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A matter of culture? Conceptualizing and investigating "Evidence Cultures" within research on evidence-informed policymaking

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Abstract

This paper conceptualizes the notion of "evidence culture" in evidence-informed policymaking by surveying existing literature that either specifically employs the term or uses adjacent terms such as "epistemic" or "research culture". It employs mixed-methods scoping review, combining citation analysis using Web of Science data used to identify the key clusters of scholarship with a qualitative thematic analysis of key papers across these clusters. This analysis identifies seven distinct approaches to "evidence cultures" across disciplinary communities. The key points of divergence across the clusters include the meanings of evidence, the underlying understanding of the evidence–policy interplay, the conceptualization of culture, and its implications for evidence use in policy. Building on these insights, we offer a framework for analyzing evidence cultures, arguing for the conceptual and empirical utility of this term in advancing scholarship on evidence use in policy settings.

Keywords: evidence culture; evidence-informed policymaking; evidence-based policymaking; policy knowledge

The question of how to ensure policymaking is sufficiently evidence-informed has stimulated a wealth of scholarship and practice over the past four decades. Both the COVID-19 pandemic and concerns about "post-truth policy" have underlined the importance of this work (Cairney, 2021; Greenhalgh & Engebretsen, 2022). Multiple reviews synthesize aspects of this burgeoning, multidisciplinary literature, often highlighting barriers to, and enablers of, evidence use in policy (Cairney, 2016; Capano & Malandrino, 2022; Innvaer et al., 2002; Liverani et al., 2013; Masood et al., 2020; Mitton et al., 2007; Nutley et al., 2019; Oliver et al., 2014). This scholarship suggests that the following factors can all play a role in this regard: expert–policymaker relations (Oliver & Cairney, 2019), organizational capacity (Jakobsen

et al., 2019), research mediation (Neal et al., 2022), and the availability, accessibility, and framing of evidence (Cairney et al., 2016; Lammers et al., 2024). A review by Lorenc et al. (2014) integrates some of these organizational features into a concept of "evidence culture", arguing there can be important differences between the "evidence culture" of health sectors and other policy areas that health researchers may seek to influence (e.g., housing and crime).

This special issue builds on Lorenc et al. (2014) concept to examine *whether, how*, and *why* distinctive "evidence cultures" shape the production and use of evidence across different contexts. Political–administrative factors (Head, 2010) and institutionalized norms (e.g., quantification—see Tichenor et al., 2022) have each been highlighted as crucial for understanding evidence use in policy settings. However, these contextual–cultural differences are seldom explored in detail within evidence reviews since the aim is often to identify common trends and generalizable insights (e.g., Contandriopoulos et al., 2010; Haynes et al., 2018; Mitton et al., 2007; Murunga et al., 2020; Oliver et al., 2014) or to synthesize scholarship on evidence use in a particular policy area (e.g., health—Innvaer et al., 2002; Liverani et al., 2013; Masood et al., 2020). Consequently, the cultural dimensions that shape evidence use are seldom unpacked.

The key contribution of this special issue is to explore "evidence culture" as a concept that can help explain how and why initiatives to support evidence use play out differently across national, institutional, disciplinary, and sectoral settings (Smith et al., 2019). However, to develop the concept, we first need to appraise the way in which "evidence culture" and related concepts are already being employed. In this introductory article, we, therefore, present a scoping review of scholarly literature that specifically uses the term "evidence culture" or adjacent terms such as: "epistemic cultures" (Knorr-Cetina, 1999), "research cultures" (Gläser et al., 2015), "style thoughts" (Fleck, 1979[1935]), "cultures of knowledge use" (Christina Boswell, 2015), "evidential cultures" (Collins, 1998), "evaluation cultures" (Furubo & Barbier, 2012), "knowledge regimes" (Campbell & Pedersen, 2014), and "(national) civic epistemologies" (Jasanoff, 2011). We combine this scoping review with citation network analysis (Kajikawa et al., 2014; Leng & Leng, 2021), to present a broad overview of the scholarship related to "evidence cultures". We use this as a basis to examine thematic clusters within the network, exploring conceptual convergences and divergences across disciplinary and theoretical genres and institutional settings. In the concluding discussion, we build on the insights from this synthesis to propose a more detailed conceptualization of "evidence culture" and to outline a linked framework for studying evidence cultures with guiding questions that can contribute to a more comprehensive study of the phenomenon.

Elucidating what "culture" entails is notoriously difficult (Jepperson & Swidler, 1994). Our aim is thus not to develop a fixed and final operational definition of evidence culture, but rather to see it as a sensitizing concept that—through our framework—can guide the attention of researchers toward the myriad of ways that cultural factors shape the way evidence is conceived of, constructed, translated, interpreted, and employed in policy. This broad analytic lens—on both the *production and translation* of evidence for policy and studies of evidence *use* in policy settings—is a deliberate attempt to challenge the sharp division between evidence and policymaking, which is often implicit in many empirical studies of the evidence-policy nexus (Capano & Malandrino, 2022). Informed by key studies in science and technology studies (STS) and the sociology of science (e.g., Jasanoff, 2004), as well as accounts of the way research funding can function to shape the production, translation, and use of evidence (Bandola-Gill, 2023; Smith et al., 2020), we view evidence production and policy use as closely intertwined processes. As such, we propose that cultural factors should not be viewed solely as relevant for understanding the attitudes and behaviors of policymakers; rather, it may be as important to understand the cultures influencing those tasked with generating and translating evidence for policy use.

Our aim is to advance scholarship on evidence use in policy settings in at least three ways. First, by synthesizing existing scholarship using an approach that explicitly centres contextual factors, thus complementing the work of evidence reviews that aim to identify generalizable insights. Second, in developing the concept of "evidence cultures", we are responding to calls for greater conceptual clarity within the dispersed literature on knowledge/evidence in policy (Blum & Pattyn, 2022). Third, our citation network analysis enables us to reflect on, and integrate, insights from different disciplinary bodies of scholarship, helping to overcome disciplinary silos (Christensen, 2021).

Methods

To understand the major themes and common assumptions in scholarship offering insights into evidence cultures, we sought to capture a large sample of published research that has approached this topic from different angles, using a range of allied terms. We constructed a "map" of this literature using citation network analysis before analyzing commonly cited papers within network clusters. Here, we provide a brief overview of the methods used to systematically retrieve literature and construct our citation network (a more detailed account and the underlying dataset are available as Supplementary Material). Citation networks are made up of nodes that represent individual papers, and directed edges between nodes that represent citations from one paper to another. When scholars cite papers relevant to their research, this creates a self-organizing structure that groups papers into densely interwoven areas of cross-citation that reflect connections relating to topics, fields, institutions, and disciplines (Klavans & Boyack, 2017). To understand clustering, modularity maximization (Newman & Girvan, 2004) is a common and well-validated approach (Traag et al., 2019). Such clustered networks have been used to produce "maps" of literatures in different research areas, including sustainability sciences (Kajikawa et al., 2014), oxytocin research (Leng & Leng, 2021), knowledge co-production (Bandola-Gill et al., 2023), and emerging topics in energy storage (Mejia & Kajikawa, 2020).

To identify relevant literature, we began by developing a search string combining terms and phrases that are commonly used in studies of evidence in policy (see Supplementary Material). We performed our search on the Web of Science's Core Collection on the 29 November 2023, returning 2,089 documents. Full bibliographic data were retrieved for each paper, and we then parsed the retrieved bibliographies into a network-readable dataset. After cleaning these data by matching duplicate DOIs and merging duplicates, we constructed a network in which nodes are documents and directed edges are citation links.

Our initial dataset consisted of 2,089 retrieved documents and 123,772 unretrieved cited documents (i.e., documents that were cited within the publications we retrieved but which were not one of these 2,089 documents). These documents were connected by a total of 157,229 citation links, though ∼87% of the documents in the network were cited only once. Given idiosyncrasies in referencing, we filtered the network to include *only* documents with at least three links to other documents in the network to remove peripheral literature. We further focused our analysis on the main component (i.e., a connected network, removing any documents that were detached from the main network), reducing our dataset to 6,650 nodes and 29,198 edges.

Our final network dataset contains 1,819 of the documents in our original query (∼87% of the original search hits), and 4,831 documents not retrieved through our Web of Science search but cited by at least three of the retrieved papers. We then clustered this network by modularity maximization by the Leiden algorithm (Traag et al., 2019), detecting 14 clusters with $Q = 0.59$. Citations to papers within the same cluster constitute ∼77% of all citations in the network. We focussed on the seven largest clusters and classified each by their research focus. To do this, we calculated the total number of citations received by each paper within a cluster from other papers in the same cluster. We aimed to identify the dominant approach to research culture in each cluster and its conceptual core, and we did so by reading the papers that were most used within each cluster. For each cluster, we established the top-10 cited papers and the top-10 cited *retrieved* papers, and then distributed these lists across the team for data extraction. We selected highly cited papers because they are explicitly used by many other papers in same cluster, not because we assume citations are an indication of quality (Leng & Leng, 2020). We analyzed the papers within each cluster thematically, following a set of sensitizing questions across the following themes: evidence type, institutional setting, conceptualization of "culture", and dominant account of the evidence–policy interplay (see Table 1).

Further in this paper is a network visualization produced in Gephi (Bastian et al., 2009) of the seven largest clusters via a force-directed layout that positions nodes based on the density of interconnections (Jacomy et al., 2014), with nodes colored by cluster membership and labeled by their disciplinary orientation.

Table 1. Percentage of references directed within and between seven clusters by row, showing that all clusters direct the majority of their within-network references to other papers in the same cluster and the level of cross-referencing between clusters.

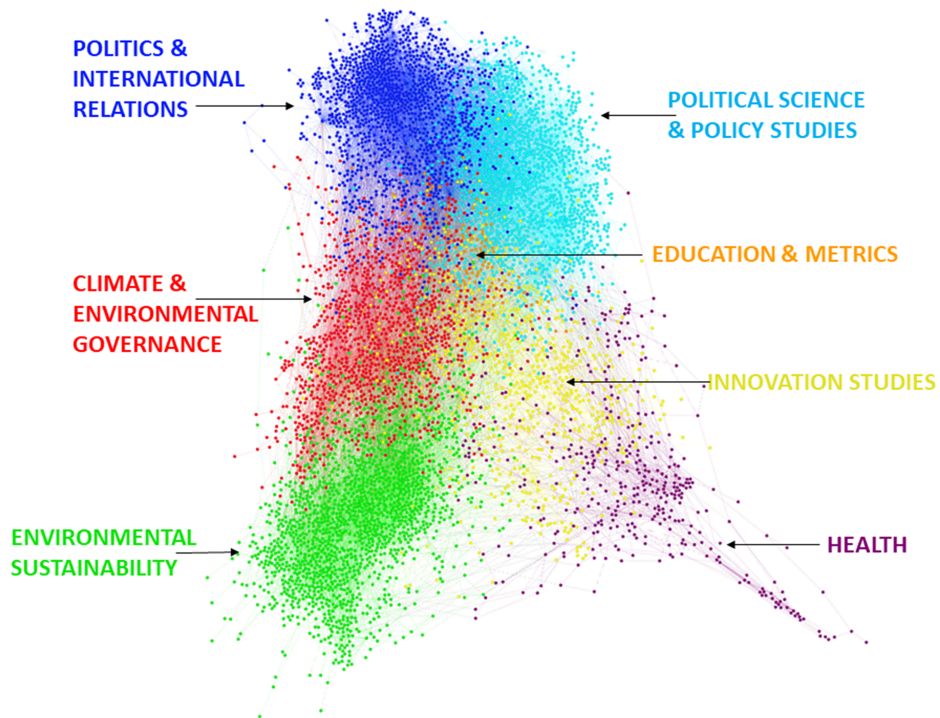| Cluster	Green (%)	Dark blue (%)	Light blue (%)	Red (%)	Yellow (%)	Purple (%)	Orange (%)
Green	85.1	0.9	15	7.9	2.6	1.1	0.2
Dark blue	1.1	78.6	12.3	4.4	2.1	0.2	0.5
Light blue	1.8	14.5	74.3	5.1	2.0	1.1	0.6
Red	11.0	9.3	6.0	67.1	3.9	0.9	0.8
Yellow	5.2	5.7	5.3	5.6	74.7	2.3	0.7
Purple	3.2	1.0	5.1	1.4	3.6	84.6	0.6
Orange	2.7	14.5	15.1	10.7	5.0	0.0	51.6

Figure 1. Directed citation network evidence in evidence use in policy, focused on the seven largest clusters ($n = 6{,}449$; $m = 28{,}503$). Nodes are colored by cluster membership and labeled by disciplinary orientation, with node position set by the ForceAtlas 2 layout algorithm.

Evidence cultures across the disciplines

The results of the bibliometric analysis are summarized in two ways. First, Figure 1 provides a visual depiction of the literature we identified and uses colors to identify "clusters" of well-connected literature. Second, Table 2 summarizes the key features of each cluster, along the abovementioned themes. The remaining sub-sections provide a more in-depth account of the overlaps and differences between these clusters.

Whose evidence is valued and why?

There are stark differences between some clusters regarding the types of "evidence" that are valued. For example, the purple health cluster (which sits at a distance from other clusters in Figure 1) places a strong emphasis on empirical research evidence. A medical hierarchy of evidence is often applied (explicitly or implicitly) to distinguish between higher and lower-quality evidence, with systematic

Table 2. Key features of the seven bibliometric clusters.

Cluster topic (color)	Type of evidence	Institutional setting	Notion of culture	Dominant account of evidence–policy interplay
Health (purple) 395 nodes	Empirical research evidence concerned with health, healthcare, or health policy, often positioned in a hierarchy of evidence in which systematic reviews are the "gold standard"	Predominantly national and local public policy and health systems bodies	The focus is usually on "professional cultures" ("policy culture", and/or "research culture"), with each culture positioned as embedding ways of thinking, processes, timelines, communication styles, and approaches that impact evidence use	The dominant framing is around "two communities" and "know-do gaps", i.e., the idea that there is an often-problematic separation between those who produce high-quality empirical research (or reviews) and those who are in charge of policy or practice decisions.
Political science & policy studies (light blue) 1,320 nodes	Scientific knowledge in the not only in broadest sense, but also experiences/lessons from existing policies (locally or from abroad)	Mainly national or transnational (how actors within national governments learn)	Causal beliefs and notions of validity shared between centrally placed actors	Separated into two communities/spheres, where the policy influence of evidence (in the form of learning or more strategic use) hinges on specific actors carrying it into the policymaking process
Politics & international relations (dark blue) 1,321 nodes	Knowledge in the broadest sense (recognized expertise and competence in a particular domain); not necessarily scientific evidence	Mainly transnational (international policy cooperation)	Causal beliefs, notions of validity, and underlying principled values and common goals shared between centrally placed actors; a sense of identifying with one another	Separated in two communities. Knowledge transmitted by networks of actors, and used in instrumental and strategic ways, mainly for agenda-setting, policy formulation, and decision-making
Innovation studies (yellow) 686 nodes	Extensive—from research and innovation to practice-based knowledge and commercially produced knowledge	National Innovation Systems (NIS) encapsulating multiple actors	Discussed as one of the determinants of the NIS. Culture is implicitly understood as located at the level of the system.	Closely intertwined—the key issue is with the notion of travel of knowledge and innovation across the system.
Environmental sustainability (green) 1,563 nodes	Knowledge systems with a particular focus on comparing "scientific knowledge" to "indigenous knowledge", with a strong emphasis on two-way learning	Multiscalar systems, from global science-knowledge processes to local practices (such as farming and fishing)	Often implicit (so not explicitly defined) but culture seems core to shaping the evolution of different knowledge systems via worldviews, accepted processes, practices, and values	Science and high-level policy are often framed as closely intertwined, but a problematic gap is identified between this "expert" knowledge and local, Indigenous knowledges, and practices
Climate and environmental governance (red) 1,048 nodes	Scientific knowledge with the ambition of drawing on other knowledge systems (Indigenous, nature, practice, and local knowledge)	Transnational environmental governance	The focus is on institutional setting—rules, values, internal processes guiding knowledge production and use	Co-constructed yet requiring strategic approaches to increasing inclusion and effectiveness of knowledge uptake
Education & metrics (orange) 116 nodes	Quantitative indicators (official statistics, performance measures, accounting methods, etc.)	International and transnational (IOs influence on national governments, global governance)	A (global) discourse, narrative, or rationality about the need for measuring and quantifying the social (e.g., references to "audit culture" and "culture of performativity")	Reciprocal and mutually co-constitutive (certain types of evidence render certain things visible in ways that further specific problem-understandings, actions and policies—and vice versa)

reviews considered an optimal form of evidence for influencing policy. For example, Grimshaw et al. (2012: 3) suggest, "that the basic unit of knowledge translation should usually be up-to-date systematic reviews or other syntheses of research findings".

In contrast, scholarship in the two clusters broadly grounded in climate/environmental studies (green and red) both tend to focus more broadly on "knowledge", "knowledge systems", and "ways of knowing" (e.g., Díaz et al., 2015; Folke et al., 2005; Tengo et al., 2017). This choice appears deliberate and is underpinned by a frequent concern that the dominant culture in "Western science" has unhelpfully denigrated the value of "lay", "indigenous", "community", and "practice-based" knowledge (e.g., Berkes, 1999; Díaz et al., 2015). Hence, in stark contrast with the publications in the Health Cluster, many of the publications in these two clusters actively challenge scientific "hierarchies of knowledge" and call for researchers to better appreciate the value of knowledge across different cultures and different "world views" (e.g., Tengo et al., 2017).

There is a strong normative dimension to these differences. Publications in the climate/environmental clusters often explicitly advocate for greater diversity of expertise and knowledge(s) in policymaking processes, highlighting the existing structural biases embedded in traditional scientific structures. Whereas literature in the health cluster is concerned only with evidence that meets particular *standards* of rigor and quality. This results in a gulf (visually evident in Figure 1) between those arguing for the application of tight evidential standards to inform the greater uptake of "good" evidence (the purple health cluster) and those arguing for the greater inclusion of diverse people and perspectives in policymaking processes (the green environmental sustainability cluster and the red climate and environmental governance cluster) to ensure better policy outcomes. These contrasting ontologies map to the methods employed within each cluster and are reflective of the authors' disciplinary backgrounds. For example, authorship teams in the environmental sustainability cluster, which features calls for scientific humility, are often disciplinarily diverse (e.g., comprising anthropologists, sociologists and political scientists, and Science and Technology Studies scholars alongside environmental scientists), whereas authorship teams in the health cluster are often restricted to health researchers.

Most of the other clusters take a more expansive view of evidence than the health cluster but are not quite as expansive as the two clusters on climate and environmental sustainability and governance. For example, scholarship in the two (closely aligned) clusters within political science (the light- and dark-blue clusters), typically avoid confining the focus to scientific or technical knowledge (e.g., Cross Davis, 2013) and include work by NGOs and think tanks, as well as scientists (e.g., Gough & Shackley, 2001), but do not generally share the environmental sustainability cluster's embrace of community/indigenous knowledge. The centrality of political disciplines in the two blue clusters is reflected in a common assumption that knowledge serves strategic and legitimizing purposes (C. Boswell, 2009; Radaelli, 1999), in contrast to the health cluster's focus on instrumental purposes. Similarly, in the innovation studies (yellow) cluster, a broad approach to knowledge is taken, though scholarship in this cluster seems more concerned with distinguishing different evidence types. For example, Klerkx and Jansen (2010) discuss the distinctions between knowledge versus information, whilst Ingram and Morris explore the difference between "know what", "know why" and "know-how". Finally, the education and metrics (orange) cluster explicitly (often exclusively) focuses on "the sociology of quantification" (Berman & Hirschman, 2018), which necessarily means that there is a focus on information that is quantified, such as statistics, accounting, and performance measures. Scholarship here often aims to demonstrate that quantitative measures have constitutive, constructive, and/or performative consequences for society (Mennicken & Espeland, 2019).

Which gaps are problematic and why?

There are three distinct ways of perceiving "gaps" between research and policy and practice within the literature in our network, and, once again, these vary by cluster. The health, innovation studies, and political science clusters share a concern with gaps between evidence (and/or expert knowledge in the Innovation studies and political science clusters) and policy and practice. In the health cluster, the focus is often on overcoming evidence–practice gaps, on the assumption that reducing these gaps will improve health outcomes. For example: "As a result of these evidence-practice gaps, patients fail to benefit optimally from advances in healthcare resulting in poorer quality of life and loss of productivity both personally and at the societal level" (Grimshaw et al., 2012). Likewise, literature in the innovation studies cluster often focuses on a perceived need to increase the uptake of knowledge in practice (e.g.,

Curry et al., 2012; Hermans et al., 2015; Ingram & Morris, 2007; Klerkx & Jansen, 2010). However, in contrast to the health cluster, the focus is more explicitly on the structural and network factors that can enable the uptake of knowledge and innovation. Scholarship in the two political science clusters shares a concern with the separation between spheres of evidence production and policymaking and often assumes each is guided by distinct logics. In contrast to the clusters on health and innovation studies, however, the political science clusters predominantly concentrate on the policymaking side of the nexus, with evidence being treated as one of many potential influences on policymaking (e.g., public opinion and political interests). Literature in the political science clusters propose that to travel into policy, evidence needs to be promoted and "carried" by relevant actors, with some analytic attention to the role of networks in supporting this work.

Publications in the environmental sustainability cluster are typically more concerned with the need to create "bridges" between indigenous/lay knowledge and scientific knowledge than with addressing gaps between evidence and policy (e.g., Agrawal, 1995; Roux et al., 2006; Tengo et al., 2017). This focus appears to be motivated by a sense that this area of scholarship was historically overly preoccupied with influencing global policy via close relationships between policymakers and researchers trained in "Western science". Several of the case studies used to unpack policy failures highlight that this unintentionally created a situation in which global policy struggled to gain national and local traction and, therefore, struggled to effect changes in practice. Hence, the focus on indigenous knowledge is driven both by value-based as well as pragmatic and strategic underpinnings; if local people (e.g., farmers and fishermen) are not sufficiently persuaded, then even policies with a strong evidence base will not effect change.

The final two clusters focus more on interconnected processes than gaps. In the education and metrics cluster, evidence and policymaking are framed as co-constitutive and inherently intertwined. The papers are therefore typically interested in studying how specific practices and methods of quantification constitute specific ways of seeing, understanding, and ultimately acting upon that which is being measured (Espeland & Stevens, 1998), i.e., constituting policy problems and solutions. This is similar to the climate and environmental governance cluster, where knowledge is also seen as having performative qualities (Christensen & Skærbæk, 2010). Though, in the education and metrics cluster, the focus is on the ways in which internal standards and processes within organizations shape the knowledge that is produced and disseminated (Hulme & Mahony, 2010). These papers demonstrate that the legitimacy of the advisory organizations is not given but strategically gained (Borie & Hulme, 2015) or undermined. For example, analysis in this cluster highlights how the Intergovernmental Panel on Climate Change (IPCC) follows a rigid knowledge hierarchy, which results in the reproduction of wider societal biases and lower representation of female authors and authors from the Global South (Díaz et al., 2015). This highlights the political nature of consensus-building and highlights the organizational challenge of trying to be simultaneously "scientific" and "inclusive" (Löfmarck & Lidskog, 2017).

How is "culture" defined and what are the implications for evidence use in policy?

Reflecting our study design, while the use of the specific term "culture" varies, most of the highly cited papers use this term or a related one. Definitions differ but typically centre on: shared values and epistemologies or common practices relating to these underpinning values and epistemologies, which become embedded (e.g., particular working styles or languages). For example, Cross (in the dark blue political science cluster) describes culture as comprising "the sense of purpose, identity, symbolism, and heritage within the community. It is more than simply esprit de corps, but a sense of identifying with one another" (Cross Davis, 2013: 150). In the same cluster, Haas (1992) concept of "epistemic communities" is commonly used to help explain the emergence of shared understandings and practices in international policy (e.g., around nuclear arms control—Adler, 1992). The concept of "epistemic communities" also features in the light blue political science cluster, though papers in this cluster tend to apply a broader set of concepts relating to policy learning (Dunlop & Radaelli, 2013; Moyson et al., 2017), such as advocacy coalitions (Mukherjee & Howlett, 2015), policy transfer (Stone, 2000), and diffusion (Dobbin et al., 2007). Hence, while not always explicitly used as a term, "culture" has a critical position in both political science clusters as the glue that binds actors together and enables evidence, or ideas, to spread. Haas (1992: 25), for instance, asks whether there is "a dominant social culture that influences the ideas developed and disseminated by scholars". By the same token, Dunlop (2017) reflects

on national cultures and asks, "whether certain types of societies have a greater or lesser disposition to learn than others?" The focus in both clusters is thus on the way shared cultures enable ideas and evidence to move rather than on how these cultures develop.

The STS foundations of the climate governance cluster inform closer attention to the way cultures develop by, for example, examining the evolving role of knowledge production in the face of global challenges (Nowotny et al., 2001). The key concept mobilized within this cluster is one of co-production of science and political order (Jasanoff, 2004) and the blurred boundaries and hybridization of science and politics (Gieryn, 1983; Latour, 1987). This focus is given more specificity within the education and metrics cluster, where the primary focus is on the way a specific culture of quantification has evolved to become dominant in particular settings. For example, literature in this cluster examines the way that quantified evidence is given material form through different numerical instruments (Berten & Leisering, 2017), such as rankings (Espeland & Sauder, 2007), indicators and indexes (Berten, 2019), and how such instruments are institutionalized within practices of national and global governance. While publications in this cluster provide insights into the ways "culture" can become embedded within, and thus furthered by, material "infrastructure" (Bandola-Gill, 2022), it is less clear where "audit culture" (Merry, 2011; Power, 1997) or "measurement culture" (Biesta, 2009) originate from, beyond an overarching neoliberal rationality or social imaginary emphasizing efficiency, economic perspectives, and market competition (Rizvi & Lingard, 2010). As such, the cluster does not focus on different evidence cultures (in plural), but rather sees quantification as part of a global and singular evidence culture that overrides specific local cultures and traditions regarding the evidence–policy nexus.

In the health, innovation studies and environmental sustainability clusters, which typically take a national or local focus, contrasting cultures are repeatedly identified as an important factor in explaining why evidence and ideas do not spread across contexts. For example, studies in the health cluster frequently contrast the culture of health *research* with *policy and practice* cultures to explain variations in the extent to which evidence is able (or not) to change policy and practice. Yet, while "culture" is consistently identified as important, few studies in the cluster try to present (or develop) a conceptual definition of "culture" that goes beyond a list of potential components (e.g., Dobbins et al., 2009; Makkar et al., 2015). Perhaps unsurprisingly, many studies in this cluster employ Caplan's (1979) notion or related ideas that poor connectivity between research and policy (or practice) reflects cultural differences between "two communities", researchers and decision-makers. In this way, "culture" is again depicted as multiple, intersecting factors that function to both enable knowledge to spread (within cultures) and disrupt its spread (across cultures).

Similarly, literature in the innovation studies cluster approaches "culture" as a factor enabling or hindering the use of knowledge (e.g., Amin & Roberts, 2008). However, a broader array of concepts are evident within this Cluster, including national innovation systems (Etzkowitz & Leydesdorff, 2000; Nelson, 1993; Sharif, 2006), knowledge systems (Curry et al., 2012; Klerkx & Jansen, 2010) communities of practice (Amin & Roberts, 2008), social learning (Hermans et al., 2015), and epistemic communities (Glazer & Peurach, 2015; Sharif, 2006); the latter overlapping with the two political science clusters. In the environmental sustainability cluster, there are frequent references to "knowledge systems" which are, for example, defined as:

'different world views, identities, practices, and ethics, in a context of asymmetries of power and rights [..] Knowledge systems are made up of agents, practices and institutions that organise the production, transfer and use of knowledge' (Tengo et al., 2017)

While the health cluster and environmental sustainability cluster consistently apply culture (or related concepts) to explain why barriers can disrupt the way evidence moves between contexts, they promote very different kinds of responses. In the health cluster, there is a strong focus on developing tools, roles, and processes to help instil an evidence culture (which embeds the health cluster's preferred hierarchy of knowledge) within policy and practice settings. The aim is to improve "knowledge translation" and "knowledge mobilization" from health research to policy and practice. In contrast, in the environmental sustainability cluster, recommendations stress scientific humility and a willingness to learn from other cultures, emphasize the importance of building trust and relationships, and employ host of terms that advocate mutual learning (e.g., "mediation", "negotiation", "dialogue", "cooperation", "co-production") and "meaningful participation" (especially of lay communities) throughout all stages of research (e.g.,

Tengo et al., 2017). While the health cluster's approach could be framed as "health imperialism", the environmental sustainability cluster's proposals are much more informed by an attention to historical contexts and power relations (e.g., colonialism—Berkes, 1999).

Discussion

Drawing across the clusters of literature reviewed in this paper, we use this section to propose a more coherent and holistic conceptualization of "evidence cultures", via a framework that can be applied to scholarship in this area. Our hope is that this framework provides a novel lens through which to view existing research on the evidence–policy nexus and identify new questions and answers to longstanding debates.

The concept of evidence cultures

As highlighted by our study—the exact meaning of "culture" is, on the one hand, diverse and, on the other hand, under-determined, as the vast majority of the literature does not operationalize or define this concept. Rather than attempting to merge the multiple definitions that we identified, we propose that distinct "evidence cultures" reflect distinct values and epistemologies and that these manifest (and can therefore be studied) via three principal mechanisms

First, as the education and metrics, climate and environmental governance, and health clusters all illustrate, via the formal rules, regulations and procedures that shape and govern knowledge production and use in specific institutional and policy settings (including, potentially, rules and mechanisms for obtaining resources to support research and translation work).

Second, as the environmental sustainability, political science, and the innovation studies clusters explore, evidence cultures may also manifest via more informal practices, rituals and (professional) norms, which can be identified in distinct patterns of behavior, habits or shared assumptions and repertoires of action concerning the production and use of evidence in policymaking.

Third, evidence cultures may also be visible in broader, related concepts, such as "data", "expertise", "knowledge", "knowledge exchange" and "research impact", which the central actors use to make sense of their actions and goals in relation to evidence construction, translation and use. For example, in the education and metrics and the health clusters, "data" are typically only used to refer to specific types of (usually quantified) data, whereas, in the environmental sustainability cluster, there is often a conscious effort to apply a much more inclusive definition. In other words, evidence cultures may manifest and, therefore, be studied partly through dominant ideas and discourses (see: Hajer, 1993) about what constitutes "good" or "appropriate" evidence for a given policy issue or within a particular policy setting or organization, as witnessed in the studies of the education and metrics cluster.

In all three manifestations, dominant "evidence cultures" can have both *constitutive effects*, shaping the type of evidence being constructed and promoted to policy audiences (e.g., via decisions around what is funded and published) and *a filtering effect*, with certain types of knowledge (those that "fit" the dominant culture) experience a relatively easy route into policy while other types are actively blocked, or altered as they encounter unreceptive cultures.

A framework for researching evidence cultures

Through these three principal mechanisms, evidence cultures can provide a novel perspective through which to view and expand existing debates on the evidence–policy relationship, in different ways. First, by redirecting the analytical focus from an exploration of barriers and facilitators of knowledge use to broader interpretative processes, which shape both evidence production and use. This is important because "evidence cultures" can function as filtering mechanisms, which facilitate a journey into policy of some forms of evidence while excluding others. In this sense, an evidence cultures framework aligns with literature in the environmental sustainability cluster, which calls on scientists to do more to reflect on the assumptions that they hold and to be open to learning from other knowledge systems (or "cultures"). This kind of cultural perspective may help explain why a facilitator in one context may be interpreted as a barrier in another context, where different evidence cultures dominate.

Second, a cultural perspective encapsulates both evidence production and evidence use, and the interplay between the two. Hence (informed especially by ideas within the cluster on climate and environmental governance and the education and metrics cluster), an evidence culture framework rejects

Caplan's (1979) metaphor of "two communities" and centers instead on the notion of an "evidence–policy interplay", grounded in a co-productionist theorization (Jasanoff, 2004). In short, the framework underlines the need to study evidence cultures across settings without assuming that "evidence" and "policy" communities necessarily have distinct evidence cultures. At a given point in time, a dominant "evidence culture" may be evident within a particular setting, but the boundary around this culture is unlikely to neatly align with professional boundaries; rather, "evidence cultures" may help explain why some types of evidence travel easily into policy (e.g., where cultures connect across professional boundaries, as illustrated by studies in the innovation studies cluster and the political science clusters).

Third, the framework encourages researchers to look for less dominant (and potentially competing) evidence cultures, alongside the (easier to spot) dominant cultures. For example, while many publications in the environmental sustainability cluster place a high value on indigenous and "lay" knowledge, scientific knowledge remains valued by many researchers working on environmental sustainability and some articles in this cluster advocate applying "standards of evidence" to indigenous knowledge in a more traditionally scientific manner (e.g., Usher, 2000). Furthermore, a dominant culture is unlikely to ever be completely stable so researchers also need to consider ongoing cultural change. Indeed, dominant cultures are likely to change over time or as they move across contexts. This is evident, for example, in the way literature in the education and metrics cluster shows different countries interpreting and using PISA-scores in markedly different ways.

The guiding questions of a framework for researching evidence cultures

For the sensitizing concept of "evidence culture" to enable comprehensive studies of evidence cultures—and their influence on evidence production and use—in concrete settings and through multiple theoretical and empirical lenses, we propose specific guiding questions. These questions are rooted in central tensions and conceptual and theoretical divergencies found within and between the different research clusters.

Symbolic and material enactments of evidence cultures

Evidence cultures concern values, norms, and logics about knowledge production and use, but such values and logics can often only influence policy in substantial and consistent ways if they are embedded within concrete methods, processes, tools, institutions, and systems for knowledge production and use. This means that studying evidence cultures requires exploring both the materiality of evidence-to-policy processes alongside their symbolic nature, which is more likely to be ascertained via an analysis of narratives, frames, interpretations, and underpinning values. The central questions related to this are:

1. What are the beliefs, norms, and views actors hold about evidence? How is evidence communicated/talked about?
2. What are the key material "carriers" of evidence (e.g., research instruments, communication tools)?

Structural and actor-oriented determinants of evidence cultures

Informed by scholarship in the innovation studies, the climate and environmental governance, and the political science clusters, this framework draws attention to the ways culture manifests itself within institutions and structures at the system level. Evidence cultures are thus more than merely beliefs held by individuals or groups of individuals (e.g., in epistemic communities). Evidence cultures also have structural components (e.g., institutionalized procedures for knowledge use) that exert influence beyond the actions of specific groups of actors. The central questions related to this are:

3. Who are the key actors involved in evidence production and dissemination?
4. Who is considered an "expert" and what is the key source of their (epistemic) power and influence? Who is excluded?
5. What structural factors (e.g., networks, institutions, and infrastructures) shape the production and use of evidence, and what types do they exclude?

Static and dynamic cultures

As evidenced by the education and metrics and health clusters, evidence cultures can take the form of highly dominant views on the evidence–policy nexus but will also be open to interpretation and, thus, translation and change over time, giving place to another dominant culture. A longitudinal perspective can elucidate whether, how and under which circumstances a particular evidence culture becomes dominant. The central questions related to this are:

6. What is the current dominant evidence culture within a given setting?
7. Are there competing evidence cultures at play within the same setting?
8. How long, and why, has a particular evidence culture come to dominate in a specific setting and is there any evidence of this evidence culture being challenged, blended/hybridized or replaced?

Situated and networked cultures

Finally, the evidence culture is shaped by both the immediate setting in which knowledge is produced and mobilized (e.g., specific organizations) and the broader networks and knowledge systems (with their relevant knowledge infrastructures). The situated cultures of specific organizations entail specific institutional epistemologies and the rules and mechanisms for producing and sharing knowledge. Organizations may have different evidentiary standards which can often be identified via in-depth examinations of internal "schemata" that drive knowledge processes. On the other hand, evidence cultures might emerge in broader systems (see the innovation studies cluster and political science clusters); thus, an interpretation of evidence culture might require a closer examination of how different situated cultures interact and interplay with one another and what overall culture arises at the system level. The central questions related to this are:

9. How has each identifiable evidence culture been shaped by the immediate setting in which knowledge is produced and mobilized, and by the broader networks and knowledge systems?
10. What differentiates the evidence culture of a given organization/institution from others within the broader system?

Overview of the special issue

The framework for researching evidence cultures calls attention to how contextual–cultural differences shape evidence production as well as its policy use across national, subnational, sectorial, and organizational boundaries. Such differences in cultures of evidence, and the many specific dimensions of such a cultural perspective, are illustrated throughout the contributions to this special issue, which incorporate analyses focusing on global, interstate, intrastate, and local levels.

Following this introduction, the first two papers in the special issue take a global perspective by respectively focusing on the spread of evidence-based policymaking (EBPM) and zooming in on global (knowledge) institutions. Holger Straßheim focuses on an intriguing puzzle; how we can explain the worldwide spread of EBPM despite continuous criticism? He approaches this question by unravelling the cultural constellations in which evidence is imbued with political and epistemic authority. As he argues, evidence cultures tend to hide the complex and often contested circumstances in which they came to exist. He carefully reconstructs this process by looking at quantifications, benchmarking and randomized controlled trials (RCT) as cases. In her article, Justyna Bandola-Gill shows how evidence cultures offer a new analytical lens for understanding the knowledge politics of International Organizations. Drawing on document analysis and 46 semistructured interviews with experts working on poverty, she unpacks how the calculative culture of the World Bank, as a key global organization, shapes the provision of evidence for policy making within the institution. Her analysis clearly shows how the prevailing evidence culture limits the availability of evidence-informed ideas. In addition, she explains how the evidence culture shapes the interactions between micro-and macro-levels of learning and entrenches the existing paradigms and ideologies. The culturally driven learning style thus acts as an important barrier to the dissemination of new policy ideas.

The issue further includes two papers that compare "cultures of evidence" in contrasting national settings. First, an article by Marc Geddes uses qualitative data to explore evidence use in two parliamentary settings: the UK House of Commons and the German Bundestag. It highlights the critical role

parliaments play in ensuring democratic decision-making is informed by evidence, while also demonstrating the ways in which beliefs and values shape knowledge use. Geddes' analysis suggests that contrasting "cultures" in each parliamentary setting UK result in very different approaches to evidence use. He argues that an ability to draw on an independent parliamentary administration in the UK helps engender a sense of parliamentary committees as non-partisan sites (a marked contrast with the adversarial culture of the wider UK political system) in which politicians use evidence to develop their policy expertise. In contrast, committees in the German Bundestag are influenced by party groups, which means that evidence is used to support overtly political bargaining. Second, a paper by Will McDowall contrasts the scientific policy advisory systems informing energy policy and the climate crisis in the UK, Germany, and the Netherlands. His analysis shows that, while all three systems draw on energy modelling, each system has a distinctive "evidence culture". While the UK system emphasizes salience, and draws on in-house expertise, the Dutch system focuses on maintaining independent, politically impartial expertise by drawing on evidence from arms-lengths bodies. Meanwhile, the German system draws on external bodies, ensuring the provision of high-quality, credible evidence, but this evidence often becomes contested as the implications are intertwined with political debates. Both papers attest to the potential value of comparatively analyzing distinctive "cultures of evidence" across national settings.

Three of the papers focus on a single national setting, either by examining a distinct overarching national evidence culture or by elucidating cross-governmental or sectorial variations in cultures of evidence within a given country. The paper by Howlett, Migone, and Howlett opt for the former by examining how Canada's distinct policy style has also created a distinct "evidentiary style". Through two illustrative vignettes of the procurement processes of military hardware and the "greening" of government procurement processes, the paper finds the Canadian Policy Advisory System (PAS) to be rather restricted, dominated by a small group of internal experts and selected external consultants brought in to legitimize already agreed upon decisions. Their paper thus elucidates how this leads to troubling tendencies of over-promising and underdelivering.

The paper by Christensen and Hesstvedt examines the extent to which different cultures of evidence, understood as informal norms and practices of evidence use, can be found within the different Norwegian ministries. The paper adds to the theorizing on cultures of evidence by proposing a two-dimensional conceptualization concerning both the amount of attention given to evidence and the nature of this evidence. Through the analysis of novel datasets covering all the commissioned research reports, white papers and expert commission members between 2000 and 2020, the paper furthermore deepens our understanding of the significant intra-governmental variations of cultures of evidence as well as the factors influencing such cultures. Such factors of importance include the level of political disagreement within the policy area as well as the analytical capacity as well as the capacity for knowledge brokering within the specific ministry. The paper thereby highlights the value of focusing on cultures of evidence to grasp the highly varied approaches to evidence across government ministries.

The paper by Saguin et al. examines cross-sectoral variation in evidence use in Brazil, by analyzing the results of a large-N survey of federal employees ($n = 2177$). Not only does this paper deepen our understanding of evidence use in the Global South but the findings suggest a more complex and nuanced understanding of how evidence use might differ across policy domains. Their findings suggest that few sectors contain "exclusive" cultures of evidence use. Rather, most policy sectors incorporate multiple clusters of evidence. Importantly, the largest portion of survey respondents seemed to describe an indistinctive culture of evidence where there is a low chance of using internal, external non-academic, and external academic or experiential evidence.

Finally, taking a more local focus, the paper by Allen and Broadhead examines how city-level policymakers in the UK develop support for immigrant integration policies in the absence of national guidance. By analyzing 6 years of documentary evidence from 12 municipalities, they demonstrate that action plans connect symbolic commitments to immigrant integration with concrete policy actions. In doing so, they argue that action plans serve as both the vehicles for establishing cultures of evidence use within these local settings and the mechanisms by which these cultures become embedded and enacted.

Between them, we hope the papers in this special issue, and the bibliometric analysis in this introductory article, help illustrate the value of considering the ways evidence cultures shape the production,

translation, and use of evidence. The framework outlined above is intended to support future scholarship to build on these papers to further unpack the evolution and consequences of contrasting cultures of evidence.

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