Unpacking the black box behind a study of collective forgetting: Methodography of an exploratory multi-layered STS study in the digital age.

# Introduction

The field of Science and Technology Studies (STS) has long been devoted to unraveling the "black boxes" that obscure the scientific practices of other disciplines, shedding light on the complex and often messy dynamics of reasoning in its making. Ironically, STS has largely overlooked the examination of its own research practices and methodologies. In response to this oversight, Methodography emerges as a compelling new genre within STS (Lippert and Mewes, 2021), providing scholars with a reflective space to critically explore and articulate the intricacies of their research experiences, practices, and the decision-making processes that shape their studies. Sharing methodographies is particularly pertinent in the digital age, where the abundance of digital resources both broadens the scope of investigation and presents challenges to deploying STS approaches, which often require a nuanced historical view of techno-scientific-social phenomena (להסתכל בספרות של מתודוגרפיה).

In line with this endeavor, this article offers a methodography of a large-scale, multi-layered study that examined how obstetricians in the mid-20th century have collectively neglected and ultimately forgot the obstetrical 'art' of delivering breech babies in favor of cesarean sections (Lazar-Shoef et al., forthcoming). Herein, I will openly unpack the black box behind my reasoning as it unfolded throughout this research—from the initial inquiries into collective forgetting to the evolving challenges, questions, theoretical frameworks, tools, methods, and platforms that guided the investigation—critically and deductively reviewing these elements. This methodography, I will argue, provides a unique, holistic, and especially instructive perspective on both the research conducted, and on the process of conducting research, particularly from an STS standpoint.

## Research-in-the-making and its surprising absence from STS discussions.

The tradition of Science, Technology and Society, which was largely shaped during the 1970s and 1980s, has a great interest in describing "science-in-the-making" (Shapin, 1992). The seminal studies of Bruno Latour (1979;1987;2013), Michael Callon, Karin Knorr-Cetina (), Wiebe E. Bijker, , Thomas Parke Hughes, Trevor Pinch (1987), and others, criticized the 'black boxing' of scientific and technological facts and artifacts. According to this critical perspective,

"The polished, extensively revised research that is available and consumed in the form of publications is the end product of a long endeavor that began as an idea in the researcher’s mind and progressed through many arduous stages. This process, from light bulb moment in the scientist’s brain to published product, is what Shapin (1992) referred to as “science-in-the-making” versus the sanitized, hopefully perfected version that readers of publications see, and what Latour called “science-already-made” "(Fedigan, 2020, p. 3).

As Fedigan highlights, unveiling the "black box" of scientific knowledge requires delving into the processes that shape it, encompassing scientists' daily practices, methodologies, and knowledge frameworks, as well as their motivations, foundational concepts, and implicit understandings. This approach allows scholars in Science and Technology Studies (STS) to elucidate the intricate, multifaceted journey of knowledge and artifact creation.

Ironically, it is strikingly uncommon for researchers within the STS tradition to publish works that offer insights into their research processes, methodological approaches, theoretical frameworks, and practical challenges encountered along the way. The absence of such methodological discourse has not gone unnoticed by senior figures in the STS field. An example is evident in the introduction for the 2008 edition of the *Handbook of Science and Technology Studies* (Handbook, 2008), with the editors commenting:

"Absent from this Handbook, to our regret, is much systematic treatment of research methods. Not only quantitative methods–survey tools, network techniques, bibliometry, experiments, and analytic models–but also qualitative, observational, and text-based techniques. Decades ago some in our field may have been "against method," but since then empirical attention to the practices of science and technology and to the sentient and tacit knowledge embodied within those practices surely argues for making explicit our own methods and epistemic assumption, if only so others can build upon our successes and learn from our mistakes." (Handbook, 2008, p.5).

Lamenting the lack of systematic methodological discussions within its extensive collection of over 2,000 pages, the editors pointed to a pivotal moment in the history of the STS tradition when it split into two distinct streams—quantitative and qualitative—after initially integrating both approaches (…2014). This paradigm shift was largely the result of what is widely recognized as the "science wars," a series of criticisms directed against the prevalent positivist quantitative methodology in science during the 1980s (). In response, researchers who focused on quantitative measurement methods for studying science, such as De Sola and his successors, "retired" from the discipline and founded the bibliometrics discipline. On the other hand, those who identified and continue to identify as STS researchers adopted a more constructivist, interactionist Straussian version of grounded theory (Handbook 2008. p. 117; Wyatt et al., 2016 p. 9). Their approaches included, among other things, the negation of the Scientific Method and its replacement with descriptions of the science-in-the-making. As implied by the editors, negation of the scientific method unfortunately also hindered STS researchers from openly discussing their own methodological practices.

Criticism of the lack of methodological discourse in STS has grown increasingly prominent in recent years. Greiffenhagen and colleagues, for example, observed that “the number of studies of the equivalents of laboratory work in the social sciences is, however, far smaller” (Greiffenhagen et al., 2011, p. 94). Similarly, John Law, Evelyn Ruppert, and Mike Savage called for "thinking structurally or institutionally about our methods" (Law et al., 2011, p. 12), arguing that this is a crucial step toward better understanding the "social life of method" (ibid., p. 4). Reflecting this shift, the 2016 edition of the handbook included an entire section dedicated to methodological discussion, aiming to reconstitute a conversation about methodology. However, as Ingmar Lippert noted in 2020, even in recent years, the question 'What is STS?' is often answered in theoretical-analytical terms, with little focus on methods and scientific practices. STS scholars rarely describe "what they gather, or are gathered with, in their work between some… empirical realities, and their words" (Lippert, 2020, pp. 11-12). Lippert thus advocated for the STS community to engage more deeply with their research practices, particularly through writing Methodographies (Lippert, 2020, p. 7; see also Greiffenhagen et al., 2011).

## An STS Methodography

The idea of methodography was first introduced by Justus Buchler to describe a “practitioner’s discrimination of his methodic process and its aspects” (Buchler, 1961, p. 128). Methodographies can be viewed as a manifestation of Leibniz's 'Dic Cur Hic' ('Say why here')—the imperative to "Say why you choose to tell, or to do, this, on this precise occasion" (Stengers, p. 29, in Robison, 2008; Jensen, 2021). They are not declarations of one's 'true' intentions for study decisions (Jensen, 2021; Stengers, in Robinson, 2008), nor mere compilations of methodological instructions presenting a 'correct' or 'appropriate' way to research the world (Lippert & Mewes, 2021). Instead, a methodography is a reflexive description of one's research-in-action. It is a form of reflexive, critical, and empirically informed practice that prompts paying attention to one's own research processes and methods, exploring the reason-making as manifested in the researchers' evolving thoughts, discussions, and interactions with various objects during the study (Lippert and Mewes, 2021, p. 4; Greiffenhagen et al., 2011). These articulations, according to Stengers, must be free from epistemological, methodological, or political safeguards that would only block the "pragmatic imagination" (Stengers, p. 29, in Robison, 2008).

The idea and endeavor of Methodography have been promoted in recent years by a group of STS researchers who have met on several occasions to reflect on and discuss their research practices, experiences, mistakes, and challenges in their ethnographies. These workshops resulted in a special issue published in Science & Technology Studies in 2021, edited by Ingmar Lippert and Julie Sascia Mewes. In this issue, they sought to identify Methodography as a distinct and particularly timely analytical genre of STS writing that "specifies and scrutinizes the situated practices of producing STS knowledge" (Lippert and Mewes, 2021, p. 3). Lippert summarized it as follows:

"The genre of methodography narrates of our own handling – our practices and methods, entangled with our and others’ selves – of ‘data’ or ‘materials’, of ‘data handling and processing, translations, semiotic and material practices, epistemic and ontological shift" (Lippert, 2020 p. 312)

## Researching in the digital age

Methodographies remain rare but are gaining prominence in STS, though the focus has predominantly been on 'orthodox' (as of the past four decades) qualitative ethnographies (Julie Sascia Mewes, Frauke Rohden, Sylvia Irene Lysgård, 2024, call for papers). This emphasis is understandable, as ethnographies provide deep insights into the complex and often messy nature of science-in-practice, embodying a "thick description" (Geertz) of the realities studied. However, the labor-intensive nature of ethnographic work, which involves extensive qualitative analysis, often confines the research scope to specific periods or case studies. In the digital age, applying STS approaches presents new opportunities and challenges, potentially expanding the scope of research while also demanding innovative methods of engagement.

The digital age has profoundly impacted the core of scientific work and societal infrastructures, rendering both increasingly 'information-laden' (Belfer, 2014). The rapid expansion of digital content has opened new areas of study and continuously alters how research is conducted across many fields. The proliferation of bibliometric indexes like Scopus, Web of Science, and Google Scholar provides rich metadata and direct access to source documents, while platforms like the Internet Archive[[1]](#footnote-1) and mainstream search engines serve as additional invaluable resources for research materials. However, the abundance of digital information creates challenges in balancing nuanced qualitative analysis with the demands of processing vast amounts of data within a reasonable timeframe. This necessitates innovative methods, tools, and platforms to collect, organize, and analyze large-scale data effectively, even within a single case study.

The increasing reliance on digital platforms in recent years to collect, analyze, manage, and publish research materials has effectively blurred many traditional distinctions between "qualitative" and "quantitative" or "computational" and "non-computational" approaches. In response, emerging fields like Digital Humanities and computational linguistics have adopted broader terminology, introducing concepts such as 'close reading' and 'distant reading' to differentiate between analytical scopes. 'Close reading' involves strategies for examining individual texts in detail—focusing on aspects like variations, history, and meanings—while 'distant reading' sets aside specific features of individual texts to identify broader trends across a corpus, providing a bird’s-eye view of patterns and anomalies (Jänicke et al., 2015; Moretti, 2005). These approaches include various bibliometric measurements, network analyses, and computational linguistics methods like N-gram or Keyness analyses, designed for researching large digital corpora. However, as Jin (2017) points out, the use of this terminology can sometimes be contradictory. Moreover, as the study discussed here demonstrates, applying a nuanced, exploratory perspective to large-scale corpora requires blending or integrating various methods through a series of actions, rendering traditional and newly abstracted categories insufficient to fully capture the complexities of the research process.

Effectively deploying various approaches on large-scale digital corpora also requires utilizing comprehensive platforms for tasks like bibliographic management and analysis. No-code platforms, such as Zotero, Mendeley, Atlas, and Maxqda, facilitate the retrieval, storage, and management of bibliographic data and metadata, while interfaces like OpenRefine, Microsoft Excel, and Tableau offer robust features for data cleaning, manipulation, and visualization. Specialized tools like CiteNetExplorer, VosViewer, and AntConc enhance capabilities in network analysis and computational linguistics. The recent surge in AI tools (e.g., OpenAI, Co-Pilot, Perplexity) further expands researchers' abilities to search, analyze, visualize, and even draft their work. However, while these platforms significantly enhance the ability to conduct complex digital-based studies, they also require a deep understanding of each tool's strengths, limitations, and potential risks (e.g., issues of privacy and security, as highlighted in [call for papers]). Researchers must also develop the skills to manage data across multiple platforms and efficiently select the right tools for specific research questions within a reasonable timeframe. In this context, methodographies become an invaluable source of knowledge, especially when they include detailed descriptions of the study activities, offering crucial insights into the practical application and integration of these tools in research.

## Scope of Article

This article presents a methodography that provides a detailed account of the study on the collective forgetting of vaginal breech deliveries, capturing the reasoning that unfolded throughout the research project. Herein, I reveal the initial and evolving intentions, considerations, and research activities that guided the study.

The following chapters examine the dialectical interplay between theoretical frameworks, methodological approaches, empirical findings, and practical considerations that collectively shaped the study’s design, inquiries, and conclusions. This multi-layered, exploratory study is organized into three phases, each introducing distinct questions, method, tools, and challenges, progressively uncovering new layers in the reasoning process.

The first phase (Chapter 1), Exploration, involves preliminary inquiries into collective forgetting and the specific case of vaginal breech births. This phase includes the adoption of initial theoretical frameworks, addressing epistemological and methodological challenges, and engaging with the research field and narrative surrounding breech births. These efforts provided foundational context, shaping the initial research questions and defining the study’s field.

The second phase (Chapter 2), Roadmaps, focuses on systematic data retrieval, primarily compiling a corpus of 6,758 publications on breech births from medical literature spanning 1941 to 2018. It discusses several strategies developed to create analytical 'roadmaps' into the corpus, which facilitated the identification of anomalies or surprising findings, refining the scope of the investigation, as well as facilitated interactive infrastructures for integrating distant and close perspectives.

The third phase (Chapter 3), In-depth Inquiry, focused on detailed examinations of selected texts from the corpus to uncover deeper context and insights. Throughout the research, there were shifts between broadening and narrowing the scope of analysis, using various reading strategies informed by theoretical, practical, and empirical motivations. These dynamics became most pronounced in this final phase, making the chapter a reflection on the entire study.

The paper concludes with a brief discussion of the challenges and benefits of writing methodographies in the digital age, highlighting their value not only for the researcher but also for the research community and the STS discipline in particular. It offers methodographies as an invaluable source of knowledge and an instructive statement of research identity.

To incorporate a deductive dimension, the article is accompanied by a detailed methodological appendix that provides structured descriptions of the methods used throughout the study, outlining their aims, protocols, tools, limitations, and key observations. While the main focus is on the research process and reasoning dynamics, this appendix offers a comprehensive overview of the methodologies employed.

# 1.Exploration: Preliminary Inquiries into Collective Forgetting and Vaginal Breech Deliveries

My first encounter with the concept of vaginal breech deliveries was personal, during my own breech pregnancy. As a young mother hesitant to undergo a cesarean section, I was surprised to discover that, despite there being no legal restrictions in Israel or elsewhere against vaginal delivery for breech babies, this condition almost always results in surgical intervention. Over time, I realized that one of the main reasons for this is the lack of obstetricians skilled in the intricate 'art' of breech delivery.[[2]](#footnote-2) Many have neither been trained in, practiced, nor even observed these procedures during their careers, and therefore do not consider them an option when faced with a breech presentation. This prompted me to explore how this significant, essentially collective, loss of knowledge took shape.

Preliminary Conceptualization of Collective Forgetting

Despite six years of exploring the collective loss of knowledge surrounding vaginal breech deliveries, the precise nature of the phenomenon and the specific case studies to examine remained unclear at the start of this research project. My primary interest was in lost practices—rich knowledge systems that span theoretical, practical, tacit, and local domains. Initially, I considered various cases, including obsolete programming languages and navigation skills, but none were as compelling as the lost medical 'arts' like vaginal breech deliveries.[[3]](#footnote-3)

Concurrently, I sought theoretical frameworks to better understand the mechanisms behind knowledge loss. A foundational concept was that this widespread loss could be interpreted as 'collective forgetting'—a decline in knowledge once widely held and practiced. [[4]](#footnote-4) This perspective allowed me to explore knowledge loss as a distinct social phenomenon through the lens of "Collective Memory." However, a review of the literature revealed that collective forgetting had received minimal scholarly attention, with most studies focusing on narratives, events, and historical figures rather than on the loss of complex practical knowledge systems. This gap highlighted the need for additional frameworks.

To develop a more precise operational definition of collective forgetting, I drew on the formal similarities[[5]](#footnote-5) between breech deliveries and endangered languages—both of which are rich knowledge systems primarily transmitted through practice. The Catalogue of Endangered Languages defines 'extinct' languages as those with no active speakers, marked by a decline in usage, application, or intergenerational transmission (Lyle and Belew, 2018). This definition highlights the role of social and environmental changes in leading a group to neglect and become deskilled in a particular practice. I adapted this framework to define "collective forgetting" in the context of vaginal breech deliveries.

Additional theoretical frameworks were needed to help describe how does a collective forgetting process might include. One useful framework was the social construction approach,[[6]](#footnote-6) particularly the theory introduced by Berger and Luckmann (1967). This perspective emphasizes the social mechanisms of knowledge construction through continuous interactions with others and with the environment. Although the constructionist approach has not directly addressed ignorance, it provided valuable social knowledge mechanisms, such as socialization and objectification. Studies in areas of extinct languages, agnotology, cognitive sociology and technological obsolescence were also sources of inspiration, as they addressed specific aspects of various forms of social and technological ignorance. Science and Technology Studies (STS) perspectives, particularly the works of Latour on the creation of scientific knowledge (e.g., 1979;1987;2010;2013…), further offered a nuanced understanding of the sociocultural, scientific, and technological processes that could contribute to collective forgetting (see: Lazar-Shoef & Efron, in this volume). At the time, my grasp of these concepts was basic, and my understanding of their interconnections was driven more by intuition than by comprehension. Nevertheless, these frameworks offered sufficient insight to launch an exploratory and intricate investigation into the collective forgetting of vaginal breech deliveries. [[7]](#footnote-7)

## Have Vaginal Breech Deliveries Collectively Forgotten, and Why?Top of Form

Before examining how vaginal breech deliveries were collectively forgotten, it was necessary to first assess whether they had been forgotten—evaluating their frequency, the availability of skilled practitioners, as well as perceptions within the obstetrics community.

Given the study’s initial focus on Israel, the incidence of vaginal breech deliveries was analyzed using official data from Israel and other Western countries, including the United States. The strikingly low rates observed supported the notion that vaginal breech deliveries have indeed nearly disappeared (see Appendix 1.1). A close reading of recent official guidelines provided additional insight into the current practices and authoritative perspectives within the obstetrics community, revealing several consistent key points (see Appendix 1.2):

* Beech presentation is relatively rare[[8]](#footnote-8) and considered a high-risk condition.
* There is ongoing controversy between advocates of cesarean sections and proponents of vaginal delivery for breech births.
* In 2000, the Canadian "Term Breech Trial" (TBT) concluded that cesarean sections are safer than vaginal deliveries for breech births, leading to a global recommendation against vaginal breech delivery.
* A global ban on vaginal breech deliveries was subsequently implemented, mandating planned cesarean sections for all term breech presentations.
* Due to significant criticism of the TBT's design and conclusions, guidelines have since been revised to allow vaginal breech deliveries in selective cases, with informed consent.
* The number of practitioners skilled in vaginal breech deliveries has since steadily declined, resulting in inadequate training and further limiting this option.

These perspectives add context to the low rates observed, providing a narrative that explains why and how vaginal breech deliveries have largely fallen out of practice. This decline can be traced back to 2000, with the publication of the TBT.

I aimed to evaluate the impact of the 2000 publication as reflected in the 'TBT narrative.' Given the scientific nature of modern obstetrics, I employed a straightforward bibliometric measure—citation count—to gauge the influence of the TBT on academic discourse concerning breech deliveries from 1995 (five years before the TBT) to 2018, as indexed in Scopus.[[9]](#footnote-9) The analysis revealed that with over 1,200 citations, the 2000 study was the most cited article on breech birth, significantly surpassing other publications, highlighting its substantial influence on the ongoing debate (see appendix 1.3).

The impact of the TBT on the current practice was echoed in interviews with Israeli obstetricians, the primary practitioners of breech deliveries,[[10]](#footnote-10) confirming its significant impact on Israeli practice. Although only 15 interviews were conducted early in the study, they provided valuable insight into why most obstetricians prefer cesarean sections over vaginal breech deliveries. Interviewees emphasized the many risks involved, the lack of skills and training, and the harsh consequences of engaging in this 'unconventional' and risky practice, such as potential litigation or criticism from colleagues.[[11]](#footnote-11) Notably, ignorance and fears were particularly prominent among the young doctors, indicating that breech births not only declined – their knowledge has ceased to transmit to the young generations, adding prove that the practice indeed collectively forgotten (see appendix 1.4).

Despite clear signs of their decline, the 'TBT narrative' held by most interviewees and reflected in the literature reviewed left gaps in explaining why and how breech births disappeared. Could a single influential study have doomed a once-valued practice like breech deliveries, especially when the ban lasted only a few years? Close readings suggested otherwise. Many publications that cited the TBT, including over 10 letters to *The Lancet*, were critical of its conclusions, eventually leading to a revision of the recommendations to permit breech deliveries again. Additionally, documents from before 2000 already mentioned the loss of skills in breech deliveries (Lazar-Shoef et al., this volume). One example, a meta-analysis published in 1995 by Daniel P. Eller and J. Peter VanDorsten (Eller & VanDorsten, 1995), citing a 1959 article by American obstetrician Ralph Wright, indicating a subsequent rapid decline in breech deliveries in favor of cesarean sections. A review of this paper revealed that Wright was responding to emerging concerns about the unusually high mortality rates among breech babies. Based on several experimental studies demonstrating lower mortality rates for cesarean breech deliveries, Wright advocated for cesarean sections for all term breech babies— a proposal that I later learned was considered extremely radical at the time yet effective in its consequences.

Information added in this detective-like work[[12]](#footnote-12) reinforced my suspicions that the history of breech births is far more complex and extends much further back than the popular TBT narrative suggests. As a result, I broadened the investigation to explore the academic literature on breech deliveries, tracing the origins of these practices back to the 1950s and examining their development as reflected in professional publications. Initially, this analysis was intended as background for the Israeli case study, primarily based on interviews. However, as the next chapters will demonstrate, the publications proved to be valuable archival materials—enabling advanced metadata analysis and often providing rich context written close to the time of events. It’s important to note that the shift to corpus analysis was primarily driven by the COVID-19 outbreak, which halted all interviews and confined me to my home. Additionally, the focus shifted from the Israeli to the American case study due to a significant bias in the academic corpus, which favored English-language publications by authors affiliated with U.S. medical institutions (see Appendix 1.3). This, coupled with the recognition that many U.S. practices predated and influenced other obstetric communities, including Israel’s, necessitated a deeper exploration of the American context. [[13]](#footnote-13)

# 2.Roadmaps to the Breech Corpus, 1941-2018.

To broaden the investigation, additional data was retrieved from Scopus for publications spanning 1941-2018, hereafter referred to as 'the breech corpus.'[[14]](#footnote-14) This timeline begins 15 years before Wright's influential 1959 paper, aligning with the onset of systematic statistical data collection on breech deliveries and indexing in medical journals (see appendix 1.5).

The corpus, comprising 6,758 publications, contained rich metadata, including titles, author affiliations, funding data, keywords, citation counts, and links to full-text articles. However, the large scale of the dataset posed challenges for detailed analysis. To address this, several distant reading techniques were employed to create roadmaps for navigating the corpus. As further demonstrated, these roadmaps mapped the evolution of the corpus across different dimensions like publication volume, discourse shifts, and key debates. Interactive data analysis platforms enabled smooth transitions between broad overviews and detailed examinations of specific records, helping to identify trends, key periods, and breakpoints within the corpus, and further refining the investigation.

## Overview of the Breech Corpus, 1941-2018.

The first roadmap focused on mapping trends in the scientific attention given to breech births from 1941 to 2018. Using the Tableau interface, I visualized the number of publications on an annual timeline, which revealed a general surge in scientific writing, peaking in the later decades (Figure X). This finding was particularly noteworthy, as it occurred during periods when the procedure was likely in decline—a pattern later confirmed by collected statistics. Additionally, Figure X highlights distinct periods of heightened activity, appearing approximately every 1-2 decades. The sharp increase in publications during the 1970s-1980s was especially intriguing, with the annual average nearly tripling compared to earlier decades (see Appendix 1.5).

However, it was unclear whether this anomaly reflected genuine scientific interest or was merely a statistical artifact, perhaps due to trends in indexing or broader shifts in obstetrics. To assess this, I compared the breech corpus with a broader corpus of obstetrics-related publications focused on labor from the same period. To account for the difference in scale (6,758 publications in the breech corpus versus 51,608 labor-related publications), I used a z-score comparison. The analysis confirmed that the 1970s-1980s represented a period of significant scientific attention to breech births, marking it as a key period for further investigation (see Appendix 1.5).

Figure X: Number of annual breech-related publications, 1941-2018.

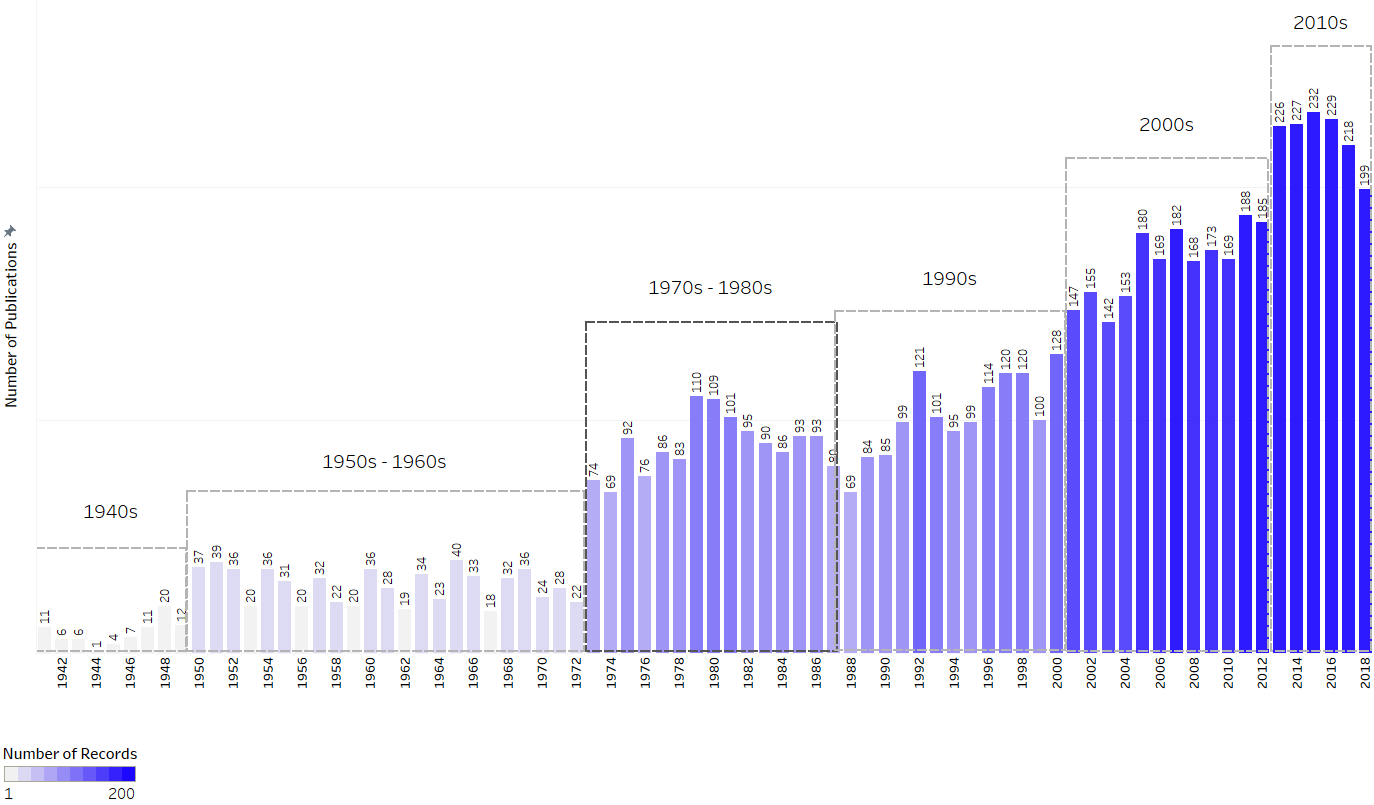
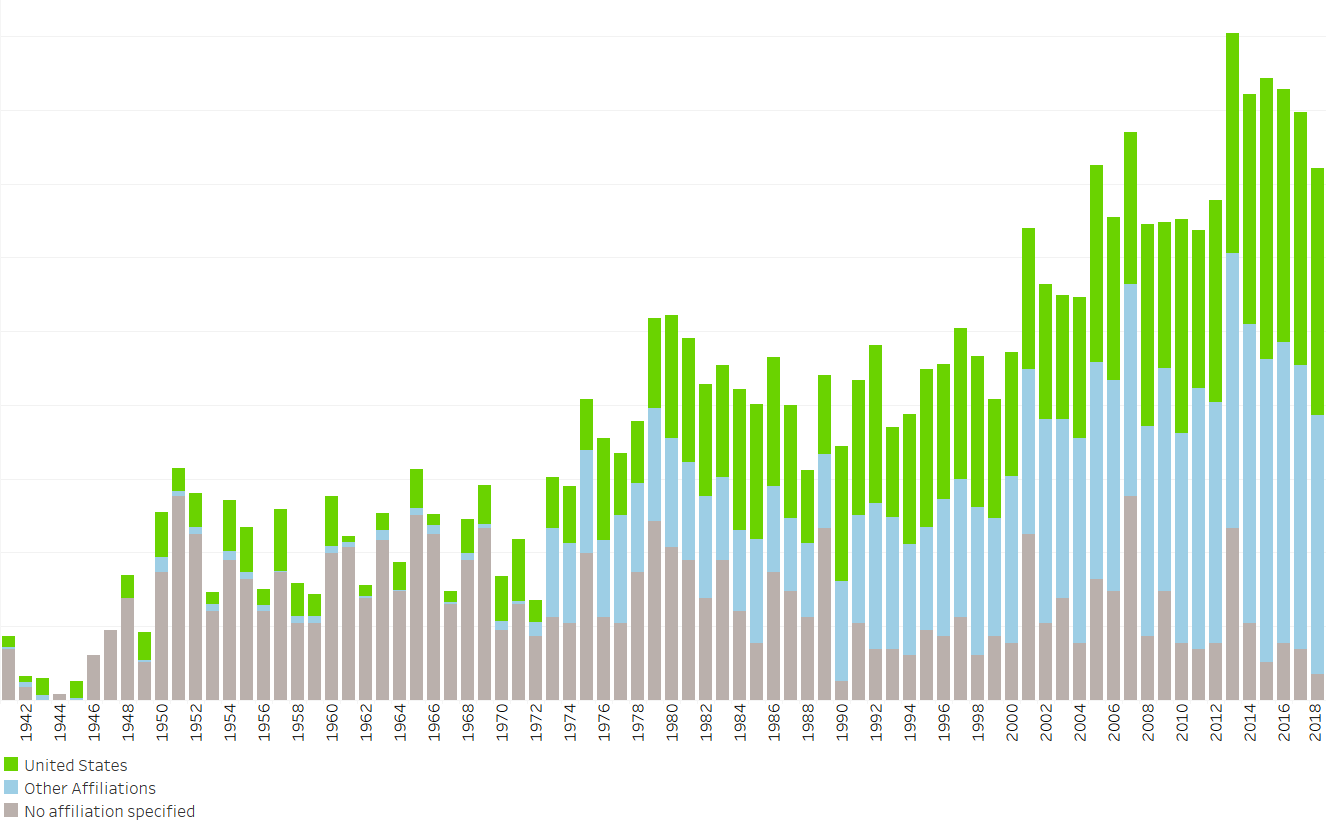


Figure X displays the annual number of breech-related publications between 1941-2018. The dashed lines represent distinct periods in the publication trends. Visualization: Tableau.

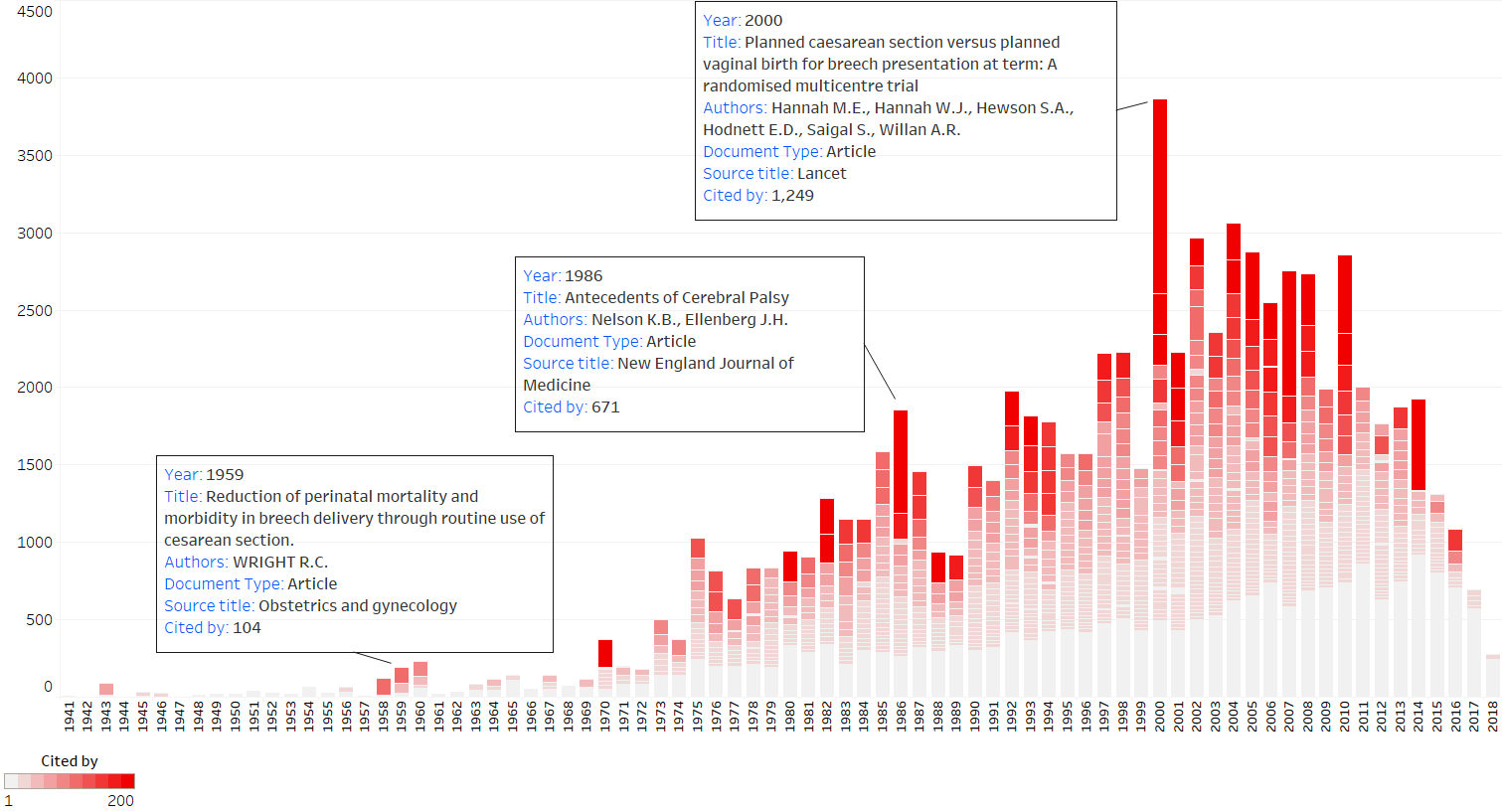
Adding dimensions to the breech corpus timeline provided valuable insights that guided the study’s focus. For example, analyzing the corpus by language and country of authors revealed the predominance of English-language publications and U.S.-affiliated authors, which influenced the decision to concentrate the analysis on the American case. However, this analysis also exposed significant limitations in the data. As Figure X shows, while U.S.-affiliated publications dominated throughout the entire period, most publications lacked this information before 1973, revealing a clear bias. This underscores a broader limitation in drawing conclusions solely from metadata trends, as many earlier publications were poorly indexed and often lacked details on affiliations, leading to potential gaps in the analysis (see appendix 1.6.).

Publications by Authors' Affiliation Country – Unites States and others, 1941-2018



Weighting the publications by citation count added further depth to the analysis of the timeline. For instance, as Figure X shows, while the TBT remains the most cited publication across the entire period, other significant publications emerged within their respective contexts. Wright's 1959 article, although not among the top 100 cited, stands out when viewed in the context of its time. Tableau's interactive data visualization capabilities further enriched these insights by providing additional context and enabling interactive exploration of metadata through toggling records on the graph (see Figure X). This approach also highlighted data limitations and allowed for the manual exclusion of records that only mentioned breech births indirectly.[[15]](#footnote-15)

Figure X: Publications by citations count, 1941-2018



The chart provides a detailed overview of the publications in the Breech Corpus, organized by year of publication, and weighted according to citation count. It also includes additional data such as title, authors, source title, and other relevant metadata for further context.

These roadmaps, based on publication and citation counts, provided initial guidance in identifying key areas and points of interest within the Breech Corpus for further investigation, but they were limited in directing what to search for. To more effectively navigate the discourse within the corpus, additional roadmaps were required.

## Mapping the Discourse of the Breech Corpus

Understanding the evolution of the discourse was crucial for contextualizing the observed trends, particularly given the surprising continuous surge in publications (Figure X). To explore how the topic was discussed over time, I analyzed content-based metadata, focusing on indexed keywords from the Medical Subject Headings (MeSH) and Emtree controlled vocabularies available at the Scopus metadata (Scopus, 2017). These keywords act as consistent descriptors used by documentation services to categorize scientific and technological publications, determining their relevance for different audiences (Callon et al., 1983). [[16]](#footnote-16) The keywords were segmented into five periods, aligned with the timeline shown earlier (Figure X). Using computational linguistic Keyness calculation, I identified distinctive terms for each period compared to the entire corpus, highlighting those with a high effect size, indicating unusual frequency during specific periods. By weighting and ordering the most significant keywords by effect size across periods, several insights emerged. For example, as shown in figure x, it marked a shift in the discourse during 1950s-1960s, when the discourse shifted from focusing on pathologies unrelated directly to breech births (e.g., tumor types), to focus heavily on mortality, complications and abnormalities. This trend further escalated during the 1970s-1980s, with more publications addressing specific complications related to breech deliveries (e.g., injuries). Another interesting observation was the equivalent rise in publications addressing cesarean sections, where initially minimal, this became the primary interest during the 1970s-1980s (see appendix 1.7).

Figure x: Top 100 keywords by periods and effect size.

A screenshot of a computer screen

Description automatically generated

Figure X presents the top 100 breech-related keywords from publications between 1941-2018, divided into five periods. Each period is ordered by effect size, highlighting the most unusually frequent terms compared to the entire corpus.

This analysis offered a more detailed roadmap of the evolution of academic discourse on breech deliveries, helping to identify key areas of focus within the corpus. It also generated a list of relevant vocabulary that I needed to familiarize myself with before delving into an extensive number of articles on the subject. However, the analysis remained limited by issues such as incomplete or missing data from earlier years, which led to an over-representation of certain terms in the Keyness calculation for those periods. Additionally, the corpus was still too extensive and required further refinement.

## Mapping Evolving Debates within the Breech Corpus

One of the most effective approaches I found for meaningfully refining the corpus was to segment it by distinctive breech-related professional debates. To achieve this, I used the CitNetExplorer tool to create an interactive, chronological map of internal citations. Internal citation analysis focuses on how publications within a specific dataset reference each other, revealing the connections and relationships among these works (). In this case, the analysis was applied to a subset of the 2,000 most cited publications within the breech corpus, allowing me to identify and map key debates and their evolution over time.[[17]](#footnote-17) A cluster analysis of this network identified ten groups of publications that cited each other more frequently than other publications, organized by their prominence within the corpus based on the number of citations within the network. A detailed examination of the titles and abstracts within each cluster confirmed that most publications in each group were centered on a specific debate. (see appendix 1.8).

Figure X. Citation map: breech related publications 1941-2018.

A diagram of a network

Description automatically generated with medium confidenceThe horizontal position of each publication is determined by its citation relationships with other publications, while the vertical position is set by its publication year, and curved lines illustrate the citation connections (CitNetExplorer, 2017). Clusters color legend presented at the top right.

As shown in Figure X the main cluster marked in red contained the most publications (434). It also covered the widest range of years (1945 to 2018), and held the greatest centrality within the network, as shown by its position in the central of the network. This cluster primarily included publications comparing breech deliveries with cesarean sections, notably featuring Wright's 1959 article and the 2000 Term Breech Trial (Hannah et al., 2000). Other clusters focused on topics such as external cephalic version (cluster 2), general cesarean section debates (cluster 3), breech presentation in twins (cluster 4), and discussions on pathologies that emerged in the 1970s (see appendix 1.8). Based on these insights and further analyses in this chapter, I selected publications associated with the first cluster as the primary (yet not exclusive) corpus for further in-depth analyses.

The roadmaps explored in this chapter provided a multifaceted examination of the breech corpus, offering valuable insights from multiple perspectives. The interactive interfaces allowed for seamless transitions between broad overviews and focused checks, enriching the context of the findings while also enabling the exploration of ad-hoc questions and the validation of existing assumptions. However, as discussed, these maps were primarily exploratory, offering only a preliminary glimpse of potential focal points within the breech corpus. Most importantly, they could not fully capture how breech birth practices were neglected and forgotten within the obstetrics community. To effectively contextualize the process of collective forgetting, further in-depth analysis of the materials was essential. However, I was now equipped with guiding roadmaps, which provided clearer directions on where and what to focus on.

# Re-Searching - Dialectical movements of in-dept inquiries

In-depth inquiries formed the longest and most complex phase of this research, driven by the need to grasp the intricate dynamics of collective forgetting, particularly regarding vaginal breech births in America. This phase did not follow a linear or segmented path; instead, many actions occurred simultaneously or were revisited over months as new insights emerged and earlier ideas were re-examined. The non-linear nature of this process makes a strict chronological or comprehensive account impossible.

This chapter, therefore, highlights the key methods of engagement throughout the research, focusing on the periods where these methods peaked in intensity and complexity. In doing so, it also serves as a discussion of the study itself. These engagements involved a series of back-and-forth dialectical movements across several dimensions, collectively referred to as Re-Searching: between shifts in the scope of analysis, different reading strategies, and various motivations for actions.

## Scope of Analysis: Broadening and focusing the corpus.

This chapter will demonstrate how the scope of analysis was dynamic, requiring continuous adjustments to both broaden and focus the units of analysis, and how this process shaped the questions and meanings during the re-search.

The primary database for this research, housed within the Zotero interface, stored bibliographical information and full-text documents. While it might be tempting to view the database as a fixed, structured system where previously collected materials lie neatly, ready for systematic analysis, the reality—at least in this case—was far more fluid. The database grew continuously throughout the study. It began with an initial harvest of the full breech corpus metadata and some full-text documents, sourced through inter-library digital services, long before I had a clear focus for the analysis. This was followed by another systematic harvest, emphasizing full-text retrieval from the four main clusters. As the research progressed, particularly during the in-depth inquiries, additional materials were continually imported. These included books, articles, interview transcripts, guidelines, court rulings, and other historical and theoretical literature that were not part of the original corpus but proved relevant. [[18]](#footnote-18)

Although the early stages of research provided clarity on where to focus, aided by roadmaps for navigating the breech corpus, deeper engagement with the materials soon revealed that the first and primary cluster, centered on the debate over breech deliveries, lacked the full context needed. This cluster became merely a seed corpus, laying the foundation for further expansion. One frequent method of broadening the database was conducting new searches sparked by intriguing references—whether another article, an unfamiliar term, or a notable figure or event mentioned in the texts. For instance, the first official report on the implications of cesarean sections, An Evaluation of Caesarean Section in the United States by Dr. Helen Marieskind (1979), was discovered within the full text of an article on external cephalic versions (Jordan, 1983). This report offered valuable insights into the formative processes of earlier decades.

As new questions arose, the corpus expanded to include additional periods and communities. For example, when submitting a manuscript to the *Journal of the History of Medicine and Allied Sciences*, reviewers requested a broader historical context, particularly regarding national efforts to reduce infant mortality rates and the medicalization of obstetrics in the early 1900s. This required delving into earlier periods, where many documents were located in old books and poorly indexed articles. These sources were manually traced by targeting events cited in texts, supplemented by additional external searches. Additionally, reviewers inquired about the role of women’s rights movements, especially the natural birth movement of the 1970s-1980s, as well as midwives and laywomen in the collective neglect of vaginal breech births in favor of sections.[[19]](#footnote-19) This prompted further investigation into the discourse on breech births within these movements, particularly through their formative books available via the Internet Archive and publications from the *Women & Health* journal.

As the database continued to grow, it became increasingly important to focus the investigations. One strategy, discussed in the previous chapter, was to systematically map the corpus and create subsets for specific periods or lines of discussion. However, as I delved deeper into the documents, it became clear that a full-text review of all materials—even within a focused subset—was impossible, enhancing the need for additional strategies to focus the corpus. One common method involved tracing prominent keywords identified in earlier analyses (discussed in the previous chapter), searching for these terms in the metadata and available full texts, and then reading the surrounding content. This approach was particularly useful for addressing specific questions. For instance, I employed a search in the metadata and full-texts for the term "skills"—which appeared from close readings to imply a lack of skills, making it a useful indicator for tracing debates on the loss of skills and educational training in vaginal breech deliveries—as well as "Cesarean section," "litigation," and others.[[20]](#footnote-20)

Another effective strategy was to focus on units of analysis rich in social, historical, and scientific context. Prefaces often provided valuable background information, including study aims, current practices, and reflections of general concerns, while discussions and conclusions offered practical guidelines, personal observations, and community reactions, particularly in "discussion" sections—which also provided the names and affiliations of the commentators. These insights were crucial for understanding the challenges and viewpoints of obstetricians at the time. Interestingly, the empirical findings sections were often less informative in this regard. [[21]](#footnote-21) Additionally, I targeted documents with richer context, such as those in the Obstetrical & Gynecological Survey, which featured summaries and extensive editor's commentaries. These anonymous commentaries by senior obstetricians, characterized by vivid descriptions and a freer, more provocative tone, provided an authentic, real-time view of the field's evolution.[[22]](#footnote-22) Targeting these context-rich units effectively transformed the literature from 'professional' to 'archival' material, offering deeper insights into the historical shifts in obstetric practices and attitudes.

As demonstrated, widening and focusing the corpus was a consequence of various strategies, and further discussed in the next chapter.

## Dialectical movements between different Reading Strategies

Perhaps it’s surprising that throughout this methodological reflection, I haven’t once used the word "methodology" to describe the study. This is because, both in real time and in retrospect, it was difficult to pinpoint exactly what my "methodology" was—as a well-organized doctrine for engaging with my subject. The main reason is that throughout the entire re-search process, and especially during the in-depth inquiries, I fluidly combined several methods and strategies simultaneously. Some could be seen as qualitative, others quantitative; some algorithmic, others manual—practiced systematically or serendipitously, from close or distant perspectives, and examined descriptively or critically. The fact that most of the materials, working environments, and methods were digital only further blurred the boundaries between these analytical categories. The task of classifying the inextricable research activities into autonomous, abstract categories would be as exhaustive as it would miss the main point: that most of the reasoning—the moments of clarity, the biggest discoveries—were less the result of any single action and more the product of the dialectical movements between those actions; their inter-actions. These will be further discussed and demonstrated here.[[23]](#footnote-23)

To describe these interactions, it’s crucial to first define both the actions involved and the actants, or units of analysis. In this context, a unit of analysis refers to a specific piece of information I engaged with at different stages of the study. This could be a publication—like those included in the roadmaps I created for the breech corpus, with each representing a distinct "case." It might also be the full text of a document or, as explored in the previous section, specific excerpts from texts that provided richer, more relevant insights. Sometimes, a unit of analysis was even smaller than a text, represented by a single term—whether a 'raw' term directly from the text or a keyword identified through algorithmic analysis. These units, whether found within the existing corpus or sourced externally during my search for additional materials, varied in their characteristics and were selected to address specific objectives throughout the study.

The "actions" in this study encompass a variety of terms I have loosely used as synonyms throughout this paper, such as "readings," "strategies," "methods," "actions," "practices," and "activities." However, for the purpose of this discussion, it is more instructive to group all of these under the umbrella of "actions." Meanwhile, "reading strategies" refer to the different ways these actions—such as *observing, filtering*, *marking*, *manipulating*, and *visualizing* various units of analysis—were combined, whether as ad-hoc responses to specific needs or as more structured approaches aimed at answering different questions, validating information, and achieving other goals. To illustrate, I will further demonstrate a specific reading strategy I employed to explore several queries surrounding Ralph Wright's 1959 advocacy for cesarean sections, which involved zooming in and out from different units of analyses and scopes of investigation.

As previously mentioned, Wright's essay surfaced during the initial explorations as a potentially key actor in the decline of breech births during the 1970s-1980s. This realization came from several different directions. For example, it was located as a single citation within the unit of analysis—the paper of Eller & VanDorsten from 1995—with a short remark next to it on the role Wright's advocacy had in the decline of practicing breech births. A second indication emerged after I zoomed out to view all the publications in the context of the full corpus (with Wright's publication now being one unit out of 6,758), of which I *filtered* using different metadata fields and *visualized* by years, as well as by the number of counts and citations (as discussed in chapter two and detailed in appendix 1.5 and 1.6), where I found the publication to stand out compared to other publications of its time in terms of number of citations (104). It additionally appeared to associate with the same cluster as the notable TBT, which also encompassed the prominent debate of breech births vs. cesarean sections (a complex strategy in itself, see appendix 1.8).

Sensing that this publication might be pivotal to the story, Wright's article was one of the first texts I read in full as I began querying the database. The preface of the article was particularly striking, stating:

"In spite of better understanding and improved technics, breech delivery continues to present a serious problem to the obstetrician. Certainly, the loss or damage of a baby *as the result of labor and delivery* is one of the most distressing circumstances encountered in our specialty, both to doctor and patient. In our efforts to reduce mortality and morbidity, we must develop a *safer* approach to delivery of the fetus in breech presentation".

(Wright, 1959. p. 758; emphases in original)

The first thing that struck me was how informative the preface was, immediately providing context about the concerns and problems that were (still evidently) occupying the field at that time—mainly the efforts to reduce the deaths of breech babies. The second striking observation was the extreme emphasis (e.g., the frightening tone he described breech deliveries, the italicization of "the result of labor and delivery"). These might not have counted as unusual observations if spotted in recent years, but against the context of being published 40 years before the TBT was ever published, it was at least intriguing. Several terms I already recognized, as they were spotted in early examinations—for example, "Mortality and morbidity"—were found to be the most relevant keywords in the discourse of his period (see Appendix 1.7), which made me more convinced that Wright was probably voicing a common concern. These were leads for further questions, which in turn translated to various strategies to answer. For example, I searched for the words "mortality" as well as "death," also frequently used in the same context, in the metadata and full texts stored within Zotero, zooming in on each text around the word for better context, marking and summarizing observations; I targeted publications that Wright cited to reveal (e.g.) their motivations and findings; filtered the corpus by the publications citing Wright (the name appears in their "Reference" field), reading the full or relevant subsets of the text for further context, and others.

The above examples illustrate just a few of the reading strategies employed to address various questions and objectives. These in-depth inquiries involved fluid movements of zooming in and out through the application of diverse perspectives, manipulations, and visualization techniques (from text to graph, to table, and so forth) to the same entity. This process often spanned months and sometimes necessitated revisiting earlier findings. Ultimately, it was the interactions between these different actions and strategies that drove the deeper understanding achieved throughout the study.

## Motivations for Action: Theory, Practice, and Empirical Findings.

The exploratory nature of this research, coupled with the lack of established theoretical frameworks and the challenges posed by its broad scope and complex design, made it impossible to adhere to a single course of action or line of thought. As a result, engaging with the materials involved countless decisions, extensive consultations with both myself and others, and the ongoing re-examination of my ideas, imperfect methods, and partial findings. This section delves into the key motivations behind my actions, influenced by theoretical guidance, encounters with empirical findings, and practical considerations. These factors collectively shaped the direction of the re-search, particularly during its final and most significant phase, as illustrated by several examples that underscore their interconnectedness.

As discussed in the first chapter, I was not aware of any grand Theory or comprehensive body of research specifically addressing the processes of collective loss of knowledge. Instead, I selectively borrowed theoretical concepts to form an initial framework around 'collective forgetting' and 'social construction.'[[24]](#footnote-24) These powerful yet initially vague metaphors provided crucial guidance. For instance, viewing the phenomenon as fundamentally 'social' directed me to focus on exploring the changing social environment rather than merely tracing the decline of the practice. This search for social context became one of the primary motivators for diving into the full-text material through in-depth inquiries. However, this was not the only motivator; the gap I encountered between official guidelines that permitted the procedure and the reality of their absence in practice also played a significant role. Specifically, the experiences of several Israeli advocates of vaginal breech deliveries—who described feeling isolated in an unsupportive environment characterized by the threat of litigation, criticism from colleagues, and restrictive informal norms—often led them to withdraw and opt for the surgical route. This gap further convinced me of the significance of the social dimension in the process. Yet another, more concrete factor tipped the scale—the COVID-19 pandemic, which halted the interviews and confined me to my home, leaving these materials as my only resource.[[25]](#footnote-25) The decision to deepen my inquiries grew stronger as I took my supervisors' advice to write a historical essay that would challenge the accepted TBT narrative (the first in this volume). All these factors, even insights from preliminary analyses that were initially set aside, contributed to the ongoing search for a richer and deeper social and historical context.

Theoretical frameworks influenced the early stages of the study, they were particularly crucial in guiding the focus of the in-depth inquiries. Tracing the social environment allowed me to target parts of the publications that provided the most context, often overlooked as merely background or supplementary to the main findings and conclusions. These frameworks also guided specific inquiries. For example, during my work on the theoretical account of the social construction of collective forgetting, I adopted key principles of the constructivist approach, such as socialization and intergenerational transmission of knowledge, which directed inquiries into the educational process of deskilling. This included a systematic exploration of changes in approaches to breech births in different editions of the authoritative "William's Obstetrics" textbook series published between 1923 and 1989. It also prompted searches for evidence on the changing state of medical education, often by querying terms like "skill" or "education." Considering the role of legitimation in the construction of knowledge (and by extension, ignorance), it was essential to understand not just how the practice was taught or neglected, but also the evolving attitudes toward its importance from both educators' and young doctors' perspectives. This led to additional full-text searches for terms such as "young," "old," or "obsolete," which often revealed discussions with a moral tone, where more senior obstetricians expressed concerns about their under-skilled interns.

Although the theoretical framework provided extensive guidance for various in-depth queries, other factors also influenced the course of the investigation. For example, as discussed earlier, after receiving reviewers' comments on the lack of historical, medical, and social context in the historical analysis, I was prompted to expand the scope of the investigation to include earlier periods and other communities that might have practiced breech deliveries (e.g., home births) or played a role in their decline. These were not minor additions but integral parts of the research process, as many of the findings and conclusions I reached were direct results of these newly explored directions, actively contributing to refining or challenging my observations and the theoretical concepts I explored throughout.

For example, while initially reviewing mid-20th-century obstetricians' approaches to breech births—often described in horrifying terms such as "the most distressing circumstances" (see Wright, 1959)—it was tempting to accept this attitude as a default or natural response, especially since it aligns with the prevailing and largely undisputed view today. However, when I looked further back to the early 20th century, when vaginal deliveries were the primary method for breech births and the saying, “Show me a man who can do a good breech delivery, and I will show you a good obstetrician"—a reference to the renowned obstetrician Joseph B. DeLee (In Hibbard and Schumann, 1973. P.518)[[26]](#footnote-26)—was widely recognized, I began to see the critical role that legitimacy plays in the process of neglecting a practice. This realization prompted me to revisit the materials and conduct a deeper investigation into how attitudes toward breech deliveries have evolved over time. These inquiries also uncovered the significant influence of scientific inquiry in legitimizing—or, in this case, delegitimizing—a practice. Experimental studies conducted during the 1930s and 1940s laid a substantial foundation for the delegitimization of breech deliveries in the 1950s and the rapid shift toward advocating and adopting cesarean sections in the following decade, even at a time when the surgery was still highly controversial and rare. This unexpected shift in the course of my investigation significantly contributed to the overall re-search process.

In summary, it was the interplay between theoretical frameworks, practical challenges, and empirical findings, which drove the evolution of the re-search. Each step of the process—whether guided by conceptual insights, shaped by external feedback, or necessitated by unexpected circumstances—had a direct or indirect impact on the investigation and understanding of social, scientific, and historical accounts in the process of collective forgetting.

To conclude, this chapter unfolds the reasoning process, highlighting its peak during the most intensive phase of in-depth inquiries. Each section deepens the understanding of the research, beginning with broadening and refining the scope of analysis, followed by the reading strategies that facilitated these shifts, and culminating in an exploration of the motivations driving the investigation. The chapter emphasizes that no single approach proved universally successful. Instead, exploring collective forgetting required experiments with different scopes and reading strategies—guided by theory, empirical findings, and unexpected circumstances. Together, these elements shaped the research, enabling a deeper exploration of the collective forgetting of vaginal breech deliveries.

# Discussion – Meta-Reflections on Methodographies

"One must be brought up in laboratories and live in them, to appreciate the full importance of all the details of procedure in investigation, which are so often neglected or despised by the false men of science calling themselves generalized... If a comparison were required to express my idea of the science of life, I should say that it is a superb and dazzlingly hall which may be reached only by passing through a long and ghastly kitchen"—Claud Bernard[[27]](#footnote-27)

The point that Claude Bernard so vividly made, and which Latour emphasized in his 1992 essay *The Costly Ghastly Kitchen,*[[28]](#footnote-28) closely aligns with the central argument of this paper: One cannot grasp the true essence of a laboratory—or a research, for that matter—or its significance, by merely reading polished papers or relying on generalized terms like "Theory" and "Methodology." Understanding the true nature of scientific research requires delving into the 'ghastly kitchen'—opening the 'black box' to reveal the messy "actual practice of creation" (Waddington, 2010, p. 59), including its dynamics, politics, failures, and unexpected paths. This is especially critical in exploratory studies and complex research designs, where the process is inherently imperfect and non-linear.

This is not to dismiss the value of methodological discussions or the pursuit of systematicity in research. Rather, it is to recognize that even systematic research involves "messy" and sometimes chaotic elements, which are crucial for fully understanding research from an STS perspective—just as they are for understanding an STS study through the same lens.

According to Lippert and Mewes (2021), what distinguishes STS methodography as a distinct and timely analytical genre in STS writing is its focus on specifying and scrutinizing the situated practices involved in producing STS knowledge, in an honest and concrete way as possible, free from generalized epistemological, methodological, or political categories, as suggested by Stengers (in Robison, 2008). Following these principles, this methodography has openly unveiled the complex practices and dynamics of my research-in-action. It reflects on the various actions I took within a digital environment, offering insights into the considerations that guided them. It acknowledges both the useful strategies I employed, and the paths not taken, highlighting the imperfect and partial ways of reasoning from both didactic and critical perspectives, while emphasizing the significance of each component and their interconnections in the dialectical formation of reasoning. In the following meta-reflection, I will briefly explore some of the promises that methodographies hold in this context, along with their current and potential challenges.

In his 1961 essay, Buchler sees methodographies as an integral part of the creative process for artists and researchers, emphasizing their value:

"Methodographic reflections are perfectly indigenous and have a threefold importance: they help him to detect the repeatable elements in his own practice; they are stimuli to the imagination of other artists; and they serve as data for the philosopher, who alone is in a position to venture on abstract comparative study." (Buchler, 1961, p. 128)

According to Buchler, writing a methodography firstly holds value for the practitioners themselves, offering deeper insight into their own ways of thinking and doing. Engaging extensively and systematically with a long and exhaustive process helped me transform tacit, implicit, and even intimate knowledge into an explicit body of knowledge. It provided perspective, allowed me to learn from my errors, and helped me recognize the tools, methods, and knowledge I adopted and developed. In other words, it enabled me to articulate and solidify a unique research identity.

Another group that may benefit from methodographies, according to Buchler, is the broader intellectual community of the practitioner, or the community of practice (Wenger, 2010), particularly in inspiring peers. This is especially relevant today, given the rapid development and widespread adoption of digital tools and AI in research. As researchers increasingly rely on these technologies throughout the research process—from initial ideas to final output—the demand for new skills and faster learning has grown. Methodographies can serve as indispensable resources, offering practical insights and tacit knowledge that are often not fully captured in standard workshops, webinars, online courses, or shared platforms like GitHub, Stack Overflow, Coursera, and YouTube, where discussions often focus on specific tools or methods. As demonstrated here, the true value often lies not just in the tools or methods themselves, but in the creative ways they are employed and engaged within specific disciplinary and contextual frameworks. Sharing methodographies within a disciplinary context, where scholars face similar aims and challenges, can be particularly fruitful.

Other groups that may benefit from methodographies, according to Buchler, are philosophers, who can use these reflections as material for their own studies. This brings a double benefit to STS as a discipline, echoing Stephan Laser's critique: " STS has convincingly made the turn from the “why” to the “how” of knowledge creation but must not forget to tie its own claims back to a “why” and “so what” for the readers (Laser, 202, p. 141-2). In the context of STS, the "readers" include both peers and philosophers. They may gain insights not only into improving their skills in conducting research from an STS perspective but also into analyzing these practices as materials for STS studies—a point emphasized by Lippert (2020) and other advocates of the genre.

There is a final remark I would like to add regarding research assessment. Current methods are often criticized for their narrow focus on output-based metrics that fail to capture the full range of a researcher’s contributions. Sally Wyatt, an associate dean for research, recently noted[[29]](#footnote-29) that despite ongoing calls for more reflexive assessments—such as 'CVs of failure,' as advocated by Melanie Stefan in *Nature* in 2010—practical alternatives remain rare, and admitting failure is still considered 'brave.' In this context, published methodographies can offer a particularly insightful introduction to a scholar's work. For myself, the methodography presented here reveals my ways of thinking and research skills more authentically than any impact measurement or polished Curriculum Vitae could.

Of course, adopting this writing approach certainly presents challenges. Reflecting on such a long and intricate research process was exhausting, particularly since I only partially kept technical records, often forcing me to revisit calculations. The dialectical nature of the research made it difficult to recall the exact sequence of practices—and often, it didn't matter, as the reasoning emerged much later. Moreover, in an academic environment that prioritizes success-based, focused writing, such extensive and reflective work may even be viewed as 'unpublishable' or dismissed as 'brave' by academic stakeholders. However, I believe the benefits in this case outweigh these challenges.

To conclude this meta-reflection, I assert that this methodography serves as both a confession and a declaration of my research identity. That is why it has been uniquely woven by me, the researcher, and written in the first person.

1. The Internet Archive is a non-profit organization that provides users with access to millions of free digitized books, movies, software, and audio for temporal use. It also hosts the WayBackMachine, a web archive for over 858 billion web pages (*Internet Archive: Digital Library of Free & Borrowable Books, Movies, Music & Wayback Machine*, n.d. Retrieved: 2024-01-12 10:52:21). <https://archive.org/web> [↑](#footnote-ref-1)
2. The formative situation that led me to consider the lack of obstetricians' knowledge in delivering breech babies is described in the preface of this volume. [↑](#footnote-ref-2)
3. Guided by Prof. Nadav Davidovitch, the research initially aimed to compare three lost medical 'arts'—stethoscope use in cardiology, soap-and-water enemas, and vaginal breech deliveries. However, the complexity and richness of the breech case soon made it the sole focus of the study. [↑](#footnote-ref-3)
4. Prof. Eviatar Zerubavel proposed the term "collective forgetting" upon hearing a concise overview of my aim of investigation. [↑](#footnote-ref-4)
5. For further reading on 'Formal Similarities' and approaches for identifying analogous "formal properties" across different contexts, see: Zerubavel, 2021. [↑](#footnote-ref-5)
6. This insight was suggested by Prof. Noah Efron the supervisor of this dissertation. [↑](#footnote-ref-6)
7. For further discussion, see: Lazar-Shoef & Efron, in this volume. [↑](#footnote-ref-7)
8. Breech presentations hold a stable occurrence rates of 3-4% of term breech babies. [↑](#footnote-ref-8)
9. For more on measuring academic impact through citation counts, see Moed (2005) and de Solla Price (1970). [↑](#footnote-ref-9)
10. For more on communities of practice, see Wenger (1998; 2011). Initially, the study considered including midwives, but early interviews and literature reviews revealed that midwife-led breech births are extremely rare. As a result, the focus shifted exclusively to obstetricians as the primary practitioners. [↑](#footnote-ref-10)
11. Interestingly, some sentiments expressed by advocates of breech births resembled those of the last speakers of endangered languages (Harrison, 2008) and older engineers (Packard, 1963), particularly in their feelings of being outdated and isolated within their fields. Future research comparing different instances of collective forgetting could help delineate its 'formal characteristics' (Zerubavel, 2021). [↑](#footnote-ref-11)
12. The idea of viewing STS research as detective work was first introduced to me during discussions with Anat Fanti. However, it has been discussed in several research contexts (e.g., Thorpe & Easterby-Smith, 2012; Zigmond, 2000). [↑](#footnote-ref-12)
13. Several small investigations confirmed the significant influence of American obstetric practices on Israel and other countries. Wright's 1959 paper widely cited globally and in the Israeli journal Harefuah, exemplifies this impact. A citation analysis showed that all Israeli papers referenced American publications, acknowledging their influence. However, these findings were not further explored as the study shifted to the American context. [↑](#footnote-ref-13)
14. Although the corpus included publications up to 2018, the primary focus was on the 1940s to 2000s, around the time of the TBT publication. [↑](#footnote-ref-14)
15. For example, as shown in Figure X, the 1986 study by Nelson & Ellenberg, with 671 citations—second only to the TBT—initially appeared relevant. However, a closer examination of its title and abstract revealed that it did not focus on breech presentations but only mentioned the condition as a risk factor for its primary subject, cerebral palsy. [↑](#footnote-ref-15)
16. Callon et al. (1983) argue that while indexing can vary due to training and circumstances, three factors enhance its "objectivity": (1) the organizational stability of documentation services, (2) the close relationship between indexers and their information consumers, and (3) the structured format of scientific publications, which aids in categorization (p. 208; see also Callon et al., 1986). [↑](#footnote-ref-16)
17. Due to the tools' scale limitations, the citation analysis focused on the 2,000 most cited publications in the breech corpus. [↑](#footnote-ref-17)
18. As of today, the Zotero database includes over 23,700 records, with many duplicates resulting from repeated retrievals. Despite this, it remains highly useful for search purposes. [↑](#footnote-ref-18)
19. It does sound somewhat anachronistic to write a historical paper on births without mentioning women. [↑](#footnote-ref-19)
20. Full-text searches were limited to machine-readable documents. It made it harder to trace terms in earlier documents, which often formatted as a picture, prompting to other strategies applied. [↑](#footnote-ref-20)
21. Empirical findings sections were often lengthy, technical, and formulaic, offering minimal insight into the state of practice or prevailing views. Moreover, the actual findings sometimes had little influence on shaping the authors' views and conclusions. A striking example of this is that some studies conducted in the 1970s were revisited by obstetricians in later years, leading to different conclusions in the context of a shifting attitude against cesarean sections (see discussion in Lazar-Shoef et al., forthcoming) [↑](#footnote-ref-21)
22. Editor's commentaries were anonymous but could be traced through other publications. For example, a commentary published in *The Survey* (Wright, 1960a) regarding Wright's article from the previous year (Wright, 1959) was revisited by Wright himself in 1960. In his response, Wright referenced Dr. Nicholas J. Eastman, a prominent figure in the obstetrics community at the time (Wright, 1960b). [↑](#footnote-ref-22)
23. For further discussion regarding the vague distinctions in the context of: close and distant reading see, e.g., Jin (2017),…. Qualitative and quantitative distinctions see, e.g., … Descriptive and critical see, e.g.,… [↑](#footnote-ref-23)
24. The extensive discussions I had during this time with Prof. Eviatar Zerubavel, and the participation in his monthly workshop on concept-driven theory and practice, helped me move away from the search for a grand Theory. Instead, they encouraged a more deliberate focus on identifying the formal features of various social phenomena and theoretical concepts. For further discussion, see Zerubavel (2021). [↑](#footnote-ref-24)
25. The pandemic was a key factor in directing the investigation toward the American case, as discussed throughout this paper. [↑](#footnote-ref-25)
26. This striking idiom from DeLee, mentioned by James McNulty, was actually found in the "discussion" section of a 1973 article (Hibbard and Schumann, 1973) to indicate that the phrase had already become passé by that time. However, similar, though less striking, statements were also found in earlier writings, supporting the claim that mastery in delivering breech babies was indeed a hallmark of early modern obstetrics. [↑](#footnote-ref-26)
27. Bernard, 1961, p. 41. Originally published in 1927. Also cited in Latour, 1992, p. 295. [↑](#footnote-ref-27)
28. I thank Prof. Nadav Davidovitch for introducing me this powerful metaphor. [↑](#footnote-ref-28)
29. <https://blogs.lse.ac.uk/impactofsocialsciences/2024/08/21/assessments-of-research-culture-should-be-open-about-failure/> [↑](#footnote-ref-29)