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Precarity-based evidence: trade unions' knowledge production on migrant workers' occupational health in slaughterhouses in Germany

Abstract: For years, grievances from low-qualified migrant workers in slaughterhouses were structurally overlooked, hindering the introduction of regulatory measures. It was only during the COVID-19 pandemic in 2020 that structural deficiencies were formally acknowledged, leading to the introduction of comprehensive regulations in the form of the Federal Occupational Health and Safety Control Act (*Arbeitsschutzkontrollgesetz*). Throughout the legislative procedure for this act, trade unions played a key role by providing sector-specific evidence on the necessity to impose limitations on employers' fundamental rights. This evidence was grounded in trade union knowledge, produced through years of fieldwork within the sector. This article investigates the rationality of unions' evidence and the intricate dynamics of its development amidst structural precarity in the years leading up to the *Arbeitsschutzkontrollgesetz*. Based on the assumption that evidence is a condition for legal change which compels political actors to produce evidence-based claims, this article offers a case study-based discussion on the knowledge-policy interface within feminist Science and Technology Studies (STS). As a research strategy, it presents a theory/methods package of situational analysis within grounded theory, building on the concept of evidence-based policy (EBP) as an initial tool for empirical data analysis. The findings highlight how structural precarity forces a highly instrumental, partial and non-systematic approach to evidence development, conceptualised in this article as precarity-based evidence (PBE). Drawing on feminist STS, the study underscores the need to acknowledge PBE's positioned rationality beyond crisis-driven policymaking to ensure democratic participation of intersectionally marginalised groups.

Keywords: Science and Technology Studies (STS); evidence-based policy (EBP); knowledge production; occupational health; precarity; trade unions; slaughterhouses; migration.

Alejandro Valdivia, Prekaritätsbasierte Evidenz: Gewerkschaftliche Wissensproduktion zur Arbeitsgesundheit migrantischer Arbeiter:innen in Schlachthöfen in Deutschland

Zusammenfassung: Über Jahre hinweg wurden die Missstände geringqualifizierter migrantischer Arbeitskräfte in Schlachthöfen systematisch verschleiert, wodurch eine Regulierung behindert wurde. Erst im Zuge der Covid-19-Pandemie, wurden die strukturellen Defizite 2020 offiziell anerkannt und eine umfassende Regulierung eingeführt: das *Arbeitsschutzkontrollgesetz*. Im Verlauf des Gesetzgebungsverfahrens spielten die Gewerkschaften eine

zentrale Rolle, indem sie branchenspezifische Evidenz für die Notwendigkeit eines Eingriffs in die Grundrechte der Arbeitgeber bereitstellten. Diese Evidenz basierte auf dem Wissen der Gewerkschaften, das über Jahre hinweg durch Feldforschung im Sektor produziert wurde. Dieser Artikel untersucht die Rationalität der gewerkschaftlichen Evidenz und die komplexen Dynamiken ihrer Entwicklung im Kontext struktureller Prekarität in den Jahren vor dem Arbeitsschutzkontrollgesetz. Ausgehend von der Annahme, dass Evidenz eine Voraussetzung für Rechtsänderungen ist, die politische Akteure dazu zwingt, evidenzbasierte Ansprüche zu erheben, bietet dieser Artikel eine fallstudienbasierte Analyse der Schnittstelle zwischen Wissen und Politik innerhalb der feministischen Wissenschafts- und Technikforschung (STS). Als Forschungsstrategie wird ein Theorie- und Methodenpaket der Situationsanalyse innerhalb der Grounded Theory verwendet, dass das Konzept der evidenzbasierten Politik (EBP) als Ausgangspunkt für die empirische Datenanalyse nutzt. Die Ergebnisse verdeutlichen, wie strukturelle Prekarität eine stark instrumentelle, fragmentierte und unsystematische Herangehensweise an die Evidenzentwicklung erzwingt, die als prekaritätsbasierte Evidenz (PBE) konzeptualisiert wird. Unter Bezugnahme auf die feministische STS wird die Notwendigkeit betont, die positionierte Rationalität der PBE über krisenbedingte politische Entscheidungsprozesse hinaus anzuerkennen, um die demokratische Teilhabe intersektional marginalisierter Gruppen zu gewährleisten.

Schlüsselwörter: Wissenschafts- und Technikforschung (STS); evidenzbasierte Politik (EBP); Wissensproduktion; Arbeits- und Gesundheitsschutz; Prekarität; Gewerkschaften; Schlachthöfe; Migration.

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1. Introduction

The increasing liberalisation of European labour markets and the proliferation of non-standardised forms of employment can obscure employers' responsibility for occupational health and safety. In such cases, grievances from intersectional marginalised groups such as low-qualified migrant workers might be structurally overlooked and regulations hindered. The German meat industry exemplifies this issue. Although unions and public authorities have criticised grievances in slaughterhouses for years (Sebastian and Seeliger, 2022, p. 237), it was only in 2020, in the context of the COVID-19 pandemic, that comprehensive, binding regulations were introduced with the publication of the Federal Occupational Health and Safety Control Act (*Arbeitsschutzkontrollgesetz*, herein: ArbSchKG). This new act formally acknowledged the

structural deficiencies in occupational health and safety in industrial slaughterhouses, seeking to tackle its root causes.

During the ArbSchKG legislative procedure, trade unions (herein: unions) provided key sector-specific evidence, explicitly requested by the government to justify imposing limitations on employers' fundamental rights (German Federal Ministry of Labour and Social Affairs, herein: BMAS¹; 2020a, pp. 14-15). The evidence that unions provided within the meat industry results from a long and challenging process of knowledge production. Over the years, sector-specific precarity – particularly that affecting low-skilled migrant workers – functioned as a structural hinderance to unions' ability to systematically recognise, verify, and report grievances in slaughterhouses. As a result, unions were compelled to continually contextualise, adapt, and reconstruct their ways of knowing, following a highly instrumental, partial, and non-systematic rationality of evidence development. Drawing on union fieldwork in Schleswig-Holstein, this article explores the rationality of unions' evidence as well as the intricate dynamics of its development amidst structural precarity in the years before the publication of the ArbSchKG. In doing so, this paper engages in a discussion on the knowledge-policy interface within feminist Science and Technology Studies (STS). It specifically contributes to the literature on evidence-based policy by exploring evidence originating from a context of structural precarity. Thus, the research question is: How did unions develop evidence amidst structural precarity?

Emerging in the late 1970s with interdisciplinary foundations, STS asserts that not only the social institution of science but also the content of science itself, is subject to social analysis (Rohracher, 2015). The relationship between science and democracy is at the core of STS scholarship, exploring, at its most basic level, the connection between knowledge and governance (Jasanoff, 2017). Given that the analysis of science's role in legitimising social forms of domination closely aligns with the STS programme, prominent feminist scholars have significantly shaped the field, expanding its topical scope beyond the study of sex and gender (Law, 2017; Rohracher, 2015; Subramaniam, 2017). This paper specifically engages with the contributions of two prominent feminist STS scholars: Donna Haraway and Adele E. Clarke. It incorporates Haraway's ideas of objectivity and situated knowledges alongside Clarke's methodological framework for situational analysis.

This study addresses the research question by employing grounded theory (GT), a widely used strategy in qualitative analysis (Clarke and Leigh, 2008; Clarke, 2007a,b), with a focus on Clarke et al.'s (2018) interpretive extension: situational analysis (SA). As a GT research strategy, a theory/methods package is presented in section 2, where the concept of evidence-based policy (EBP) provides an analytical entry point to the empirical data. Following the operationalisation of SA with the empirical data (subsection 2.3), the article traces union evidence as it was translated into and negotiated during the legislative procedure of the ArbSchKG (section 3) and situates the structural precarity shaping the rationality and dynamics of unions' evidence development

1 Bundesministerium für Arbeit und Soziales.

(section 4). It then examines unions' evidence development in Schleswig-Holstein (section 5) and concludes with a final reflection (section 6).

2. Theory/methods package

Case studies are central to STS scholarship (Law, 2018), drawing on and diverging from sociology in their approach to the theory-method relationship (Silvast and Virtanen, 2023, p. 168). In STS, methods are not only research tools but also objects of study (Law, 2017). Rather than relying on *a priori* theories to guide empirical research, STS closely integrates conceptual and empirical elements to deepen our understanding of the complex practices surrounding science (Silvast and Virtanen, 2023 on Gad and Ribes, 2014). In this sense, the theory/methods package is based on the idea that methods do not serve theory; rather, they ground it (Clarke and Leigh, 2008, on Jenks, 1995). Accordingly, the methods' goal of the theory/methods package is GT as an abductive approach in which the analysis goes back and forth between empirical data and its conceptualisation (Clarke and Leigh, 2008, p. 117). In GT, the analytical entry point and provisional theorising are facilitated by sensitising concepts (Clarke and Leigh, 2008, pp. 117-118), which Blumer (1969) defines as frameworks that provide users with a general orientation for engaging with empirical data, in contrast to definitive concepts that offer fixed guidelines on what to observe. Although sensitising concepts can be tested and refined (Bowen, 2006 on Blumer, 1954), this is not a requirement in GT, where they may simply serve as foundational tools for the analysis of empirical data (Bowen, 2006). This research uses EBP as a sensitising concept to lay the foundation for the analysis of empirical data, focusing on normative assumptions about scientific evidence and objectivity from a feminist perspective.

2.1. Evidence-based policy

The role of evidence in public policy has gradually gained significant attention, making it an almost indisputable requirement today (Pearce et al., 2014). The evidence-based movement, which led to EBP, began in health studies as evidence-based medicine, promoting randomised trials and systematic reviews to identify effective health practices (Pearce et al., 2014; Saltelli and Giampietro, 2017; Baron, 2018). In public policy, EBP has expanded significantly since 2000 (Saltelli and Giampietro, 2017; Baron, 2018) and involves a three-dimensional process as outlined by Bogenschneider and Corbett (2021). First, it entails the production – through rigorous research methods – of credible evidence on problem-targeted and effective policies (Baron, 2018). Second, it involves the utilisation of credible evidence in policymaking. Finally, it includes the evidence-based implementation of policies (Lester, 2018). In this regard, the concept of EBP encompasses both the production of knowledge (evidence) and its application (translation) in policies, relying on normative epistemological and ontological assumptions about scientific methods and what constitutes good evidence. As Wesselink et al. (2014) explain, the rhetoric of EBP assumes that problems are clearly defined,

measurable, and unambiguous, pursuing uniform rationality. This leads policymakers to apply the “best scientific evidence” to devise effective solutions.

However, the use of evidence in policymaking raises important questions about how knowledge is recognised and applied. The claim that EBP is objective tends to marginalise qualitative research within a hierarchy of knowledge and gives rise to criticism (Wesselink et al., 2014; Saltelli and Giampietro, 2017). As Boswell (2014) and Wesselink et al. (2014) explain, despite the ongoing debates about the meaning, validity, or sufficiency of evidence, all actors are committed to using it, creating a common ground for debate. However, this common ground is shaped by power relations that are often overlooked or manipulated by EBP (Saltelli and Giampietro, 2017), with policy-relevant facts emerging from a struggle for political and epistemic authority, thereby exposing EBP’s reliance on exclusionary practices such as black-boxing, knowledge monopolisation, and oversimplification (Strassheim and Kettunen, 2014). Boden and Epstein (2006) empirically illustrate how EBP can shape and control knowledge production, resulting in policy-based evidence that support neoliberal agendas. As Wesselink et al. (2014) note, while few contest that policy should be evidence-based, EBP’s pursuit of objective and universally applicable evidence often overlooks the crucial role of context, which is a decisive factor in policymaking.

Critical studies on evidence in policymaking suggest that instead of a single problem being addressed by a single policymaker, multiple stakeholders with differing, overlapping, and sometimes conflicting views are involved. Each stakeholder brings unique perspectives on the problem and the type of knowledge best suited for a solution (Wesselink et al., 2014, p. 342). In line with recent debates in STS, this paper contributes to the EBP literature on the necessity to understand evidence as socially embedded in authority relations and cultural contexts (Engebretsen and Baker, 2022; Hoppe, 2005; Jasenoff, 2011; Nutley et al., 2010; Jung et al., 2014; Strassheim, 2013; Strassheim and Kettunen, 2014; Wesselink et al., 2014). In so doing, it adopts a feminist perspective on the ontological and epistemological nature of objectivity, as proposed by Donna Haraway, a leading STS scholar whose work influenced Clarke’s development of SA (Clarke A. and Star S., 2008). As Rohracher (2015) explains, Haraway proposes a dynamic epistemology that grants importance to partial perspectives, recognising and valuing the position of the knower. Haraway (1988) challenges both radical social constructionism – which views all knowledge as socially constructed, inherently relativistic, and rhetorical – and positivism, with its totalising and universalising claims to scientific truth. For Haraway (1988), objective knowledge is rooted in partiality rather than universality, as only situated perspectives allow for broader visions, making the feminist question in science one of understanding objectivity as positioned rationality. As Haraway explains: “*The knowing self is partial in all guises (...) able to join with another, to see together without claiming to be another*” (Haraway, 1988, p. 586). The processes of evidence development amidst structural precarity analysed in this paper involve two levels of partiality in the pursuit of objectivity: first, unions’ positionality and reporting on intersectionally marginalised workers, and second, my own positionality in researching the unions’ partial perspectives within

the meat sector. As such, this research neither seeks nor claims to offer a complete or universal perspective; rather, it aims to integrate a partial and critical understanding of the challenges to evidence-driven democratic participation for intersectionally marginalised groups.

While a traditional conceptualisation of EBP might be highly useful in producing and assessing evidence in different settings, its normative assumptions of objectivity prove inadequate for both generating and interpreting evidence in contexts of structural precarity. Evidence in such contexts inevitably follows its own rationality and dynamics of development, particularly in embracing and channelling the uncertainty of partial positions. The analysis of unions' evidence development in the meat industry empirically contributes to a feminist perspective on EBP by challenging epistemological and ontological hierarchies of knowledge.

2.2. *Data collection*

The empirical data used in this study consists of around 150 documents and seven in-depth semi-structured interviews. The documents originate from three sources: documents of the German federal government and Bundestag obtained through inquiries under the Freedom of Information Act, and a non-public archive of the German Trade Union Confederation² (herein: DGB) in Schleswig-Holstein, accessed specifically for this study and quoted anonymously. Since the DGB's experience in Schleswig-Holstein was presented as evidence in the ArbSchKG legislative procedure to highlight major meat industry issues (BMAS, 2020a, p. 4), the DGB archive is central to the analysis of unions' knowledge production from 2012 to 2017. The archive contains over 100 non-anonymised and predominantly confidential documents, including email exchanges, position papers, workers' personal documents (contracts, pay slips, health records), printed and handwritten protocols, external legal opinions, internal knowledge verification documents (e.g., pay slip and rental price calculations), press releases, and photographs. As such, the archive primarily contains observational data, the authenticity and accuracy of which were thoroughly verified. For example, unions' knowledge of grievances, contained in, for instance, in-house reports, could be verified by examining the contracts and pay slips supporting this knowledge.

SA, which is discussed in the following section, helped to further verify the accuracy of unions' self-reported activities and resulting knowledge through the mapping and triangulation of extensive empirical data, including documents and interviews (infra). For example, in my analysis of a union's open letter informing workers of their rights and ongoing dialogue with the slaughterhouse operator (subsection 5.3), I had access to the original letter and several documents from various stakeholders reporting on it, such as non-anonymised email exchanges between NGG, DGB, Faire Mobilität, and volunteers. Similarly, the self-reported site visit in an in-house protocol was verified by mapping email exchanges with the slaughterhouse operator (including position

2 Deutscher Gewerkschaftsbund.

papers responding to union concerns) and with external actors, such as a legal firm. Drawing on Haraway's ideas of objectivity as positioned rationality, this study seeks impartiality within partiality, asserting the validity and accuracy of the empirical data that underpin the various levels of analysis and interpretation in this research.

The document data was complemented by seven in-depth semi-structured interviews, including two follow-ups with interviewee A and B (infra). Interview is a useful method for closing knowledge gaps in complex processes (Minichiello et al., 1995). Unlike surveys, interviews provide access to personal experiences and complement macro-level observations with micro-level explanations (Lynch, 2013). The interviewees are three representatives from the specialised German Food, Beverages, and Catering Union (herein: NGG), one representative from Faire Mobilität, and one long-term volunteer at DGB. Faire Mobilität is a counselling centre for Central and Eastern European workers and a key unions' partner. Interviewees were selected based on their expertise: Interviewee A, head of the NGG's legal department, represents the union's legal claims and was key in channeling its legal knowledge into the ArbSchKG legislative procedure. Interviewee B, head of the NGG Berlin office, joined NGG after the ArbSchKG was enacted but had previously served as DGB executive director in Schleswig-Holstein, where they initiated the union's first activities in slaughterhouses. Interviewee C, a labour counsellor, worked at Faire Mobilität before and during the ArbSchKG legislative procedure. Interviewee D, a Romanian native speaker and long-term DGB volunteer, played a key role in translation and bridging the cultural gap between workers and unions before and during the ArbSchKG legislative procedure. Interviewee E held a senior position at DGB-Schleswig-Holstein for over a decade, during and prior to the ArbSchKG legislative procedure.

2.3. Situational analysis of unions' evidence development

SA, an extension of GT, draws from an interpretive perspective within the sociology of knowledge (Clarke et al., 2018 p. 10 on Berger and Luckmann, 1966; McCarthy 1996). While traditional GT may still assume positivist truth in scientific knowledge, SA does not (Clarke, 2007b). Instead, SA explicitly acknowledges the situatedness of knowledge and accepts the partiality of knowing – both for the researcher and those being studied – thereby aligning with feminist scholarship such as that of Haraway, a key inspiration for SA (Clarke, 2007b). Within this perspective, situated knowledge refers to the specific historical, cultural, and geographical contexts in which knowledge is generated and applied (Clarke et al., 2018, p.10). The concept of situation in SA encompasses not only the idea of positioning but also that of a holistic entity, the situation, which is always greater than the sum of its parts as it embraces their contextual relationships (Clarke, 2007b, p. 354).

SA is an effective tool for analysing power hierarchies in the inclusion or exclusion of groups from knowledge production (Clarke et al., 2018, p.10), making it particularly suited for this research. In SA, the situation of inquiry, broadly conceived, is the key unit of analysis and is empirically constructed through three types of maps, aiming

to analyse the messy complexities of its elements and relationships (Clarke et al., 2018; Clarke, 2007a). Situational maps lay out and reveal the complex interactions of major elements within a research context, such as human, nonhuman, discursive, historical, symbolic, cultural, and political. Social worlds/arenas maps explore the ongoing arena(s) of discourse and negotiation involving collective actors and key non-human elements. Positional maps outline key positions, taken or not taken, regarding specific axes of concern within the situation of inquiry.

SA's fundamental assumption is that all elements within a situation both shape and are shaped by one another (co-constitutiveness) (Clarke, 2007a). Accordingly, the various components and dimensions of the SA maps were analytically tailored and operationalised to the empirical specifics of this research in three steps: An inventory of the empirical data, a situational mapping, and the conceptualisation of a four-phase knowledge production cycle.

First, all documents were traced in a linear and visual chronology from 2012 to 2017, each assigned a unique numerical code. This enabled to identify connections and analyse concurrent events, beginning with discussions on working and accommodation conditions in Schleswig-Holstein slaughterhouses in 2012 and ending in 2017, with no significant activities in 2018 and 2019. The interviews, conducted partially during the document analysis, were transcribed and triangulated with the documents to address knowledge gaps or delve into key topics. Second, various SA maps were created.

Situational maps

A situational map, termed structural precarity, outlined recurring key elements related to grievances and vulnerabilities in industrial slaughterhouses (e.g. unpaid overtime, demeaning treatment, language barriers). This structural precarity, resulting from abusive power relations, creates a situation where grievances and vulnerabilities are rendered invisible, and accountability is hindered. Structural precarity permeates the social worlds/arenas and positional maps described below and was analytically differentiated into two situational maps: systemic precarity relating to the legal situation and epistemic precarity relating to the cultural situation.

In line with SA's foundational idea that the situation, as a holistic entity, is greater than the sum of its parts, section 4 traces how the interplay of systemic and epistemic precarity significantly excluded unions from systematised knowledge production. As a result, evidence arising from structural precarity – conceptualised in this article as precarity-based evidence (PBE) – follows its own rationality and dynamics of development. As illustrated in Schleswig-Holstein, structural precarity obscured grievances and, to address the issues in slaughterhouses, necessitated the instrumentalisation of uncertainty surrounding highly fragmentary knowledge or loosely founded suspicions. While this approach did facilitate knowledge production, its outcomes are mainly in-depth qualitative descriptions of a limited number of cases, with quantitative data remaining largely unattainable (section 4).

Social world/arenas

The social worlds/arenas maps analytically operationalised union activities in two maps: 'behind the scenes' and 'in the public eye.' The 'behind-the-scenes' social world/arena map encompassed union activities that did not involve direct engagement with employers, such as interactions with workers or internal research on subcontracting labour law. In contrast, the 'in the public eye' social world/arena included activities involving direct employer engagement, such as submitting position papers and conducting site visits.

Positional maps

Three positional maps were created to analytically differentiate the stages of unions' knowledge: initial, intermediary, and advanced. Initial knowledge reflected unions' early understanding, often based on assumptions and vague representations of grievances in slaughterhouses. Intermediary knowledge, though fragmented, was actively used in communications with slaughterhouse operators and subcontractors. Advanced knowledge reveals a comprehensive understanding of the issues, evidenced by unions' growing frustration following repeated unsuccessful attempts to resolve grievances through direct employer dialogue. Throughout these maps, an empirical pattern emerged regarding unions' rationality in evidence development: the urgent need to address grievances led unions to frequently bypass knowledge verification processes, thereby instrumentalising incomplete or fragmentary knowledge (precarity-based rationality).

SA's mapping revealed an empirical pattern in the dynamics of unions' knowledge production, leading to the conceptualisation of an analytical framework to systematise this process across four phases: Phase 1 (initial knowledge gain); Phase 2 (knowledge verification); Phase 3 (knowledge application); and Phase 4 (optimised knowledge gain). Within this framework the process of knowledge production forms a cyclical and fluid continuum, with phases occurring simultaneously or repeatedly, and with the possibility of movement between the phases. To emphasise the dynamics of this ongoing, evolving process, the framework is termed the 'Knowledge Production Cycle' (KP-Cycle). The various SA maps facilitated the systematic allocation of data within this cycle, as follows:

- Phase 1 (initial knowledge gain) traces the unions' first stage of knowledge production. It begins with vague concerns and suspicions raised by NGG and Faire Mobilität about potential issues in slaughterhouses and culminates with a physician's report on major occupational grievances at Slaughterhouse SH, thereby prompting the unions to intensify their engagement within the sector.
- Phase 2 (knowledge verification) traces union activities aimed at verifying their initial concerns before dialogue with employers ('behind-the-scenes' social world/arena). This phase is brief, highlighting the structural context of precarity, which necessitates the rapid instrumentalisation of uncertainty to address urgent grievances in slaughterhouses.

- Phase 3 (knowledge application) traces the ‘intermediary’ stage of knowledge and is related to direct interactions with employers (in the public eye’ social world/arena). It starts with the very first communication with the operator of Slaughterhouse SH and ends with the in-site visit of Slaughterhouse SH.
- Phase 4 (optimised knowledge gain) analyses the ‘advanced’ stage of knowledge. After several unsuccessful efforts to address grievances through dialogue, the unions’ prevailing frustration vis-à-vis employers and their inaction reflects a profound understanding of the issues in slaughterhouses. The essence of this optimised knowledge constitutes the evidence presented during the 2020 legislative procedure of the ArbSchKG concerning the necessity to impose limitations on employers’ fundamental rights (section 3).

3. Union evidence in the ArbSchKG

The ArbSchKG, which was introduced during the COVID-19 pandemic, was briefly negotiated over a period of under eight months, from May to December 2020. Aiming to comprehensively regulate and improve working conditions in the meat industry, the act banned contracts for specific pieces of work (*Werkverträge*)³ in larger meat processing plants with more than 49 employees and imposed limits on temporary agency work (*Leiharbeit*)⁴. Both types of contracts, discussed in detail in section 4, have been identified as root causes of occupational health and safety grievances in slaughterhouses. Following the ArbSchKG, meat companies must now employ slaughterhouse workers under standard labour contracts (*Arbeitsverträge*), with core work areas fully protected by health and safety regulations (Kothe, 2021, p. 41), overseen by the Federal Customs Administration.⁵ To address long-standing control deficiencies, the ArbSchKG set minimum inspection quotas for labour authorities and assigned the BMAS oversight of COVID-19 regulations.⁶

Union participation in the ArbSchKG legislative procedure – where evidence grounded in their optimised knowledge was provided – can be reconstructed as follows. In early 2020, industrial slaughterhouses became COVID-19 hotspots due to poor working and living conditions. Initially, the German federal government used non-binding measures to control the pandemic among workers (Creutzburg et al., 2020), but mandatory regulation soon became necessary. The COVID-19 pandemic thus opened a window of opportunity for unions to amplify their longstanding claims for hard law regulation in the meat industry. Subsequently, DGB, NGG, and Faire Mobilität formed a crisis team to present unified demands to the German federal government (Interviewee B).

3 §§ 6a para. 2 in conjunction with § 2 para. 2 Gesetz zur Sicherung von Arbeitnehmerrechten in der Fleischindustrie. Herein: GSA Fleisch.

4 § 6a para. 3 GSA Fleisch.

5 § 6b para. 1 GSA Fleisch.

6 § 18 para. 3 ArbSchG.

On May 12, 2020, the NGG wrote to Federal Minister of Labour Hubertus Heil (herein: the Labour Minister), highlighting slaughterhouse issues and advocating for a subcontracting ban (BMAS, 2020a, pp. 3-4). To illustrate nationwide issues, NGG included a report from DGB Schleswig-Holstein, with Interviewee B noting that the unions' extensive fieldwork in Schleswig-Holstein rendered its experience nationally representative. Shortly thereafter, on May 20, 2020, the federal government adopted the *Occupational Safety Program for the Meat Industry*,⁷ aimed at banning subcontracting and temporary work (BMAS, 2020). On May 25, 2020, NGG wrote again to the Labour Minister, endorsing the programme and offering sector-specific knowledge for drafting the bill (BMAS, 2020a: 5). Within a month, on June 18, 2020, the Labour Minister turned to unions requesting sector-specific knowledge on subcontracting, temporary work, and worker housing (BMAS, 2020a: 14-15), underscoring unions' key role in the ArbSchKG legislative procedure.

The draft proposal for a new bill on July 21, 2020 included a full ban on temporary work and subcontracting in the meat industry. The explanatory memorandum of the draft heavily relies on evidence to justify the importance of the ban (BMAS, 2020b), underscoring the empirical significance of EBP. To describe the working conditions, BMAS relies on empirical findings from Faire Mobilität and the Employers' Liability Insurance Association (BMAS, 2020b: p. 23). After the draft proposal is prepared by the responsible ministry, in this case BMAS, an official public hearing typically follows.⁸ Several civil society actors, including unions, were consulted (BT-Drs. 19/22997: 11). While NGG welcomed the draft proposal but advocated for stricter regulation of the meat industry (BMAS, 2020c), DGB provided more detailed comments on the draft (BMAS, 2020d).

In early October 2020, as part of the ongoing legislative procedure in the Bundestag, the responsible Committee on Labour and Social Affairs conducted public hearings, to which unions were also invited (BT Committee Print 19[11]778). The NGG argued for the constitutionality of the changes and advocated for stricter rules on artisanal slaughterhouses, along with a complete ban on *Leiharbeit* (BT-Ausschussdr. 19[11]767). During these hearings, the NGG was specifically asked for quantitative data, suggesting a hierarchy of knowledge in regulatory processes. Due to the unions' long-term systemic obstacles in collecting quantitative data, the NGG cited Faire Mobilität's empirical findings and an NRW inspection study to support their qualitative data on slaughterhouse issues, as explained by interviewee B. In section 4, the root-causes for lacking quantitative are analysed.

In late October, acting independently to influence decision-making, the NGG sent a letter to all CDU/CSU members of the Bundestag urging them to support the ban on *Leiharbeit*. To substantiate this, the NGG provided specific evidence on the issues related to *Leiharbeit* (NGG 2020). In later negotiations, the ban on *Leiharbeit* was softened in December 2020, and the Bundestag passed the law in a roll-call vote later that

⁷ Arbeitsschutzprogramm für die Fleischwirtschaft.

⁸ § 47 para. 3 GGO.

month (BT-Plenarprotokoll 19/201: 25258-25261). As required, the Bundestag promptly forwarded the law to the Bundesrat (BRat-Drs. 745/20) for the necessary approval under Art. 87(3), para. 3 sent. 3 GG. Following the political compromise with CDU/CSU on banning temporary work, NGG anticipated Bundesrat support and ceased further actions (Interviewee B). The ArbSchKG was approved, certified by the Federal President (Art. 82 para. 1 GG), and promulgated on December 30, 2020, entering into force on January 1, 2021 (BGBI. I 3334).

The legislative procedure of the ArbSchKG empirically underscores the conceptual discussion on EBP and supports critiques that EBP's emphasis on quantification can marginalise qualitative research within a hierarchy of knowledge. As noted, during the Bundestag hearings, emphasis was placed on negotiations informed by quantitative data, which unions lacked. Although unions' evidence ultimately proved sufficient to facilitate participation in the legislative procedure and contribute, at least in part, to this new regulation, Engebretsen et al.'s (2022) thesis on crisis-driven policymaking and its related flexibility regarding traditionally accepted evidence might offer a plausible explanation for this. In this regard, the legislative procedure of the ArbSchKG underscores not only the need to be prepared for emerging windows of opportunity but also the importance, as discussed in the following section, of acknowledging the root causes of structural precarity in order to accurately interpret precarity-based evidence beyond "flexible" crisis-driven policymaking.

4. Situating union evidence: structural precarity

Prior to the ArbSchKG, unions' knowledge of grievances in industrial slaughterhouses was situated within a sector-specific context – termed structural precarity – where grievances and vulnerabilities were rendered invisible, and accountability was hindered. The root causes of this structural precarity are linked to both the legal situation (systemic precarity) and the cultural situation (epistemic precarity). As substantiated in this section, the intertwining of systemic and epistemic precarity excluded unions from a systematised process of knowledge production, as illustrated in section 5 of this paper.

4.1. Legal situation: systemic precarity

The systemic precarity of work in slaughterhouses stems from a system where employers circumvent legal responsibilities for labour and health obligations through subcontracting agreements. In 2019, NRW labour authorities inspected slaughterhouses and found 8,752 violations in 30 follow-up inspections, including over 2,400 breaches of occupational health and safety regulations (MAGS NRW, 2019, p. 6). The extensive use of *Werkverträge* was identified as the main reason for the violations (MAGS NRW, 2019, p. 10). This inspection program was crucial for unions, providing quantitative data linking slaughterhouse problems directly to *Werkverträge*. Interviewee A explains:

“Here we could say that in NRW, you finally listened to what we’ve been saying for years, and you actually inspected it. So, there was a lot of material. Our problem was that everyone knew about these grievances as an open secret, but proving it was difficult because the system effectively evades accountability.”

While standard employment contracts *Arbeitsverträge* are highly regulated, *Werkverträge* are minimally regulated, leaving employees with *Werkverträge* in a particularly vulnerable position. This can be explained as follows: In German civil law, *Arbeitsverträge* and *Werkverträge* are the two legal forms used to regulate employment relationships. *Leiharbeit* is a specific form of *Arbeitsvertrag* that, however, was not representative in slaughterhouses (Interviewees A and B). In *Arbeitsverträge*, the obligation to work exists irrespective of success⁹ and is linked to a legally mandated minimum wage.¹⁰ *Arbeitsverträge*, as a standard form of employment, are highly regulated, encompassing health and safety measures, entitlement to paid leave, and provisions for workers’ participation rights, among others (Kamanabrou, 2017, § 16 and §§ 32-34). In *Werkverträge*, payment is contingent upon successfully achieving specific outcomes.¹¹ In civil law, *Werkverträge* are minimally regulated, focusing on termination, non-performance, or inadequate performance (Looschelders, 2022, §§ 33-35).

Historically, slaughterhouses have significantly liberalised their core employment model, transitioning from *Arbeitsverträge* to *Werkverträge*. Until the 1990s, slaughterhouse employees had *Arbeitsverträge* (Schulten and Specht, 2021, pp. 36-37). In the explanatory memorandum for the ArbSchKG, the BMAS assumes that the number of regular employees in the meat industry decreased by 25% between 1999 and 2019 (BR-Drs. 426/20, 13-14). This liberalisation was highly problematic for both slaughterhouse workers and unions, as it overshadowed employers’ legal responsibilities, especially regarding occupational health protection (Interviewees A and B). As a result, the reporting, verification, and documentation of grievances in slaughterhouses were significantly restricted both for workers and unions. Based on documents and interview analysis, the following reasons can be identified.¹² (1) Dividing the legal responsibility of a single company among multiple subcontractors, each responsible for only a small portion of workers, undermines the bargaining power of workers and unions; (2) The subcontractors exhibit a poor corporate culture, often opting for verbal agreements instead of written contracts; (3) additionally, due to workers’ reluctance to pursue legal action, subcontractors tended to disregard employees’ legal claims.

The customs inspections in NRD represented a novelty in terms of gaining quantitative data. Some of the issues in slaughterhouses, however, have been known to labour authorities since 2013 (Siekmeyer and Arndt-Zygar, 2013, pp. 21-24). Before the ArbSchKG, several political approaches had been tested to improve working

⁹ § 611a para. 2 BGB.

¹⁰ § 1 para. 1 Minimum Wage Act (*Mindestlohngesetz*).

¹¹ § 631 para. 1 BGB.

¹² These reasons were previously identified by Valdivia, Gallon, and Mangold (2023) in the initial empirical corpus of this study.

conditions in slaughterhouses, yielding limited success: In 2015, the meat industry signed a voluntary agreement with the Federal Ministry for Economic Affairs, followed by the introduction of the 2017 Act to Secure Workers' Rights in the Meat Industry.¹³ In its original form, the act mandated social security contributions, free work equipment, and payment of wages in euros.¹⁴ None of these political approaches improved working conditions in slaughterhouses (Hans-Böckler-Stiftung, 2019; Kohte and Rabe-Rosendahl, 2020, p. 330; Schulten and Specht, 2021, p. 38; Kohte, 2021, p. 38). The experience in Schleswig-Holstein exemplifies unions' unsuccessful efforts to resolve issues in slaughterhouses through direct communication with employers and their resulting evidence of the need to impose limitations on employers' fundamental rights (section 5).

4.2. Cultural situation: epistemic precarity

The epistemic precarity in slaughterhouse work arises from a cultural context where workers are marginalised from the knowledge society due to the intersection of various migration- and education-specific factors. In this sense, epistemic precarity engages with Crenshaw's (1991) concept of intersectionality, applied here to the field of migrant labour and unions activities (Tapia and Alberti, 2018, p. 2). Aware of the importance of nuanced and differentiated approaches to the migrant workforce (Tapia and Alberti, 2018; Alberti et al., 2013; Heyes, 2009), SA of the empirical data enabled the identification of recurrent patterns among migrant workers in industrial slaughterhouses. Slaughterhouse workers often lack the ability to adequately learn about their rights, recognise workplace grievances, report them, and, if necessary, take necessary action against employers. The combination with systemic precarity resulted in structural disadvantages and vulnerabilities for those workers in the labour market, while also curtailing unions' ability to produce knowledge.

Based on analysis of the in-depth interviews, the following five migration- and education-specific factors contribute to epistemic precarity.¹⁵ (1) Language barriers: These limit unions' ability to directly contact workers, and thus to report, verify, and document their problems (Interviewees A and B). (2) Cultural attitudes towards unions: All interviewees noted that dysfunctional union structures in workers' home countries foster distrust towards unions. As a result, many workers are reluctant to contact or join unions in Germany. Those who do join often hesitate to fully report their issues, fearing consequences. (3) Cultural attitudes towards state institutions: Workers often perceive state institutions such as courts as intimidating and inaccessible, deterring them from seeking support there (Interviewee C). (4) Workforce fragmentation reduces bargaining power: The harsh conditions in slaughterhouses lead to high turnover, weakening worker solidarity and reducing bargaining power

13 GSA Fleisch.

14 §§ 3–5 GSA Fleisch.

15 Building on the initial empirical corpus of this research, Valdivia, Gallon, and Mangold (2023) have partially identified these migration- and education-specific factors.

for both workers and unions against employers. (5) Low educational profiles: Most slaughterhouse workers have low educational backgrounds, especially in manual trades (Interviewee B). Interviewees D and E noted a decline in educational levels over the years, partly due to increased recruitment of non-literate individuals from rural areas of Romania.

5. Precarity-based evidence: the experience of unions in Schleswig-Holstein

The analysis of the 2012–2017 experience in Schleswig-Holstein follows the four phases of the KP-Cycle, using SA's mapping strategy to guide data articulation. It illustrates how structural precarity rendered grievances invisible and compelled unions to instrumentalise uncertainty, suggesting a precarity-based rationality in evidence development. While this approach successfully facilitated knowledge production, its highly instrumental, non-systematic and partial outcomes – precarity-based evidence – are often constrained to qualitative descriptions, as quantitative data remains largely unattainable.

5.1. Phase 1: Initial knowledge gain

An email exchange between Faire Mobilität and NGG in 2012 documents the unions' initial actions concerning the meat industry. It highlights early concerns and suspicions, along with the unions' knowledge gaps in understanding the work culture in slaughterhouses and the challenges in reaching workers to obtain firsthand information about their issues. Consequently, it suggests the first phase of the KP-Cycle: the initial knowledge gain.

In November 2012, Faire Mobilität mailed NGG to arrange a joint visit to a slaughterhouse in Schleswig-Holstein (anonymised herein: Slaughterhouse SH) and its workers accommodations (Faire Mobilität and NGG, 2012). Back then, even Faire Mobilität, responsible for advising migrant workers and, in that role, playing a key part in the ArbSchKG legislative procedure, lacked specific knowledge about the workers' origins. The representative from Faire Mobilität stated: *"If you think that mostly Romanians are working there, I could bring an interpreter for that day."* Additionally, the unions were not yet aware of the grievances related to the accommodations. The NGG representative remarked: *"As of now, I know that there are no mass accommodations; instead, colleagues are renting apartments."* In this email exchange, unions also reported that they had no members in slaughterhouses, which led to insufficient information on work shifts and accommodation addresses, rendering their awareness campaigns ineffective.

One year later, in 2013, the initial knowledge gain efforts became more concrete due to the unexpected report from a physician on slaughterhouse issues. This report was crucial for unions, providing a better understanding of the problems in slaughterhouses and correcting, for example, initial beliefs about workers' accommodation. It also enabled the launch of urgent activities within the meat industry, highlighting the

importance of “passive” knowledge gain processes for unions and the need for accessibility and availability to benefit from them. An email exchange between NGG and Faire Mobilität in mid-December 2013 outlines this process: *“A year ago, we discussed [Slaughterhouse SH], and now, after numerous attempts to obtain shift schedules, we finally have a contact”* (Faire Mobilität and NGG, 2013). A physician from Doctors Without Borders independently reached out to the DGB to report severe grievances in slaughterhouses: systematic overtime, unpaid hours, lack of health insurance, 100-euro daily deductions for sick leave, addresses of mass accommodations, and restricted doctor choice due to subcontractors’ cooperation with specific physicians. Concerning this report, Interviewee B noted that it first alerted unions to severe issues and sparked intense activities within the meat industry. When asked about the reasons for engaging with the sector despite the absence of union members, Interviewee B explained that the DGB and its affiliated unions felt a strong obligation to stand in solidarity with the workers.

Following the exchange with the physician and prior to engaging in communication with employers (‘behind-the-scenes’ social world/arena), unions undertook activities to verify the issues in slaughterhouses, marking the beginning of the second phase of the KP-Cycle.

5.2. Phase 2: Knowledge verification

By 2014, an internal DGB protocol highlights unions’ improved comprehension of both the working culture in slaughterhouses and the root cause of the degrading working conditions (DGB, 2014): the outsourcing practices of major meat companies. Furthermore, for the first time, unions identified Romanian workers as the primary group affected. As previously mentioned, this fact was unclear in 2012. As noted in the protocol, major meat companies in Germany – Tönnies, Vion, Westfleisch, and Danish Crown – have largely outsourced their operations. This has led to wage dumping, a declining permanent workforce, job losses in other EU countries, and the severe exploitation of Romanian workers. These workers, recruited through shell temporary employment agencies, live and work in extreme precarity: *“They live here like in a ghetto, with no contact with colleagues, neighbours, or unions,”* the report notes. The case of Slaughterhouse SH illustrates this issue. After it was taken over by Industrial Meat (anonymised, herein: IM), working conditions in the company significantly worsened. Whereas workers previously were part of a works council and a collective agreement, personnel management was outsourced after the takeover, and the permanent workforce reduced to about 8%.

To address the issues at Slaughterhouse SH directly with workers, the first activity of the unions (NGG and Faire Mobilität) was to conduct an information campaign in early 2014 outside of Slaughterhouse SH and one of the mass accommodations. The campaign aimed both to inform workers of their rights and to verify their grievances firsthand. Reconstructed from an internal DGB protocol (DGB, 2014), it was largely unsuccessful due to the context of epistemic precarity, with workers fearing to contact

unions and disclose their issues. The only worker who could be reached reported working shifts of over 12 hours, lacking a written contract and pay slips, and consequently experiencing uncertainty regarding overtime, sick leave compensation, and rent deductions from his wages. Interviewee B explained that unions quickly realised the ineffectiveness of information campaigns outside slaughterhouses, as subcontractors had warned workers against engaging with unions, instilling fear and discouraging interaction.

Following the information campaign and internal research, unions approached the slaughterhouse operator, IM, for the first time to address these grievances. This marked the third phase of the KP-Cycle: knowledge application ('in the public eye' social world/arena).

5.3. Phase 3: Knowledge application

In 2015, IM was for the first time approached – initially through informal contact and, later, as no improvements were made, with an official position paper sent in early February 2015 and described below (DGB, Faire Mobilität, and NGG, 2015). Both approaches reveal three key aspects underlying the rationality of the unions' evidence development in context of structural precarity.

The first aspect is that, by 2015, unions had no members in industrial slaughterhouses, resulting in a significant power imbalance when raising claims with IM. In this scenario, unions had to capitalise on whatever resources and opportunities were available, including the political context, in order to gain bargaining power. In an email exchange between NGG and DGB, the unions reported a forthcoming visit by the Federal Minister for Economic Affairs for customs inspections in Schleswig-Holstein, which they strategically leveraged to reinforce their claims against IM: *"We will first meet with local [IM] management under the threat of customs inspections and then gradually escalate. Some information still needs to be tightened up"* (DGB and NGG, 2015a).

Second, the quote also highlights the unions' commitment to verifying knowledge, whenever possible, before formally lodging complaints, reinforcing the cyclical nature of knowledge production. As Interviewee B noted, unions' ongoing verification of grievances and their root causes over the years allowed them to be heard during the ArbSchKG legislative procedure.

Third, due to the urgency of addressing grievances in slaughterhouses and the structural precarity hindering acknowledgment, unions bypassed systematic knowledge production in favour of immediate knowledge application (translation). This is evident throughout the position paper, with unions raising claims despite the absence of quantitative data and adequate legal expertise to support any of their arguments. For instance, regarding health insurance-related matters, they comment: *"According to our findings, the posted workers do not have a European health insurance card, as we believe is required by law"* (DGB, Faire Mobilität, and NGG, 2015). The systemic precarity, as discussed in subsection 4.1, obscured employer responsibility and limited

quantitative knowledge production. The extensive use of *Werkverträge*, as Interviewee B explained, also led to unique legal challenges for which unions lacked expertise, necessitating a lengthy and painstaking process of legal professionalisation on the field over the years.

Concerning the content of the position paper, which covered working hours, vacation, posting work, wages, and health insurance, Interviewee B explained that it illustrates the unions' efforts to organise knowledge when raising claims. Regarding working hours, unions complain about unlawful 12-hour workdays without timely compensation: "*The 12-hour shifts have three 30-minute breaks, but long distances to break rooms force employees to shorten or skip their breaks.*" In terms of vacation, unions argue that the monthly two-day leave for overtime denies workers the right to continuous vacation and prevents visits to their families in Romania. For posting work, workers are sent back to Romania for two unpaid months after two years of employment before being reassigned to Germany, which excludes them from German social security and violates European posting regulations. Concerning wages, workers do not receive pay slips, preventing verification of the 8 EUR minimum wage and costs for rent and bus transfers. Transparent time tracking for wage calculations is also missing. Lastly, in terms of health insurance, workers lack a European health insurance card, forcing them to cover their own medical costs, with little chance of reimbursement in Romania. They also lack the freedom to choose their doctors and are dependent on subcontractors' cooperative doctors (DGB, Faire Mobilität, and NGG, 2015).

IM's response in late March 2015 prompted the unions (DGB and NGG) to undertake several activities. These activities, which revealed additional aspects underlying the unions' evidence rationality and its development amidst structural precarity, included an open letter to workers in late April and a site visit to Slaughterhouse SH in early May. The outcomes of these activities allowed unions to further corroborate IM's and subcontractors' positions, leading to optimised knowledge gain, as described in subsection 5.4.

First, unions developed creative solutions to reach workers despite having very limited resources. The open letter (DGB and NGG, 2015b) addressed workers' mistrust toward unions by emphasising both their solidarity and the need to prevent the overall degradation of working conditions in the sector. Interviewee B explained that the unions' claim to prevent the degradation of German working conditions was the most compelling way for workers to understand their engagement.

Second, despite experiencing linguistic and cultural barriers tied to epistemic precarity, unions did not overshadow workers but actively gave them a voice. The open letter, part of the empirical corpus of this research, reflects a transparent and respectful approach, ensuring that workers were fully informed about their rights and all exchanges and negotiations between unions and IM. Here, volunteers were crucial for unions as cost-neutral linguistic and cultural intermediaries, exemplified by a DGB volunteer who translated and adapted the open letter from German to Romanian.

Third, to improve understanding of the grievances in slaughterhouses, unions conducted on-site investigations, emphasising the importance of both verbal (position

papers, statements) and non-verbal communication (body language, gestures, tones). Non-verbal communication helped unions close knowledge gaps, gain new perspectives, identify hidden problems, and initiate verification processes, requiring critical self-examination to interpret and document their insights. During the site visit, for example, when verifying IM's position on promptly correcting violations of working hours regulations through a revised shift system, unions documented dissatisfaction of subcontractor responses: *"When asked about the progress, there were evasive answers and questioning looks. It was vaguely stated that discussions were ongoing"*, notes an DGB in-house protocol (DGB, 2015a).

Fourth, the site visit (DGB, 2015a) exemplifies the systemic and epistemic precarity affecting work in slaughterhouses and highlights the challenges faced by unions in acknowledging these issues: When discussing the introduction of a rotating shift system, Subcontractor 1's director dismissed its utility, stating: *"The Romanian colleagues also want to work as much as possible!"*. Additionally, when explaining the transition to employment under German law, Subcontractor 1's manager reported workers' supposed dissatisfaction due to higher social security contributions, adding that they would be [sic] *"satisfied again"* once they learned about child benefits. This demeaning treatment, highlighting a poor corporate culture, is documented by the unions. Moreover, regarding wage issues, unions were surprised when Subcontractor 1 claimed responsibility for managing pay slips and additional costs, given that Subcontractor 2 is the direct employer. The DGB protocol (2015a) notes the unions' lack of experience with subcontracting chains, reporting a substantial research agenda needed to decrypt the legal technicalities between Subcontractors 1 and 2. The results of this research, along with the outcomes of the activities described above, provided the unions with an advanced understanding of the grievances in slaughterhouses, as discussed in the following section.

5.4. Phase 4: Optimised knowledge gain

The unions' optimised knowledge gain, described below, follows IM's position from late March 2015, combined with workers' feedback following the open letter in late April, interactions with subcontractors during the site visit to Slaughterhouse SH in early May, and legal research on subcontracting chains. In this final phase, unions demonstrate an advanced understanding of slaughterhouse grievances, which ultimately forms the core of their evidence in the ArbSchKG legislative procedure on the necessity to impose limitations on employers' fundamental rights.

Regarding working hours, the single-shift system with three unpaid breaks remains unchanged, leaving only 10 minutes for breaks during which workers clean their workspaces. IM's claim to pay higher than the minimum wage could not be confirmed. Workers reported no written contracts or pay slips, prompting unions to continue documenting issues involving working hours and wages. On the subject of vacation, workers reported that during the site visit, they had been informed that only six days out of the three vacation weeks were compensated, leading unions to further document

ongoing violations of vacation law. Regarding posting work, workers reported never having worked in a Romanian slaughterhouse and being employed in Germany for an average of five years, raising doubts about the legality of subcontracting chains. Subcontractors confirmed health insurance coverage but also reported cases where workers made direct payments (DGB, 2015a).

This optimised knowledge was channelled to IM in early June through a new position paper. An email exchange reveals the DGB's frustration after several failed attempts to secure a meeting with IM, and highlights concerns about structural precarity in slaughterhouses. For example, regarding subcontractor chains, the position paper states: *"Regarding your general contractor liability, we have substantial doubts about the legal structure of your contractor [Subcontractor 1] and their contractor [Subcontractor 2]."* It also notes alarming tactics to intimidate workers: *"We reiterate our concern that it is unacceptable for the managing director of [Subcontractor 2] to visit accommodations and pressure employees not to share information with us."* (DGB, 2015c).

In 2016, the unions further deepened and optimised their knowledge through various proactive efforts to research and document the situation of workers. These actions included sending another position paper to IM, consulting a cooperative doctor to review workers' insurance status, recording a worker's personal report on grievances, and documenting an emergency doctor's testimony regarding the death of a worker in one of the accommodations.

In late April, the DGB executive director once more corresponded with IM about the conditions in slaughterhouses, conveying widespread frustration with IM's inaction:

"After more than a year of continuous attempts on our part to achieve improvements in the specific working conditions of our Romanian colleagues at [Slaughterhouse SH] through dialogue, we must conclude that this approach has evidently failed (...) We now lack any confidence that your company is genuinely committed to ensuring ongoing improvements in working conditions on site." (DGB, 2016a).

In early July, the DGB confirmed through a phone call with a subcontracting cooperative physician that incorrect insurance policies meant that workers had to pay medical expenses upfront. According to a DGB in-house protocol, the physician also requested that IM *"cease sending anyone or anything further, as I am already charging less for the examinations"* (DGB, 2016b).

Unions' understanding of grievances at Slaughterhouse SH was further confirmed when Marian (anonymised), a Romanian worker, contacted Faire Mobilität in mid-August (DGB, 2016c). He reported working over 12 hours daily, falsified timesheets, missing pay slips, insufficient break times, and a lack of health insurance, with workers relying on [sic] "swallowing pills" provided by a supervisor. Marian also noted no formal job training, contributing to a rapid turnover of skilled workers. Interviewee C confirmed that the meat industry, with its high turnover rates, is one of the most

precarious sectors addressed by Faire Mobilität. This turnover exacerbates workers' vulnerability to epistemic precarity.

A further example of unions' optimised knowledge gain is a physician's report from late August detailing the death of a 30-year-old worker due to cardiac arrest in one of the mass accommodations (Physician, 2016). Through discussions with witnesses, the doctor uncovered major unsafe conditions, including reliance on a Romanian-speaking intermediary for medical sick notes,¹⁶ which delayed care. Because timely action could have saved the worker, the doctor advocated for clear Romanian-language emergency procedures in the accommodations.

The optimised knowledge resulting from the physician's report informed union claims to a district administrator and to IM. Early in September, the DGB emailed the emergency doctor's report to the district administrator, highlighting that the fatality reflected workers' vulnerability due to language and cultural barriers (epistemic precarity) and urging the district to support strategic communication with IM (DGB, 2016d).

With a new position paper sent in early October, unions once more urged IM to address ongoing issues at Slaughterhouse SH (DGB, 2016e): Unions complained that transitioning to German social insurance had not improved conditions. Problems with working hours, payment, work safety, and housing persist. Issues include single-shift systems, unpaid setup times, malfunctioning timekeeping devices, and unresolved payment issues, such as uncompensated overtime. Work safety remains a concern due to frequent accidents, inadequate training, and increased assembly line speeds. Monthly housing costs of 200 EUR exceed local rental caps by about 320%, and safety deficiencies, highlighted by the fatal incident at one of the mass accommodations, continue to be a problem. In its late October response (IM, 2016), IM addressed union concerns, attributing issues surrounding working time to layoffs resulting from switching to German subcontractors. They promised to reinstate the 4-shift system, cover 10-minute setup times, and provide monthly pay slips. IM denied increased workplace accidents, safety deficiencies in accommodations, and excessive accommodation costs, clarifying that additional costs such as transport and medical visits are included in the tenancy contracts.

In 2017, unions optimised knowledge gain continued. IM's last response led unions to hire an external law firm to review worker accommodations in Schleswig-Holstein. Three legal opinions (Law Firm, 2017) from February to March found that subcontractors' additional contracts constituted tenancy agreements, requiring compliance with accommodation rules making it inadmissible to include extra costs. Furthermore, German meat industry rules state that voluntary commitments are binding. Interviewee B explained that, despite the unions' in-house legal department, the complexity of *Werkverträge* in slaughterhouses required external support to address *sui generis* legal technicalities, including those pertaining to housing. In May, a final example of unions'

16 This is most likely the foreman. All interviewees report systematic mistreatment by the foremen, which is particularly concerning when they also act as medical intermediaries.

actions during the optimised knowledge gain phase involved collaboration with the Friedrich Ebert Foundation (DGB and Friedrich Ebert Foundation, 2017). DGB mailed the Foundation in Romania, requesting any information on Subcontractor 2. The Foundation's response included photos of empty lots at the alleged headquarters, confirming the unions' suspicion that Subcontractor 2 was a shell company.

6. Final reflections

The unions' experience of knowledge production leading to the ArbSchKG presents an intriguing case for understanding the interpretation and use of evidence in policy-making. Comprehensively situating the unions' experience within the meat industry in its specific legal and cultural context challenges EBP's paradigm of objectivity, uniform rationality, and quantification, both in the methodologies of generating and interpreting evidence. Evidence originating in settings of structural precarity inevitably follows its own rationality and dynamics of development, particularly in embracing and channelling uncertainty of partial positions.

To tackle a system that renders grievances invisible, unions had to incorporate and embrace subjective reporting and doubt into a highly non-systematised process that matured over time. Although this approach successfully facilitated knowledge production, its non-systematic and partial outcomes – conceptualised in this study as precarity-based evidence (PBE) – are often limited to qualitative descriptions, as quantitative data collection remains largely unattainable. While PBE proved effective in facilitating democratic participation in the underlying conditions of urgency created by the COVID-19 pandemic, it raises questions about its leverage and acceptance beyond crisis-driven policymaking.

Understanding the unique features of evidence rooted in structural precarity is essential for rethinking established knowledge hierarchies and adjusting benchmarks for interpreting evidence from intersectionally marginalised groups. In expanding the EBP framework to explore evidence amidst structural precarity and challenging its rhetoric of objectivity, this study does not propose a universal definition of precarity to which policymaking should accommodate. Instead, it pledges – in line with feminist STS scholarship – to critically acknowledge different and partial positionalities in the interpretation and use of evidence. To achieve this, the paper proposes a theoretical framework for analysing rationalities and dynamics in evidence development, drawing on an extensive operationalisation of situational analysis within grounded theory.

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Competing Interests

I declare no competing interests.

Sources

Anonymised IM (2015a) Position paper. [Confidential]

Anonymised IM (2016) Position paper. [Confidential]

Anonymised Law firm (2017) Legal opinion. [Confidential]

BMAS (2020a) Correspondence BMAS and NGG, 01/05/2020 to 29/07/2020, based on IFG enquiry: www.fragdenstaat.de/anfrage/kontakte-und-stellungnahmen-im-zusammenhang-mit-den-arbeitsbedingungen-in-der-fleischindustrie-2020-arbeitsschutzkontrollgesetz/753592/anhang/ngg.pdf.

BMAS (2020b) Gesetz zur Verbesserung des Vollzugs im Arbeitsschutz. Referentenentwurf: www.bmas.de/SharedDocs/Downloads/DE/Gesetze/Referentenentwuerfe/referentenentwurf-arbeitsschutzkontrollgesetz.pdf.

BMAS (2020c) Stellungnahme der Gewerkschaft Nahrung Genuss Gaststätten, www.bmas.de/SharedDocs/Downloads/DE/Gesetze/Stellungnahmen/arbeitsschutzkontrollgesetz-ngg.pdf

BMAS (2020d) Stellungnahme des Deutschen Gewerkschaftsbundes, www.bmas.de/SharedDocs/Downloads/DE/Gesetze/Stellungnahmen/arbeitsschutzkontrollgesetz-dgb.pdf

DGB and Friedrich-Ebert-Stiftung (2017) Email correspondence. [Confidential]

DGB and Faire Mobilität and NGG (2015) Position paper. [Confidential]

DGB (2014) In-house protocol. [Confidential]

DGB (2016a) Position paper. [Confidential]

DGB (2016b) Memorandum. [Confidential]

DGB (2016c) Memorandum. [Confidential]

DGB (2016d) Email correspondence. [Confidential]

DGB (2016e) Position paper. [Confidential]

DGB (2015a) Memorandum. [Confidential]

DGB (2015b) Email correspondence. [Confidential]

DGB (2015c) Position paper. [Confidential]

DGB and NGG (2015a) Email correspondence. [Confidential]

DGB and NGG (2015b) Open letter. [Confidential]

Faire Mobilität and NGG (2013) Email correspondence. [Confidential]

Faire Mobilität and NGG (2012) Email correspondence. [Confidential]

MAGS NRW (2019) Überwachungsaktion. 'Faire Arbeit in der Fleischindustrie'. Abschlussbericht, Düsseldorf: MAGS NRW.

NGG (2020): Arbeitsschutzkontrollgesetz: Leiharbeit, Brief an die Abgeordneten der CDU/CSU Bundestagsfraktion vom 20/10/2020.
Physician (2016d) Memorandum. [Confidential]

Bibliography

Alberti G.; Holgate J. and Tapia M. (2013) 'Organising migrants as workers or as migrant workers? Intersectionality, trade unions and precarious work', *International Journal of Human Resource Management (The)*, 24(22), pp. 4132–48. doi: <https://doi.org/10.1080/09585192.2013.845429>

Baron, J. (2018) 'A Brief History of Evidence-Based Policy', *ANNALS of the American Academy of Political and Social Science (The)*, 678(1), pp. 40–50. doi: <https://doi.org/10.1177/0002716218763128>

Berger P. L. and Luckmann, T. (1996) *The social construction of reality. A treatise in the sociology of knowledge*. London: Penguin Books.

Blumer H. (1969) *Symbolic Interactionism: Perspective and Method*. Berkeley: University of California Press.

Boden, R., and Epstein, D. (2006) 'Managing the research imagination? Globalisation and research in higher education', *Globalisation, Societies and Education*, 4(2), pp. 223–236. doi: 10.1080/14767720600752619

Bogenschneider K. and Corbett T. J. (2021) *Evidence-based policymaking. Envisioning a New Era of Theory, Research and Practice*. Second edition. New York: Routledge.

Boswell, J. (2014) 'Hoisted with our own petard: Evidence and democratic deliberation on obesity', *Policy Sciences*, 47, pp. 345–365. doi: <https://doi.org/10.1007/s11077-014-9195-4>

Bowen G. A. (2006) 'Grounded Theory and Sensitizing Concepts', *International Journal of Qualitative Methods*, 5(3), pp. 12–23. doi: <https://doi.org/10.1177/160940690600500304>

Clarke, A. E. (2007a) 'Grounded Theory: Critiques, Debates, and Situational Analysis' in Outhwaite W. and Turner S. P. (eds.) *Handbook of Social Science Methodology*. London: Sage, pp. 423–442.

Clarke, A. E. (2007b) 'Feminisms, Grounded Theory and Situational Analysis' in Hesse-Biber S. N. (ed.) *Handbook of Feminist Research: Theory and Praxis*. California: Sage, pp. 345–370.

Clarke A. E. and Leigh Star S. (2008) 'The Social Worlds Framework: A Theory/Methods Package' in Hackett E. J.; Amsterdamska O.; Lynch M. and Wajcman J. (eds.) *Handbook of Science and Technology Studies (The)*. Third edition. Cambridge, Massachusetts: The MIT Press, pp. 113–137.

Clarke, A. E.; Friese, C. and Washburn, R. (2018) *Situational analysis: grounded theory after the interpretive turn*. Second edition. Los Angeles: SAGE.

Crenshaw K. (1991) 'Mapping the margins: intersectionality, identity politics, and violence against women of color', *Stanford Law Review*, 43(6), pp. 1241–99.

Engebretsen, E. and Baker, M. (2022) *Rethinking Evidence in the Time of Pandemics*. Cambridge: Cambridge University Press.

Engebretsen, E.; Umachandran, P.; Ødemark, J. and Greenhalgh, T. (2022) *In what ways do cultural contexts influence the knowledge translation process for health decision-making and what are the implications for policy and practice?* Health Evidence Network Synthesis Report 76, Copenhagen: WHO Regional Office for Europe.

Gad C. and Ribes D. (2014) 'The Conceptual and the Empirical in Science and Technology Studies', *Science, Technology, & Human Values*, 39(2), pp. 183–91.

Hans-Böckler-Stiftung (2019) *Branchenmonitor Schlachten und Fleischverarbeitung*. Düsseldorf: Hans-Böckler-Stiftung.

Haraway D. (1988) 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies*, 14(3), pp. 575–99. doi: <https://doi.org/10.2307/3178066>

Heyes J. (2009) 'Recruiting and organising migrant workers through education and training: a comparison of community and the GMB', *Industrial Relations Journal*, 40(3), pp. 182–97. doi: <https://doi.org/10.1111/j.1468-2338.2009.00520.x>

Hoppe, R. (2005) 'Rethinking the science-policy nexus: From knowledge utilization and science technology studies to types of boundary arrangements', *Poiesis & Praxis* 3(3), pp. 199–215. doi: <https://doi.org/10.1007/s10202-005-0074-0>

Jenks, C. (1995) 'The Centrality of the Eye in Western Culture: An Introduction', in Jenks C. (ed.), *Visual Culture*. London: Routledge, pp. 1–25.

Jasanoff, S. (2011) 'Quality control and peer review in advisory science', in Lentsch, J. and Weingart, P. (eds.) *Politics of scientific advice. Institutional design for quality assurance (The)*. Cambridge: Cambridge University Press, pp. 19–35. doi: <https://doi.org/10.1017/CBO9780511777141.002>

Jasanoff S. (2017) 'Science and Democracy' in Felt U.; Fouché R; Miller C. A. and Smith-Doerr L. (eds.) *Handbook of Science and Technology Studies (The)*. Fourth edition. Cambridge, Massachusetts: The MIT Press, pp. 259–287.

Jung, A; Korinek, R.-L. and Strassheim, H (2014) 'Embedded expertise: A conceptual framework for reconstructing knowledge orders, their transformation and local specificities', *Innovation: The European Journal of Social Sciences*, pp. 398–419. doi: <https://doi.org/10.1080/13511610.2014.892425>

Kamanabrou, S. (2017) *Arbeitsrecht*, Tübingen: Mohr Siebeck.

Kohte, W. (2021) 'Integrativer Arbeitsschutz in der Fleischwirtschaft', *Arbeitsschutz in Recht und Praxis*, 2, pp. 37–41.

Law, J. (2017) 'STS as Method' in Felt U.; Fouché R; Miller C. A. and Smith-Doerr L. (eds.) *Handbook of Science and Technology Studies (The)*. Fourth edition. Cambridge, Massachusetts: The MIT Press, pp. 31–57.

Looschelders, D. (2022) *Schuldrecht Besonderer Teil*, 17th edition, München: Vahlen.

Lynch, J. F. (2013) 'General Considerations: Research Design, Ethics, and the Role of the Researcher', in Mosley L. (ed.) *Interview Research in Political Science*. New York: Cornell University Press, 31–44.

McCarthy, E. D. (1996) *Knowledge as culture: the new sociology of knowledge*. London: Routledge.

Minichiello, V.; Aroni, R.; Timewell, E. and Alexander, L. (1995) *In-Depth Interviewing: Principles, Techniques, Analysis, Second edition*. Melbourne: Longman.

Nutley, S.; Morton, S.; Jung, T. and Boaz, A. (2010) 'Evidence and policy in six European countries: Diverse approaches and common challenges', *Evidence & Policy*, 6(2), pp. 131–44.

Pearce, W.; Wesselink, A. and Colebatch, H. (2014) 'Evidence and meaning in policy making', *Evidence & Policy*, 10(2), pp. 161–65. doi: <http://dx.doi.org/10.1332/174426514X13990278142965>

Rohracher H. (2015) 'Science and Technology Studies, History of', *Elsevier*, pp. 200–205.

Saltelli, A. and Giampietro, M. (2017) 'What is wrong with evidence based policy, and how can it be improved?', *Futures*, 91, pp. 62–71. doi: <https://doi.org/10.1016/j.futures.2016.11.012>

Schulzen, T. and Specht, J. (2021) 'Grundlegender Wandel in der Fleischindustrie?', *Aus Politik und Zeitgeschichte*, 51(52), pp. 36–41.

Sebastian, M. and Seeliger, M. (2022) 'Die Re-Regulierung der Schlachthofarbeit in der Corona-Krise', *Arbeit*, 31(1–2), pp. 235–254. doi: <https://doi.org/10.1515/arbeit-2022-0013>

Siekmeyer, M. and Arndt-Zygar, S. (2013) *Landesweite Überwachungsaktion in der Fleischindustrie. Missbrauch von Werkverträgen unterbinden*, Ministerium für Arbeit, Integration und Soziales des Landes Nordrhein-Westfalen: Arbeitsschutz in Nordrhein-Westfalen. Jahresbericht 2013, pp. 21–24.

Silvast, A., and Virtanen, M. J. (2023) 'On Theory–Methods Packages in Science and Technology Studies', *Science, Technology, & Human Values*, 48(1), pp. 167–189. doi: <https://doi.org/10.1177/01622439211040241>

Strassheim, H. (2013) 'Politische Expertise im Wandel: Zur diskursiven und institutionellen Einbettung epistemischer Autorität' in Kropp, S. and Kuhlmann, S. (eds.) *Wissen und Expertise in Politik und Verwaltung*. In: *Der moderne Staat*, Special issue, 1/2013, pp. 65–87.

Strassheim, H. and Kettunen, P. (2014) 'When does evidence-based policy turn into policy-based evidence? Configurations, contexts and mechanisms', *Evidence & Policy*, 10(2), pp. 259–277. doi: <http://dx.doi.org/10.1332/174426514X13990433991320>

Tapia, M. and Alberti, G. (2018) 'Unpacking the Category of Migrant Workers in Trade Union Research: A Multi-Level Approach to Migrant Intersectionalities', *Work, Employment and Society*, 33(2), pp. 1–12. doi: <https://doi.org/10.1177/0950017018780589>

Valdivia, A.; Gallon, J. and Mangold A. K. (2023) 'Occupational health in slaughterhouses in Germany: translating political claims into Legal Language during the COVID-19 pandemic', *Zeitschrift für Sozialreform*, 69(4), pp. 279–303. doi: <https://doi.org/10.1515/zsr-2023-0005>

Wesselink, A.; Colebatch, H. and Pearce, W. (2014) 'Evidence and policy: discourses, meanings and practices', *Policy Sciences*, 47, pp. 339–44. doi: <https://doi.org/10.1007/s11077-014-9209-2>

Appendix

	Organisation	Function	Date
Interviewee A	NGG	Head of Legal Department	11/03/2024 and 01/12/2022
Interviewee B	NGG	Head of Berlin Office	27/02/2024 and 16/11/2022
Interviewee C	Faire Mobilität	Labour counsellor	22/12/2022
Interviewee D	DGB	Volunteer	10/02/2024
Interviewee E	NGG	Head of Office	19/02/2024

