persistence of academic patterns in sustainability research framing observed by Wuelser and Pohl [61]. However, it might also be seen as a consequence of systematically omitting ultimate societal goals. When interviewees’ values are muted in this regard, what prevails in their absence is the classical scientific core value: knowledge. This result is reinforced by a tendency among interviewees to avoid—like in the case of scenes—any reference to purpose at all, an omission that impairs approximately one-fifth of all science society pentads in our study. Concentrated among green humanists and process observers and thus well in line with our typology matrix in Figure 2, this tendency in combination with ‘negative acts’, i.e. the description of what people are *not* doing, can be expressed in pictures of the science-society interface which are rather bleak and frustrating to the interviewee, for instance when an Arctic researcher describes the difficulties to get conflict parties from NGOs and oil business to join scenario workshops (“These people don’t want to talk to each other, they won’t listen to each other!”). However, we observed the rhetoric omission of purposes also in attempts to positively get a grasp on transformative research, e.g., when an interviewee working on smart heating assessments describes his transdisciplinary efforts of “involving the stakeholders early on and going to these loops of feedback and incorporating it in your research,” but fails to name any purpose this effort serves. Thus, narratives of transformative research tend to result in rather unconvincing stories. This is equally true for the transformers’ discourse and is one reason why they cannot credibly claim the upper right spot in Figure 2 either.

## 5. Discussion

Impact-driven SD research increasingly takes on a role in responding to the tremendous challenges of climate change and other crises in the Anthropocene. Yet we find that telling stories about the role of research vis-à-vis policy and society may be challenging. However, this kind of story-telling is not only desirable for external research communication. At the same time, it is highly relevant to enable younger researchers to understand established or emerging research pathways and approaches.

Critical-constructive impact-driven SD research encounters challenges when narrating about its position vis-à-vis society and policy-making in the process of formulating goals and working towards them. We identified a tension, at times even a trade-off between leaning stronger either towards independent, critical goal formulation (sometimes through environmentalist, sometimes through more socially engaged imperatives) or towards an engagement with actual political processes.

Being torn between involvement and independence from these processes, between affirmation and critical distance towards real-world SD goals, researchers face different options. A strong process involvement often results in taking over the rhetoric of the process itself which results in polished, not very meaningful narratives. Alternatively, when trying to be unambiguous, researchers find themselves in distant positions that are at odds with strategic debates and policymaking.

In our interviews, we clearly observed numerous cases of these dynamics. Not only the rhetoric but also the goals that are referred to are taken from real-world SD processes in which researchers are involved. The consequence is that it becomes difficult to tell about goals that are not originating from political processes but are based on scientific principles and findings. What we find interesting is that this tendency—assimilating project or process language—even occurs in confidential interview situations where it would be possible to speak more frankly about the intentions of research(ers). Here, in line with structuralist and cognitivist assumptions, rhetorical practice clearly interacts with and pre-structures thinking [62,63].

Our research suggests exploring where the optimal spot for an impact-driven researcher in the tension field between being a clearly narrating (i.e., purpose-articulating) and a communicatively prudent (i.e., not too advocacy-focused) sustainability researcher would be. If we assume that articulating clear SD goals while at the same time being politically involved in approaching them is possible, the upper right spot in the figure would be such an ideal position. We could then conceive of a curve leading from the upper left through the upper right to the lower right corner. This would imply that it is not a dilemma between the two axes. (If it truly was a dilemma, we would not conceive of a bent curve, but rather of a neat line from the upper left to the lower right. A genuine tradeoff would mean that the more researchers tend to be politically involved, the more they lose their ability to articulate clear SD goals independently from the processes they talk about.)

None of the five ideal types of impact-driven SD researchers combined narrating about both outspokenness and political involvement in such a way that it could credibly claim the spot in the upper right corner. However, the group of ‘transformers’ would seem the closest to meeting the challenge. Yet we found that even their stories leave a great potential for improvement. The risk of getting more and more captured by the role of a mere facilitator is present, this would imply ending up in the lower right position of the graph. Political goals are overall rarely manifested, while interviewees express the need to avoid being perceived as prescriptive or paternalistic. Whether this need is grounded in genuine ethical modesty and democratic openness (proclaimed by many) or rather in the tactical necessity of avoiding marginalization is a question we cannot solve in this contribution.

Assuming that the deep process involvement of impact-driven SD researchers like the ‘transformers’ keeps them from narrating convincingly about the science-policy interface, we suggest that an alternative way could lie in trying to switch between roles for the individual researcher. Instead of one optimal role for impact-oriented transition researchers, there might be two, depending on the respective situation. While the process involved may require alignment of the researcher with real-world goals, processes, and its limits, we argue that SD researchers should try to maintain or regain an independent, research-informed standard against which real-world processes can be assessed. Such a standard



can be derived from scientific research, philosophical reasoning or even political deliberations, but it should not merely build on (often local) political processes and projects in which researchers are directly involved.

Such an alternation between roles would not be a trivial task. It is a shared challenge for all those engaged in impact-driven SD research. We assume that some of the proponents of mainly natural science-based concepts such as planetary boundaries actually do meet that challenge, e.g., when oscillating between the non-compromising truth of climate science and the compromise-oriented involvement in stakeholder commissions such as for a national phase-out of fossil fuels. In parallel to the role change, permanent critical reflection of SD research—retrospectively or synchronized—is key here [64], organized through accounting for and argumentative tracing of the approaches and methods of such impact-driven transition research [65] (p. 296). SD researchers should strive for developing forums and methods for this reflection.

In addition to methods for critical reflection on the SD research(er's) role, future research directions arise on the level of narrative analysis. As our study was carried out in one particular institutional context, further studies in other SD research institutes could complement this case. Similar analyses may be worthwhile in other research fields that aim at achieving a critical-constructive impact. In addition to this broader approach, refined studies within impact-driven SD research are needed. This may help to identify narrative differences related to topic, narrator, and context. This may also help to test and refine methodological and analytical approaches such as the framework for narrative analysis and the typology of SD researchers. Further, comparative studies between impact-driven SD research institutes and established university departments rejecting such claims might be helpful to carve out specific differences.

While the challenge is certainly not easy to meet, there are a few basic recommendations we draw from our research with respect to narratives in general. As introduced in the beginning, narrating as a mode of communication is performed intentionally or non-intentionally. It is furthermore deeply embedded in societal power relations that may foster or hinder the success of narrative communication. Thus, convincing narratives alone will not be a guarantee for progress towards greater sustainability, particularly in the light of partly impactful counter-narratives. Nevertheless, there are ways how narratives of impact-driven SD research can be improved. Our finding that narratives often remain incomplete or blurry suggests that researchers should talk more clearly about agents, acts, goals, means, and purposes. Further, the excessive insistence on (possibly planetary) boundaries and calls for environmental pressure reduction per se are unlikely to make for good stories. These protection-oriented stories tend to be expressed in 'negative acts' of omission or avoidance (i.e., incomplete pentads) and in mere opposition to the frames of conventional progress advocates—an opposition that cognitively reinforces the adversarial frame [66]. We further suggest that researchers should not be hesitant to use stronger value-laden language when narrating, particularly values such as justice, but also innovation, provide the material for telling vivid stories including positively connoted protagonists ('heroes') as well as counter-agents.

This value-laden language is in principle available. Although the UN Sustainable Development Goals, for instance, can hardly be seen as a narrative success [67] as they bundle too many heterogeneous political goals [68], their commitment to strong social targets in addition to environmental ones is not only conceptually appropriate, but also in rhetorical terms. Overarching transformation ideas that involve global safety, fairness, and life improvement—the essence of SD [58], remain the resources that impact-oriented researchers need to draw from over and over again. This may prevent getting lost in the daily policy transactions SD researchers have to engage with.

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