



Thirty-five years of sensemaking in the business & management research: a bibliometric analysis, review and discussion

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Abstract

Sensemaking is widely acknowledged as providing valuable guidance on how individuals and groups organize to perceive issues at stake, thereby lessening the negative impacts of future unknowns. Sensemaking is not a new field, yet events surrounding the recent COVID-19 pandemic may benefit from a sensemaking perspective. While prior reviews have considered sensemaking research, this is arguably the first bibliometric review of sensemaking and its application across the entire business and management domain. From 2,838 articles, we used performance analysis and science mapping techniques to offer propositions and avenues for future research. We advance theory and offer practical implications by identifying and providing context about prominent theorists, authors, journals, articles, and environments where sensemaking has been studied. Thirty-five years after the first article on sensemaking was published, this paper offers an extensive review demonstrating the evolution, current interests, and future directions of sensemaking research in the business and management discipline.

Keywords Sensemaking · Bibliometrics · Literature review · Management · Organizational studies · Business

JEL Codes M00 · M10

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1 Introduction

Sensemaking in business and management is important. Weick (1988, p. 308) stated, “if we can understand the process of sensemaking during a crisis, then we can help people to prevent larger crises by smarter management of small crises.” With a bold vision of equipping practitioners with sensemaking awareness to reduce the negative impact of unknowns, this study helps in gaining an overview and new perspectives of the sensemaking literature.

Sensemaking is a widely studied concept in business research, and practitioners alike acknowledge the value of sensemaking, evidenced by its application in governments and by management consultants (Australian Army 2021; PPL 2022). The organizational sensemaking process helps comprehend and manage dynamic environments. Understanding and scrutinizing the sensemaking process are significant activities in several practical application areas, such as managing strategic changes, facilitating mergers and acquisitions, providing better healthcare, and saving lives in crises (Gioia et al. 1994; Sahay and Dwyer 2021; Vaara 2003; Weick 1993). Yet, with the plenitude of sensemaking literature, there is a dearth of concise guidance for practitioners. Research has an important role in informing practice, thus it is no wonder that business scholars call for more research into sensemaking, considering sensemaking is studied in many fields, like marketing and small business (Christianson and Barton 2021; Hollebeck and Macky 2019; Holt and Macpherson 2010).

However, there are challenges in researching sensemaking in increasingly diverse fields. Sensemaking traditionally employs a constructionist philosophy with associated qualitative methodology (Craig-Lees 2001). Yet, fields studied in conjunction with sensemaking may adopt different paradigms, thus potentially affecting the validity, reliability, and acceptance of research by practitioners (De Frutos-Belizón et al. 2019; Healy and Perry 2000). This issue has received little attention, yet should researchers need to be concerned with philosophical differences, and if so, how are the differences reconciled?

Sensemaking has been investigated with several reviews that propel the concept and guide academics and practitioners; e.g., Cristofaro (2022) reviewed 402 studies, and Turner et al. (2023), 60 studies. As reviews are beneficial in summarization, uncovering new perspectives, and identifying trajectories (Fisch and Block 2018; Post et al. 2020), substantial changes in operating environments, such as COVID-19, precipitates the need for further reviews (Paul et al. 2021). This paper is arguably the first sensemaking review conducted since the COVID-19-related public health emergency ended on 4 May 2023 (World Health Organization 2023), with a wider literature search and resultant larger corpus than prior studies. With the uncertainty of COVID-19, combined with the origins of sensemaking in crises (Weick 1988), and the call by Christianson and Barton (2021) for a broader scope of sensemaking research, we posit that the significant changes resulting from COVID-19 necessitate a fresh review. Consequently, with the aim of making the sensemaking literature more accessible and further expanding the impact of the literature, we explore sensemaking theory as applied in the business and management discipline via three research questions:

Rq1: How has sensemaking research evolved?

Rq2: What are the topics of current interest in sensemaking?

Rq3: Where is the future direction of sensemaking research heading, and does the prevailing paradigm support future directions?

Given data analysis is valuable in advancing theory combined with the evolution of technologies that support literature data analysis, there is an increasing uptake of bibliometric research that handles large volumes of scientific data through quantitative and statistical means. As such, we employ performance analysis and science mapping using tools, methods, and techniques such as co-citation analysis and keyword co-occurrence clustering to address the research questions from the corpus of 2,838 articles. Our findings show that sensemaking is an important field that has attracted increasing academic attention, and it bridges many disciplines and environments based on the seminal work initiated by Professor Karl Edward Weick (1988) who introduced the concept of sensemaking into organizational studies.

Our study makes numerous contributions to the literature. First, identifying and discussing topical clusters provides novel insights and identifies trajectories, such as marketing and international business (IB) being emerging sensemaking topics. Second, philosophical discussion shows sensemaking as adaptable from its traditionally constructionist paradigm to other philosophies, for example, realism. Third, our propositions and discussion identify literature gaps and opportunities to develop sensemaking theory further. Last, we show that sensemaking is a valuable perspective in understanding micro and macro business environment change, thereby raising awareness of the practical applicability and benefits of sensemaking in the business and management discipline.

Next, we explain the sensemaking theory and then our methods and literature selection before presenting results. Discussing our findings follows this, and finally, the implications and future research opportunities are offered.

2 Theoretical context

Sensemaking emerged through five theories associated with seminal authors Brenda Dervin, Gary Klein, Daniel Russell, David Snowden, and Karl Weick (Littlejohn and Foss 2009). Dervin focused on information science, Klein on cognitive systems engineering, Russell on human-computer interactions, Snowden on knowledge management, and Weick on organizational communication. Weick's theory is prominent in management studies (Ann Glynn and Watkiss 2020) and has its origins in the 1960s when it was argued that our understandings are socially constructed (e.g., Garfinkel 1967; Weick 1969; Brown 2018).

Weick et al. (2005) described the sensemaking process in four steps, as illustrated in Fig. 1: (1) an environmental change is sensed and noticed as unfamiliar and requiring attention. (2) Initial understandings termed bracketing are forthcoming using cognitive frames such as work experience and education. (3) Labeling occurs where a collective plausible story emerges from the bracketing. Finally, in step 4, the learnings are retained, which then acquaint future sensemaking. While action is an

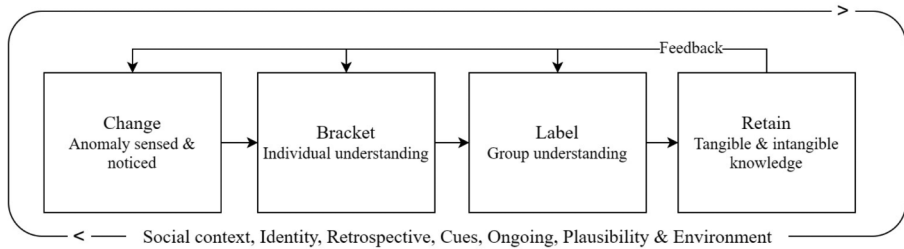


Fig. 1 Weick's sensemaking process exhibiting SIR COPE. *Note:* Adapted from Jennings and Greenwood (2003), Weick (1979), and Weick et al. (2005)

outcome of the sensemaking process that informs future sensemaking, sensemaking does not prescribe actions by itself.

Weick (2005) provides seven conditions for sensemaking, often abbreviated as SIR COPE, that affect the process (Fig. 1). First, *Social context* refers to sensemaking being social in that communication is central to sharing knowledge and forming opinions and understandings. Second, *Identity* is an individual's perceived and actual characteristics, such as education, role in an organization, and gender, that influence decision-making for the individual and groups. Third, sensemaking is *Retrospective* in that the process addresses unknown situations and environments, and people make sense of situations based on prior experiences and understandings. Fourth, *Cues* are the data and knowledge that individuals attain consciously and subconsciously. Fifth, sensemaking is *Ongoing* in that information and environments are imperfect, and past learnings inform new perspectives. Sixth, *Plausibility* implies that with imperfect information and understanding, accuracy is unlikely to be forthcoming; hence, plausible understandings are necessary. Finally, the seventh condition is that people and groups enact their *Environment* by creating a reality based on their plausible understandings and actions.

Two significant sensemaking constructs are *sensegiving* and *sensebreaking*, while other constructs include *sensedemanding*, *sense-exchanging*, *sensehiding*, and *sense specification* (Maitlis and Christianson 2014). Sensegiving shapes others' meaning construction (Gioia and Chittipeddi 1991), while sensebreaking breaks down or destroys interpretations (Maitlis and Christianson 2014). Definitions of the variants of constructs that define the sensemaking concept are provided in Table 1.

Practice and theory have a symbiotic relationship whereby both benefit through learning from and informing each other (Shepherd and Suddaby 2016). As we show in this study, sensemaking is a widely studied academic field, often involving practitioner perspectives like case studies, such as Weick (1993), studying sensemaking in a firefighting event, and Klein and Eckhaus (2017), analyzing Enron manager communication during its collapse. In addition, the literature provides mitigations; for example, sensemaking may be facilitated via activities such as scenario planning, promoting knowledge sharing between teams and business units, encouraging diversity in human resource experience, skills, and education, and by being aware of the process of sensemaking (Kalaiganam et al. 2021; Maitlis and Sonenshein 2010; Weick 1993).

Table 1 Sensemaking and construct definitions

Construct	Definition
Sensemaking	“The process through which managers and other organizational actors come to understand events or issues, constructing meanings by extracting, interpreting, and acting upon cues from their environment” (Whittle et al. 2023, p. 1808)
Sensegiving	“The process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality” (Gioia and Chittipeddi 1991, p. 442)
Sensebreaking	Happens when “previously held meaning attributions get disrupted or undermined” (Austin et al. 2020, p. 298)
Sensedemanding	“Efforts to acquire information that casts doubt on established meaning” (Calvard 2015, p. 9)
Sense-exchanging	“How organizational stakeholders’ perception and interpretation further construct and contribute to the identity consensus” (Ran and Golden 2011, p. 421)
Sensehiding	The “processes of distorting and manipulating images through holding back particular aspects or cues” (Horbach et al. 2019, p. 417)
Sense specification	“Providing specific meanings” to an event or environment (Monin et al. 2013, p. 257)

3 Methods and literature selection

Our research strategy comprised four steps; definition of aims and scope, selection of bibliometric analysis methods and techniques, data collection, and bibliometric analysis and reporting (Donthu et al. 2021). While we discuss the process as being step-by-step, in practice it was iterative as we refined, for example, research questions, literature searches, and tools as the study progressed. Our choice of bibliometric analysis and the literature selection are discussed next.

3.1 Bibliometric analysis

The scope of this review is expansive to understand the evolution and structure of the research topic; hence, bibliometric analysis is appropriate (Block and Fisch 2020). Bibliometric analysis comprises mapping contributions, i.e., performance analysis, and discussing the relationships, i.e., science mapping (Zupic and Čater 2015). Numerous methods, tools, and techniques are available to address research aims and methods, and techniques used in this paper are shown in Table 2.

In this study, our methods comprise the likes of co-occurrence and co-citation analysis, that are widely used in bibliometric analysis (Hammerschmidt et al. 2023). Tools primarily refer to the software used for analysis and charting, and this study

Table 2 Methods and techniques used in this paper

Class	Item	Description
Methods	Citation analysis	Citations are analyzed, and influence and importance inferred from the number of citations an entity, such as an author or paper, receives (Garfield 1972)
	Co-citation	Co-citation quantifies how often entities are cited together and aids identifying relatedness and influences on a field such as journal co-citation, which helps determine influencing journals or groups of journals (Small 1973; Yang et al. 2022)
	Co-occurrence	Co-occurrence measures how often a term, such as a word in an abstract, occurs in a corpus. Relevancy and relationships may be inferred by the number of times records include the same terms (Cobo et al. 2011; Mukherjee et al. 2022)
Techniques	PageRank	PageRank calculates the importance considering the number of links to the source and the relative importance of the citing source, with a higher PageRank indicating higher relevancy (Senanayake et al. 2015). Bibliometrix uses PageRank in many calculations (Aria and Cuccurullo 2017)
	Walktrap	Walktrap is an algorithm for clustering and is included with Bibliometrix. Walktrap provides clustering accuracy at a higher speed than many other algorithms (Pons and Latapy 2006; Smith et al. 2020)
	H-index	The Hirsh index (h-index) indicates scientific quality that may be used to understand a scholar's relative importance (Hirsch 2007). H-index is widely used in bibliometric analysis in determining importance (e.g., Hammer-schmidt et al. 2023; Sharma et al. 2023)

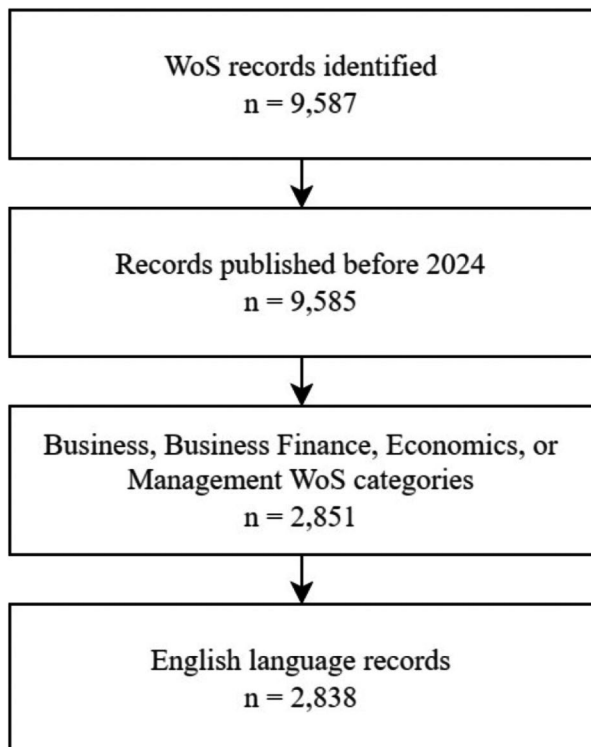
uses the Bibliometrix R package (Aria and Cuccurullo 2017) for analysis and VOSviewer (van Eck and Waltman 2011) for testing and validation. Most tools include techniques the researcher may select; for example, VOSviewer (van Eck and Waltman 2011) allows four different normalization options that influence how the data are organized.

3.2 Literature selection

Bibliometric analysis benefits from systematic and broad literature searches with well-defined inclusion and exclusion criteria, while the research questions retain the primary focus throughout the study (Block and Fisch 2020; Hiebl 2021). The literature search and selection process is illustrated in Fig. 2.

To identify relevant records, we first defined search terms that included derivatives of sensemaking and related constructs; *sensebreaking*, *sensedemanding*, *sense-exchanging*, *sensegiving*, *sensehiding*, and *sense specification* (Maitlis and Christianson 2014). Then, in January 2024, we searched the Web of Science (WoS) database title, abstract, and keyword fields using the terms. The rationale for the choice of WoS database is that it is frequently used in bibliographic analysis and has a greater number of indexed journals than some other databases (Block and Fisch 2020). The initial search returned 9,587 records. Subsequently, two records published in 2024 were removed to limit records to those published up to the end of 2023. Then, we excluded records not in the Business, Business Finance, Economics, or Management WoS categories, resulting in 2,851 remaining records. Thirteen non-English language records were removed, and duplicates were absent due to WoS removing these surplus records (Clarivate 2022), resulting in a corpus of 2,838 records. Furthermore, we checked that no retracted articles were present. The relevancy of records is critical in bibliometric studies (Zupic and Čater 2015), as is the number of

Fig. 2 Flow diagram of review search and selection



records needed to attain valid results. Donthu et al. (2021) recommend that several hundred to thousands of records are necessary for bibliometric analysis. Hence, the structured approach to our literature selection and the quantity of records returned supports the methodology in addressing the research questions.

4 Results

4.1 Performance analysis

4.1.1 Evolution of the field based on annual number of articles

Figure 3 shows the number of records published per year as a scatterplot with a polynomial trendline showing the upward trend. The first record was published in 1988 (Weick 1988), and in 2023, 327 were published. Analysis of sensemaking trends by year is of limited relevance in that an event may trigger further associated events that are then studied, and research may continue for many years. It may be deduced, however, that academic interest in the field is consistently rising, as shown by the trendline.

4.1.2 Top articles on sensemaking over time

Analysis over time facilitates identifying progression and trends in a field (Block and Fisch 2020), and, as such, Table 3 shows the papers with the most citations in four time periods. We categorise the periods as T1 referring to period before 2000 that comprises 77 studies, T2 is between 2000 and 2008 with 349 studies, T3 is between 2009 and 2016 with 888 studies, and T4 refers to the years since the start of 2017 until the end of 2023 with 1,524 studies. The Academy of Management journals are prominent in publishing highly cited sensemaking articles at all times. Gioia authored most-cited articles in all time periods, comprising two primary topics; theory-building and strategic change. His theory-building papers (Gehman et al.

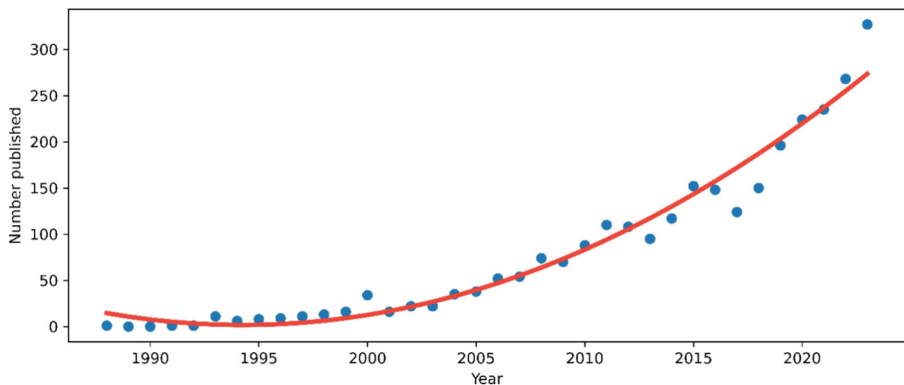


Fig. 3 Number of records published from 1988 to 2023 with trendline. Data extracted from WoS on 2 January 2024

Table 3 The five most cited articles published in different time periods

Before 2000 (T1)			2000 to 2008 (T2)		
References	Citations	Journal	References	Citations	Journal
Langley (1999)	3,585	Academy of Management Review	Weick et al. (2005)	3,359	Organization Science
Weick (1993)	2,246	Administrative Science Quarterly	Ashforth et al. (2008)	1,592	Journal of Management
Gioia and Chittipeddi (1991)	1,903	Strategic Management Journal	Corley and Gioia (2004)	1,213	Administrative Science Quarterly
Morrison and Robinson (1997)	1,437	Academy of Management Review	Morrison and Milliken (2000)	1,190	Academy of Management Review
Gioia and Thomas (1996)	963	Administrative Science Quarterly	Phillips et al. (2004)	923	Academy of Management Review
2009 to 2016 (T3)			2017 to 2024 (T4)		
References	Citations	Journal	References	Citations	Journal
Gioia et al. (2013)	5,528	Organizational Research Methods	Gehman et al. (2018)	460	Journal of Management Inquiry
Maitlis and Christianson (2014)	994	Academy of Management Annals	Miron-Spektor et al. (2018)	320	Academy of Management Journal
Welch et al. (2010)	786	Journal of International Business Studies	Aguinis and Glavas (2019)	301	Journal of Management
Jay (2013)	673	Academy of Management Journal	Smith and Besharov (2019)	280	Administrative Science Quarterly
Lengnick-Hall et al. (2011)	689	Human Resource Management Review	Hollebeek and Macky (2019)	263	Journal of Interactive Marketing

Note: Citation counts were retrieved from WoS on 2 January 2024

2018; Gioia et al. 2013) explored inductive case study methodology and highlighted the relevancy of the socially constructed aspects of sensemaking and Weick's works. In Corley and Gioia (2004); Gioia and Chittipeddi (1991); Gioia and Thomas (1996) Gioia explored the role of identity in strategic sensemaking. Markedly, the understanding of identity has been widely studied in sensemaking. For example, Craig-Lees (2001) highlighted the importance of sensemaking and recognizing the role of the individual. Meanwhile, van Zoonen et al. (2022) noted the relevance of adequate communication in sensemaking to reduce employee identity threats that may lead to mental health issues.

Generally, older articles are more likely to be cited (Block et al., 2019). Hence, it is interesting to note that the most cited paper, with 5,528 citations, is Gioia et al. (2013), published 25 years after the first corpus article (Weick 1988). Gioia et al. (2013) focus on a qualitative methodology and attaining the perceptions of an interviewee as they make sense of a situation.

Paradigm informs methodology and Weick predominantly adopted storytelling and narratives as a means of understanding sensemaking (e.g. Weick 1988, 1993). With sensemaking's origins in the constructionist paradigm (Craig-Lees 2001), it is, therefore, unsurprising that qualitative methodology dominates the field. Of the five most cited articles in each time period, Gioia and Thomas (1996) and Miron-Spektor et al. (2018) are alone with quantitative methodology. In addition, a search of cor-

pus titles and abstracts revealed approximately 100 quantitative and 492 qualitative studies.

Not only has Weick's sensemaking informed the understanding of business and management in novel events, but it has also influenced paradigm and methodology in business and management research. This is unsurprising as Weick authored papers on the nature of theory (e.g. Weick 1989, 1995). Case study is a prominent methodology in the social sciences, and Weick has been influential to prominent case study theorists, such as Gioia and Langley (Gehman et al. 2018). The influence of Weick's sensemaking on methodology and theorization has been ongoing throughout the time periods; for example Gehman et al. (2018), Gioia et al. (2013), and Langley (1999).

4.1.3 Top journals that publish on sensemaking based on the number of published articles

Table 4 shows the 15 journals with the highest volume of articles published after the scientific peer-review process. We used the Australian Business Deans Council (ABDC) INC. (2022) and Scimago Lab (2024) (SJR) as the widely used quality indicators for business research (e.g., Benameur et al. 2023; Sharma et al. 2023). For ABDC, A* is the highest journal quality, followed by A, B, and C rankings, and journals not listed in the ABDC ranking are excluded. Likewise, SJR provides journal quality indicators developed from the information in the Scopus database, where the first quartile journals (Q1 journals) refer to the highest quality (top 25% journals). Likewise, Q4 journals refer to the bottom 25% of journals of the listed sources.

Out of 508 journals in the corpus, 934 articles (30% of the corpus) were published in 15 journals. *Organization Studies* published the most papers with 121 articles and is a highly rated journal by SJR (Q1) and ABDC (A*) with an h-index of 167. The first *Organization Studies* sensemaking article was Boyce (1995), who researched storytelling and sensemaking in a religious organization. All the top publishing journals are of high quality, with the *Academy of Management Journal* having a h-index of 358 and the lowest in the list being the *Scandinavian Journal of Management* with an h-index of 65.

Journal research subjects vary, indicating a wide topic range and illustrating sensemaking as relevant to diverse subjects. In addition, all journals continue to publish since first publishing a sensemaking article, with the *Journal of Management Studies* publishing studies on sensemaking for 35 years, illustrating sensemaking's ongoing relevance. The journals publishing most articles per year on average are *Industrial Marketing Management*, *Journal of Business Ethics* and *Organization Studies*, with an average of four articles per year.

4.2 Science mapping

Identifying and discussing topic clusters is insightful in bibliometric analysis, and findings aid in providing new insights (Block and Fisch 2020). As such, to identify knowledge diffusion in sensemaking, we first performed author keyword co-occurrence. This resulted in identifying close relationships between keywords that we discuss. While keyword co-occurrence analysis is beneficial for historical analysis and

Table 4 Top fifteen journals in sensemaking according to the number of articles published

Journal	No. Articles	Journal h-index	SJR Quartile	ABDC Ranking	Research field	Years active	Articles per year (average)
Organization Studies	121	167	Q1	A*	Organizational behavior & human resource management	1995–2023	4
Human Relations	91	152	Q1	A*	General social sciences	1993–2023	3
Journal of Business Ethics	83	229	Q1	A	Law	2004–2023	4
Journal of Management Studies	81	206	Q1	A*	Business & international management	1988–2023	2
Journal of Organizational Change Management	76	79	Q2	B	Organizational behavior & human resource management	1996–2023	3
Industrial Marketing Management	72	161	Q1	A*	Marketing	2006–2023	4
Organization Science	68	269	Q1	A*	Organizational behavior & human resource management	1994–2023	2
Academy of Management Journal	57	358	Q1	A*	General business, management & accounting	1993–2023	2
Academy of Management Review	56	293	Q1	A*	Management of technology and innovation	1993–2023	2
Journal of Business Research	53	236	Q1	A	Marketing	1998–2023	2
Journal of Management Inquiry	43	72	Q1	A	General business, management & accounting	1996–2023	2
Management Learning	37	84	Q1	A	Strategy & management	1996–2023	1
Leadership Quarterly	33	175	Q1	A*	Sociology & political science	2000–2023	1
Scandinavian Journal of Management	33	65	Q1	B	Strategy & management	2007–2023	2
British Journal of Management	30	125	Q1	A	General business, management & accounting	2000–2023	1

The research field indicates the primary area of research of the journal per Scopus. Journal h-index per Scimago Lab (2024)

helps identify the study topics, it is prone to issues relating to author understanding and bias in selecting keywords (González et al. 2018). Thus, we further analyzed the corpus using source co-citation clustering to gain insight into trends and trajectories at a subject level, such as marketing or information systems.

4.2.1 Knowledge diffusion based on keyword co-occurrence

Using the Walktrap algorithm, four clusters were identified based on the 6,824 author keywords in the corpus. Before analysis, we converted select words and phrases to base terms; for example, *sense-making* and *sense making* were changed to *sensemaking*. Repulsion was set at 0.3, the 75 most relevant keywords were selected to be displayed, and isolated nodes were removed. Keywords were absent in 54 articles.

Figure 4 illustrates the clusters, with Table 5 providing examples of keywords in each cluster. Clusters of co-occurring keywords are shown in color (Fig. 4) with the node size (keyword) relative to the frequency of co-occurrence, with large nodes indicating higher frequency. Connecting lines indicate co-occurrence, with line width illustrating frequency.

The red cluster is the largest, and high co-occurrence keywords in this cluster include *sensemaking*, *communication*, *emotion*, *knowledge management*, *learning*, and *social*. The sensemaking keyword's large size is unsurprising considering the focus of this study. Of all clusters, keywords in this cluster align most closely with sensemaking theory. For example, Weick et al. (2005) explain that sensemaking is social and relies on communication, and learnings from sensemaking are used in future understandings. This cluster traverses many decades of research, such as Gioia et al. (1994) and Whittle et al. (2023).

The blue cluster considers *corporate social responsibility (CSR)*, *sustainability*, and *paradox*, with few co-occurring keywords in this cluster. While it may be tempt-

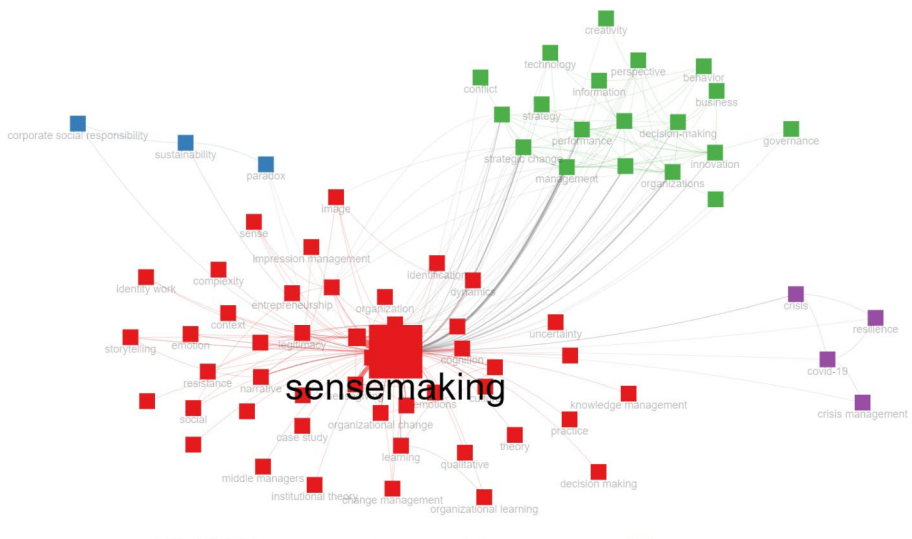


Fig. 4 Keyword co-occurrence clusters

Table 5 Keywords in co-occurrence clusters

Cluster	Color code	Example keywords
1	Red	sensemaking, communication, leadership, identity, sensegiving, organizational change, cognition, change, narrative, organizational, learning, entrepreneurship, construction, storytelling, change management, trust, emotion, knowledge management, social
2	Blue	sustainability, paradox, corporate social responsibility
3	Green	management, innovation, performance, organizations, strategic change, knowledge, strategy, decision-making, model, work, organizational identity, information, technology, perspective, behavior, conflict, creativity, business, governance, crisis
4	Purple	covid-19, resilience, crisis

ing to perceive this small cluster as less important, we posit that it is highly relevant. Topics may be analyzed considering the degree of development (from low to high) and relevancy (Cobo et al. 2011). We assume all clusters are highly developed as per our selection of important keywords for analysis. As for relevance, CSR and sustainability are an increasingly studied pairing as government, business, and society awareness of environmental and natural issues grows (Meseguer-Sánchez et al. 2021). Paradox is contextually relevant; for example, longer-term environmental objectives may result in near-term unfavorable economic impact (Luo et al. 2020). The role of sensemaking is understandable considering the need to appreciate how managers, investors and other stakeholders make sense of CSR (Hahn et al. 2014; Meng et al. 2022). Hence, the blue cluster, being highly developed and relevant as other clusters are, may be considered a ‘hot topic’ important for the structural and conceptual development of sensemaking (Cobo et al. 2011).

The green cluster, which includes *knowledge*, *innovation*, *technology*, and *strategy*, encapsulates many fields and decades of research. Strategy is interesting in the sense-making context and relates to the co-occurring keywords. Strategy implies planning rigidity, whereas sensemaking is often described as reactionary and requires innovative thinking (Weick 1988). This contradiction is addressed in the literature with mitigations recommended to reduce the chance of, or outcomes of, the unexpected, such as improved knowledge management and sharing, facilitated by technology or people, and pre-planning such as scenario analysis (Akgün et al. 2014; Eckstein et al. 2023; Kalaiganam et al. 2021). Hence sensemaking remains reactionary, however, strategy may be employed to reduce the severity of the unexpected.

The purple cluster is small and comprises recent research, as evidenced by the COVID-19 keyword. Terms also include *crisis* and *resilience*. The public health emergency of international concern (PHEIC) comprising COVID-19, which was in place from 30 January 2020 (World Health Organization 2020, 2023), may explain the co-occurrent keywords due to the volatility and unknown of that time. Weick (1988, p. 305) noted that sensemaking environments are “characterized by low probability/high consequence events that threaten the most fundamental goals of an orga-

nization,” which is relatable to many organizations during the PHEIC (Bouncken et al. 2022).

4.2.2 Evolution of subjects using source cluster analysis

The corpus was analyzed in the four periods, T1-T4, for source co-citation clustering to detect links between subjects over time. The PageRank algorithm identified the 50 most influential sources, and then Walktrap determined clusters based on factors such as centrality and peripherality of sources and proximities and distances (Aria and Cuccurullo 2022). A repulsion force of 1 was set to refine clustering, with a higher repulsion helping in aggregating separated nodes, thus graphically identifying nodes in clusters (Quiles et al. 2016; Song and Pei 2019).

The clusters are summarized in Table 6 and illustrated in Figs. 5, 6 and 7, and Fig. 8, with the cluster colors not suggesting relatedness but used to differentiate clusters within the same figure. Sources clustered together imply strong relatedness in the corpus and, as the subject matter may be inferred from a publishing journal (González et al. 2018; Yang et al. 2022), the subject of journals was attained from Scopus (Elsevier 2024). Clusters contain multiple sources. Thus, we determined the subject matter of each cluster by the subject of the highest PageRank sources in the cluster, shown in the *primary subjects* column in Table 6.

As per Table 6 in the *primary subjects* column, ‘organizational studies’ and ‘management’ are clustered together at all times. Thus, an ongoing strong relationship is apparent between these two subjects in sensemaking. ‘Strategy’ is evident in all periods and always clustered with ‘management,’ providing evidence of continued combined relevancy in sensemaking. ‘Psychology’ was prominent until T4, while the relevancy of ‘sociology’ in sensemaking was initially strong (T1) but then faded. In the most recent period (T4), IB is significant in sensemaking. The ‘marketing’ cluster is showing increasing importance and is represented in T1, T3, and T4; however, the T1 cluster of ‘marketing’ has low PageRank, revealing weaker standing in this initial time T1, while there has been a strong PageRank and more journal representation in more recent times (T3 and T4).

5 Discussion and opportunities for future studies

5.1 Discussion

Sensemaking is valuable in understanding business and management in varied subjects, topics, and environments (Christianson and Barton 2021). This study presents a bibliometric review of 2,838 papers to summarize existing themes, uncover new perspectives, and identify future research opportunities. In addition this paper delivers an overview of existing studies that may inform future research considering Christianson and Barton (2021) advancing the need for expanded scope of sensemaking research in light of changes necessitated by COVID-19. Performance analysis identified publishing trends, and articles. Science mapping showed progression of sensemaking theory between subjects and topics.

Table 6 Clustered progression of field via source co-citation

Time Period	Cluster	Highest PageRank sources	Primary subjects		
1988 to 1999 (T1)	1	Organization Studies (0.025) American Journal of Sociology (0.024) Advances in Strategic Management (0.023) MIT Sloan Management Review (0.021) American Sociological Review (0.021)	Management, organizational studies, sociology, strategy		
	2	Administrative Science Quarterly (0.053) Academy of Management Review (0.047) Academy of Management Journal (0.042) Strategic Management Journal (0.041) Research in Organizational Behavior (0.035)	Management, organizational studies, strategy		
	3	Psychological Bulletin (0.028) American Psychologist (0.025) Journal of Applied Psychology (0.024) Journal of Personality and Social Psychology (0.023) Organizational Behavior and Human Decision Processes (0.021)	Psychology, organizational studies		
	4	Journal of Marketing Research (0.003)	Marketing		
	5	Public Relations Review (0.003)	Public relations		
	2000 to 2008 (T2)	1	Administrative Science Quarterly (0.055) Academy of Management Review (0.055) Academy of Management Journal (0.050) Organization Science (0.048) Strategic Management Journal (0.043)	Management, organizational studies, strategy	
		2	MIS Quarterly (0.011) Communications of the ACM Magazine(0.011) Information Systems Research (0.011)	Information systems	
		3	Journal of Personality and Social Psychology (0.022) Journal of Applied Psychology (0.021) Psychological Bulletin (0.021) Organizational Behavior and Human Decision Processes (0.018) American Psychologist (0.017)	Psychology	
		2009 to 2016 (T3)	1	Academy of Management Review (0.051) Organization Science (0.050) Academy of Management Journal (0.049) Administrative Science Quarterly (0.049) Journal of Management Studies (0.043)	Entrepreneurship, Management, organizational studies, strategy
			2	Journal of Marketing (0.018) Journal of Business Research (0.015) Journal of Marketing Research (0.014) Industrial Marketing Management (0.013) Journal of Consumer Research (0.011)	Marketing
3			Journal of Applied Psychology (0.022) Journal of Personality and Social Psychology (0.020) Research in Organizational Behavior (0.019) Psychological Bulletin (0.018) Journal of Organizational Behavior (0.018)	Psychology	

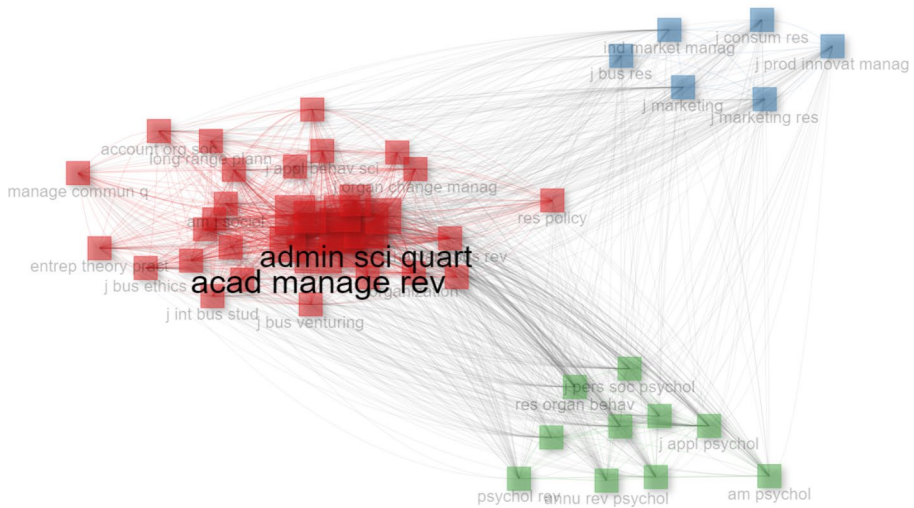


Fig. 7 Source co-citation during T3 (2009 to 2016)

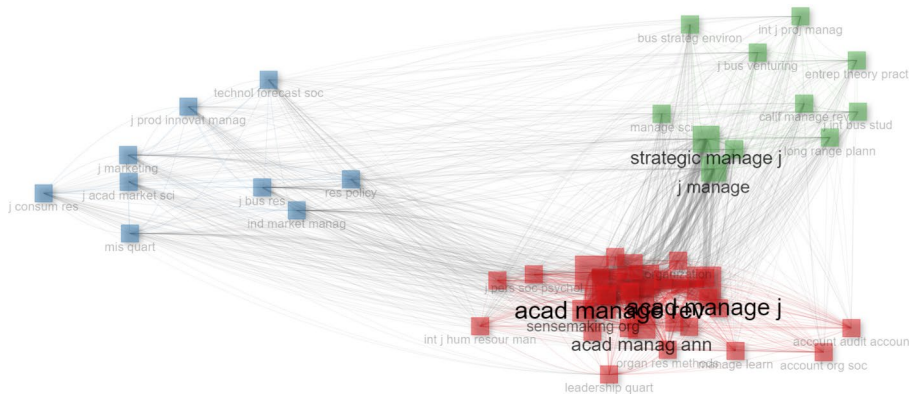


Fig. 8 Source co-citation during T4 (2017 to 2023)

In response to Rq1 (“how has sensemaking research evolved?”), the volume of published research has trended upward, with reputable journals publishing significant numbers of articles, and top articles receive many citations. Furthermore, sensemaking has evolved to traverse a broad range of subjects and topics. This is unsurprising as sensemaking is a generalized organizing process by design (Weick et al. 2005) and is an umbrella construct that accounts “for a diverse set of phenomena” (Floyd et al. 2011, p. 943).

Relating to Rq2 (“what are the topics of current interests in sensemaking?”) and Rq3 (“where is the future direction of sensemaking research heading, and does the prevailing paradigm support future directions?”), findings from this research showed specific and relevant trends that we discuss further considering the four keyword clusters.

Marketing is an emerging sensemaking subject, and prominent sensemaking keywords we revealed support the alignment of sensemaking and marketing. A criticism of marketing has been its inflexibility in addressing rapidly changing markets, often termed volatile, uncertain, complex, and ambiguous (VUCA) environments (Tarba et al. 2023). This has given rise to marketing research and practice combined with concepts that enable responsiveness in marketing. An example is marketing agility (MA), which focuses marketing decisions on customer feedback and notably includes sensemaking (Eckstein et al. 2023). Considering marketing becoming more flexible to customers' needs and wants, including VUCA, the red and purple keyword clusters (including keywords such as *communication* and *COVID-19*) are emblematic of the tie-in between sensemaking topics and marketing, where communication and COVID-19 are widely studied in marketing and sensemaking (e.g., Behl et al. 2023; Sharples et al. 2022). Furthermore, the overlap between sensemaking and marketing is prominently seen in the keyword *social*: While sensemaking is a social activity (Weick 2005), marketing is increasingly concerned with social communication and associated implications considering technologies such as social media, often in tandem with sensemaking (e.g., Mirbabaie et al. 2020). Pertinent marketing issues are also seen in the green and blue keyword clusters (containing, for example, information and *technology*). For instance, generative artificial intelligence (AI) has recently been introduced in widely used software services, such as marketing platforms (Smith-Goodson 2023). This has invoked many areas of study applicable to both marketing and sensemaking, such as insight into the impact on employment, consumer perception of the technologies, and consumer data security and privacy (Kshetri et al. 2023; Weber et al. 2023). We thus propose:

Proposition 1 Sensemaking is a plausible lens through which one can study marketing, particularly in VUCA environments.

IB describes business activities across borders and, while being a relatively new research discipline (Morck and Yeung 2007), it has a long history with evidence from many past millennia, such as foreign trade discussed by Plato (Weinstein 2009). IB involves VUCA (purple keyword cluster), that is a topical sensemaking research area, with cultural differences, languages, laws, and the like potentially presenting impediments or opportunities (Asseraf and Gnizy 2022; Elo and Silva 2022); for example, sanctions affecting vehicle exports to Russia may impact the financial performance of brands such as BMW and Toyota (KPMG LLP 2023). There are parallels between IB and further sensemaking keywords; for example, in their analysis of Management International Review, an international business journal, Mukherjee et al. (2021) describe the *corporate governance* and *corporate social responsibility* keywords as prevalent, that we found ubiquitous in sensemaking keyword clusters. Hence:

Proposition 2 Sensemaking is a viable perspective to research International Business.

Continuing with the response to Rq3, Craig-Lees (2001) provided that the constructionist paradigm is dominant in sensemaking. Constructionism perceives sensemaking as individual and subjective, with a reality constructed by the individual. As such,

findings are unlikely to be broadly generalizable, and the individual perspective is observed through qualitative methodology (Welch et al. 2010). Our findings of storytelling, narratives, and predominantly qualitative methodology support the constructionist position in sensemaking.

Yet marketing and IB, among other business and management fields, favor objective positions such as scientific realism (Aguzzoli et al. 2024; Hunt 2018). Realism assumes a reality exists independent of any individual, and the researcher's role is to discover and approximate this reality, which may then be generalized (Welch et al. 2010). As such, marketing and IB are biased toward quantitative research (Aguzzoli et al. 2024; Crick 2021). How may the philosophical divide between constructionism and realism be reconciled to enable relevant marketing, IB, and sensemaking research?

Craig-Lees (2001) addressed this conundrum in their discussion of sensemaking in psychology and marketing, noting that select researchers perceive sensemaking with a social constructionist perspective. Social constructionists understand that shared social realities exist that can be applied, in part, collectively. While social constructionism somewhat tempers the divide with realism, a gap remains in the underlying assumptions between perceiving reality as independently constructed (social constructionism) and reality existing independently of any one person (realism). Similarities and differences between the two paradigms have been widely discussed with various conceptualizations, such as Cruickshank (2012) advocating that the two are incompatible, and Williams (2016) advancing that the two positions can be reconciled. Another stance is that the paradigm may change to meet the needs of the topic (Craig-Lees 2001). While the philosophical debate remains unresolved, the realism paradigm has influenced limited sensemaking studies (e.g. Seidel et al. 2018; Wiredu et al. 2021). As such:

Proposition 3 Realism is a valuable paradigm through which to perceive marketing and International Business in sensemaking.

As shown in cluster analysis, strategy is a prominent theme in all time periods. The research into strategy and sensemaking is broad and voluminous, with 568 studies in the corpus. Many aspects of strategy are apparent, such as strategy formulation (e.g., Sitaloppi et al. 2021) and implementation (e.g., Gioia et al. 1994). Sensemaking is often a small business research lens (e.g. Holt and Macpherson 2010; Liyanagamage and Fernando 2023), yet few studies research sensemaking considering small business strategy.

Strategy is important to small business but differs from larger organizations (Handoyo et al. 2023). For example, when considering Porter's generic strategies, cost leadership may be problematic for small business due to limited economies of scale and typically lesser financial resources (Lee et al. 1999; Porter 1980). Product differentiation strategies however may favor small business that are better able to serve local markets (Lee et al. 1999). There is a gap in considering small business research with a sensemaking lens and, as such, we proffer:

Proposition 4 Sensemaking offers a relevant strategy lens for small businesses.

5.2 Future research

As for future research opportunities, the increased volume of sensemaking research considering deep uncertainty is worthy of discussion. We showed that sensemaking is a valuable lens through which to perceive crises that affect business. Recent events, such as COVID-19 and the war in Ukraine, have resulted in deep uncertainty affecting business performance (Schmelzer 2022). Theory has an important role in informing practice (Antonakis et al. 2014) and sensemaking theory aids practitioners in minimising adverse outcomes (Weick 1988); thus it an opportune time for further research in sensemaking considering these, and potential future, deep uncertainties.

The philosophical paradigms underpinning sensemaking research, in consideration of allied topics, will benefit from further exploration. This paper touches on the vast and ongoing topic of business and management philosophies, and these philosophies are fundamental to business research (Hunt 2018). For instance, marketing favors realism, while sensemaking skews towards constructionism. The ontologies and epistemologies of realism and constructionism differ greatly, and, with paradigm influencing methodology, the paradigm differences between sensemaking and co-studied topics may negatively impact validity and reliability (Healy and Perry 2000). Hence, further debate and understanding of research paradigms will aid researchers, and potentially address the shortage of quantitative research in sensemaking.

5.3 Theoretical and academic contributions

Academics have long highlighted the need for further sensemaking research (Christianson and Barton 2021), and a necessity for research is building a solid familiarity with existing knowledge (Bergkvist and Eisend 2021). As reviews help develop a holistic overview of a topic (Post et al. 2020), this bibliometric review paper is expected to advance sensemaking research by identifying prominent scholars, journals, and research activities on this topic. This review paper will benefit researchers considering their research topic from a sensemaking perspective.

This paper discusses the potential issues in the philosophical foundations of sensemaking and its role as an umbrella construct. The issue of philosophical differences in business and management research is significant and may affect validity and reliability, and acceptance of research by practitioners (De Frutos-Belizón et al. 2019; Healy and Perry 2000). As such, this paper will aid in making academics aware of potential philosophical tensions. Furthermore, academics will be informed about the paradigms and methodologies prevalent in sensemaking.

Further theoretical contributions include mapping the sensemaking topic across 35 years using keyword and co-citation clustering to identify and discuss trends, thereby adding interesting perspectives on the evolution of the topic. We also provide a richer understanding of the sensemaking topic, thus advancing the ‘big picture’ of the topic. In addition, we hope to progress sensemaking theory by identifying literature gaps and offering propositions to promote future research. Finally, Weick (1995), the prominent sensemaking theorist, espoused the value of theorizing through disciplined imagination, and we hope that perspectives in this study stimulate thought and debate, as these aspects are necessary to advance theory (Bergkvist and Eisend 2021).

5.4 Practical implications

For practitioners new to the application of sensemaking, this study provides a foundation for understanding the often-confusing topic of sensemaking in emerging subjects, the range of events in which sensemaking is applicable, and significant research undertaken on the topic. For practitioners familiar with sensemaking, this study presents an opportunity to refresh and refine their sensemaking knowledge by leveraging the latest research and interdisciplinary insights. For example, we emphasized how the COVID-19 PHEIC presented unprecedented change that may benefit from studies using a sensemaking perspective. In addition, practitioners will benefit from the understanding that sensemaking is applicable in crises and in high probability and low impact events and activities, such as communication between employees, that aids sensemaking. Furthermore, cluster analysis will guide practitioners in perceiving how sensemaking has evolved and is perceived in different contexts. Most important of all, sensemaking may aid in reducing adverse outcomes of unknown situations, and we provide practitioners with an overview of the process and the areas where sensemaking research is prominent.

5.5 Limitations

The selection criteria used to identify sensemaking research has limitations. We only used the WoS database, however other databases may contain more research work in addition to grey literature. We selected only English research articles and those only in the Business, Business Finance, Economics, or Management categories, yet research in other languages and other categories may offer valuable insights. Furthermore, our database search terms may have missed relevant research; for example, we searched for derivatives of sensemaking, yet if authors used terms like *make sense* or *making sense*, we might have missed these articles.

Likewise, we use cluster analysis in this review, and we acknowledge that the process of clustering requires interpretation that can be subjective. We selected algorithms that may output different results based on our choice, and, in addition, we picked parameters that may influence output, such as the number of keywords to display co-occurrence.

Our discussion relating to ontology, epistemology, and methodology, collectively termed as paradigm (Healy and Perry 2000) is brief. Paradigm is a broad and evolving topic with disparate definitions and terminology. Our understanding and use of terminology reflect the research as cited, however there may be different works or interpretations of these research.

6 Conclusions

We showed that sensemaking is an important research topic traversing a diverse set of subjects, topics, and environments. To reconcile prior research, we mapped the topic of sensemaking and conducted bibliometric analyses. The comprehensive overview and analysis of the literature were used to offer propositions and to identify opportu-

nities for future research. Sensemaking is a broad topic that aids in understanding and preparing for unknown environments. We anticipate that this study will aid academics and practitioners in continue benefitting from applying the sensemaking theory into their research and practice.

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Data availability We have not generated any datasets in researching and documenting this review. All data or research used in analysis has been referenced.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

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