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# Regrounding Inquiry-Based Learning in History: A Study of Historians' Epistemic Processes

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## ABSTRACT

One of the core aims of inquiry-based learning (IBL) approaches to history education is to help students grasp how historical knowledge is constructed. Thus, IBL applications are usually justified through reference to expert historians' research practices. We argue that the current body of empirical research on historians' practices is limited in some important ways. To develop an expanded understanding of the practice of historiography (i.e., historical research and writing), we interviewed 26 Finnish academic historians about activities involved in their practice. We then identified over a hundred epistemic processes of historiography that we divided into 14 categories. Some categories partly aligned with earlier accounts of historians' epistemic processes, although we identified some extensions of these categories. We also recognized five themes that provide an expanded understanding of historians' epistemic processes for IBL: archival work; tools and languages; virtues and affect; broad approaches and methodologies; and social processes. We discuss the implications of our findings for history education and argue for more diversity in studies of epistemic practices in history. Although professional historiography in its full scale cannot—and should not—be brought into all classrooms, educators need a broader understanding of historiography in order to model such a practice at different levels of education.

## Introduction


Many history educators emphasize the educational goal of working “like a historian” (e.g., S. Greene, 1994; Hotchkiss & Hougen, 2012; Hynd et al., 2004; Martin et al., 2021; Shanahan et al., 2016; Reisman, 2012; Veel & Coffin, 1996). By centering the figure of historian as the key point of reference, these educational approaches emphasize the practice of historiography (i.e., historical research and writing).<sup>1</sup> Key to the justification of these educational approaches is that they are grounded in empirical research about how historians conduct research and form historical knowledge. We argue, however, that the field's understanding to date of how historians practice historiography has been built on empirical evidence that addresses only a part of historians' practice. We aim to strengthen this empirical grounding through an interview study of the activities historians engage in while conducting historical research.

## Fostering historical thinking with inquiry-based learning

Many current approaches to history education seek to foster historical reasoning or historical thinking through engaging students in (scaffolded or modified versions of) activities similar to

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<sup>1</sup>We rely here on terminology established within philosophy of historiography (e.g., Tucker, 2009; Kuukkanen, 2015). Thus, *historiography* is understood as a practice involving inquiry into past events, processes, phenomena etc. with the central aim of writing about them. As Tucker's (2009, p. xii) glossary outlines, historiography involves research, and the “professional activities of historians. For example, searching the archives.”

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those of historians (Clark, 2020; Luís & Rapanta, 2020; Parkes & Donnelly, 2014, Reisman, 2012; Seixas, 2017; Wilke et al., 2023). Voet and De Wever (2017) have grouped a range of different approaches together as instances of *inquiry-based learning* (IBL; also known as *inquiry learning*, see van Boxtel et al., 2021). The core idea of IBL is that “students learn content as well as discipline-specific reasoning skills and practices [...] by collaboratively engaging in investigations” (Hmelo-Silver et al., 2007, p. 100).

A central shared goal of IBL approaches to history education is to foster a grasp of the practices of developing historical knowledge. As Voet and De Wever (2017, p. 312) emphasize, the goal of IBL in history is “not a full attainment of historical research skills, but rather the development of an understanding of how historical knowledge is constructed and evaluated.” Importantly, the practices of learning about the past and constructing historical knowledge are understood in reference to how historians engage in research (e.g., Barton, 2005; Parkes & Donnelly, 2014; Van Drie & Van Boxtel, 2008; Wilke et al., 2023). For example, Nokes (2017, p. 553) holds that “historical reading and writing are the literate acts of historians, replicated, to the extent possible, by students in history classrooms.” Likewise, Green (2016, p. 93) argues that “[t]he cognitive moves historians practice provide a model for pedagogy in the classroom.” Ideally, the knowledge of historians’ practices that guides IBL should arise out of a rich basis of empirical studies of historians’ practices of historiography. We argue, however, that this basis is limited in some important ways.

### ***Grounding IBL on empirical research of professional historians’ practices***

In this paper, we address the questions of what is involved in historical inquiry as practiced by historians and how the practices of historical inquiry in IBL curricula in history relate to historians’ actual practices. Voet and De Wever (2017) provided an overview of the core tenets of historical inquiry that are highlighted in models of IBL. Reviewing a range of frameworks used in educational studies of IBL in history during the preceding 25 years, they identified eight frameworks and described five categories of core processes represented in inquiry-based approaches in history education.

First, *sourcing* refers to processes for grasping the nature of a source and its relative trustworthiness (including determining the author’s background, the type of document, and contextualizing the source to the period of its production). Second, *appraising* includes corroborating information as well as evaluating source content, their authors’ perspectives, reasoning, and biases. This category can also be considered as centering the analysis of sources, going beyond just identifying source information. Third, *specifying* involves processes for enhancing one’s understanding and directing one’s search for information. Specifying includes asking questions and activating prior knowledge, reflecting on one’s understanding and its progress, and dealing with ignorance and uncertainty. Fourth, *constructing* involves processes for forming a mental model of the past, including selecting and interpreting information relevant to one’s inquiry, as well as contextualizing the selected and interpreted information in terms of spatial, temporal, and social contexts. Finally, *arguing* refers to the argumentative processes relevant for reporting the conclusions of inquiries and backing these conclusions with evidence through quotes, general citations, and references, as well as considering possible counterarguments.

According to Voet and De Wever (2017), these five categories encompass the processes of historical knowledge construction that models of IBL in history have prioritized. Crucial to the justification of IBL approaches in history, these processes were considered to reflect or represent the kind of expert practices that historians perform in order to produce historical knowledge. The processes were justified not only through theoretical accounts of the practice of historiography but also through empirical research into historians’ epistemic practices. But what exactly does this empirical research consist of?

When reviewing the eight publications contributing to Voet and De Wever's synthesis (i.e., De La Paz & Felton, 2010; Hicks et al., 2004; Perfetti et al., 1994; Poitras & Lajoie, 2013; Van Drie & Van Boxtel, 2008; Wineburg, 1991, 1994, 1998), we identified a total of six empirical studies of historians' practices by Wineburg (1991, 1994, 1998), Leinhardt et al. (1994), Leinhardt and Young (1996), and Rouet et al. (1997).<sup>2</sup> These are studies of how historians make inferences from and about pre-selected sources during and after reading them. In Wineburg's (1991, 1994, 1998) studies, US-based historians were tasked with making interpretations about specific historical topics while reading pre-selected source documents. Through two analyses of the same data, Wineburg (1991, 1994) found three main categories of heuristics used by the historians (sourcing, corroborating, and contextualizing) and three kinds of cognitive representations (of the text, event, and subtext) formed by the historians when reading and reasoning about the documents. In a later study, Wineburg (1998) produced three main codes from an analysis of historians: self-referential statements addressing historians' own beliefs, opinions, or affective responses; addressing literal or interpreted meanings of texts; and establishing a context to make texts intelligible.

Leinhardt et al. (1994) interviewed seven US-based historians, asking in particular about how they establish a historical case and how something is explained in history. The authors concluded that historical case construction and explanation is a purposive and motivated endeavor that aims for compelling (i.e., exhaustive, chronological, and causal) narratives and involves contextual interpretation as well as argumentation and/or debating with other interpretations. In Leinhardt and Young (1996) study, three US-based historians read short documents that were familiar and/or unfamiliar to them. Through interviews of these historians, they identified two broad schemas for reading: reading for identification (including classifying, corroborating, sourcing, and contextualizing documents) and reading for interpreting. Interpreting included historical reading (e.g., appraising historians' intentions and theoretical positioning). In Rouet and colleagues' (1997) investigation, eight doctoral candidates at a French university read a pre-selected set of documents about controversial topics and lists of facts in a hypertext environment and then wrote essays about their opinions on the controversies. The authors found that the students used all the heuristics reported by Wineburg (1991) and that most did not want to take a stance on the presented controversy in the way they were asked to do.

Comprising the whole of empirical studies on expert practices that underlie the range of models reviewed by Voet and De Wever (2017), these studies have been influential in shaping IBL in history. More recent educational research has also provided important contributions to this body of empirical research. Baron (2012) studied five historians' thinking aloud while they analyzed historic buildings, identifying five heuristics. Three of them build and elaborate on Wineburg's (1991) heuristics in a new context. Baron (2012) also recognized two additional heuristics: supposition (i.e. using prior knowledge to imagine and evaluate possible scenarios in situations where evidence falls short) and empathetic insight. Gottlieb and Wineburg (2012) studied eight religious and eight non-religious historians' thinking aloud when reading and interpreting a set of pre-selected documents and concluded that religious historians varied their epistemic criteria depending on whether they were triggered by specific themes or documents to align with their personal allegiances. Relying on survey and interview data, Schneider and Zakaï (2016) studied the writing practices of ten graduate students pursuing a PhD in history. They reported that historical writing is a complex affair involving the use of a range of tools, crafting stories based on evidence but with incomplete information, and translating knowledge to different audiences. In a research design with pre-selected tasks and settings, Goulding (2021) investigated two expert historians' and six students' readings of historical websites, concluding that Wineburg's (1991) three heuristics were still central, but played out somewhat differently in evaluating online material. In a

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<sup>2</sup>There were also some additional publications by some of the same authors, but these additional publications did not report new empirical analyses of historians' research practices.

more open-ended task, McGrew (2022) invited ten historians, ten fact checkers and 25 undergraduates to engage in online searches in pursuit of answering a predetermined historical question, finding that in such a task, historians and fact checkers privileged evidence from reliable secondary sources, unlike students, who preferred evidence from primary sources.

Finally, in a study somewhat similar to ours, Monte-Sano (2017; Monte-Sano & Thomson, 2022) interviewed 18 historians about their writing practices, reporting a range of writing processes, such as taking different kinds of notes, developing questions, getting feedback, and reflecting upon and revising their work. In later analyses, they identified writing considerations such as writing forms, target audiences, and selection of material.

These more recent studies suggest that attending to historians' practices outside merely reading a predefined set of historical documents can provide crucial insights into the practices of historiography. Even so, we think there is room for additional efforts to represent the fuller range of activities that historians engage in when practicing historiography. In a review of multiple source use in the domain of history, Fox and Maggioni (2018, p. 209) observed that “[t]here does not appear to be any empirical research published in peer-reviewed journals that investigates or observes historians engaging in multiple source use while carrying out their own historical inquiries.” Instead, they argue, historians have mainly been studied while seeking answers to questions provided by researchers and while analyzing sources provided by researchers. Within history education, others have also called for “fuller models of historians’ disciplinary practices” (Marczyk et al., 2022) or “a richer, more nuanced picture” of history-specific cognition in order to better “model or practice forms of historical thinking” (Bain, 2000, 333). Likewise, historians, anthropologists, and philosophers of history have repeatedly pointed out a lack of empirical research into the habits and activities through which historians perform or produce historiography (Paul, 2011, 2021; Tran & Noël, 2018).

We aim to complement the existing evidence on historical practice with evidence from expert interviews that target historians’ scholarly practice and the processes related to it on a wider scale than prior studies. In order to grasp the practice in more of its complexity, we shift the focus in two ways. First, we focus on the kind of historical research that historians actually do, instead of engaging in pre-set tasks with given materials and aims. Second, we widen the focus from examining cognitive processes of interpreting sources and making inferences from them into studying more broadly the different kinds of epistemic processes related to historical research.

### ***Epistemic processes in the practice of historiography***

Our approach to investigating the practice of historiography draws on current work on epistemic cognition, a field interested in “how people acquire, understand, justify, change, and use knowledge in formal and informal contexts” (J. A. Greene et al., 2016, p. 1). *Situated* approaches to epistemic cognition emphasize that ways of knowing are specific to particular contexts (e.g., specific fields, tasks, goals, tools, and environments; see, e.g., Chinn & Sandoval, 2018; Sandoval, 2018). Thus, the practices of historians are expected to differ not just between disciplines but also within them, such as between subdisciplines and methodological approaches (Chinn et al., 2014; Chinn & Sandoval, 2018; Elby & Hammer, 2001; Kainulainen et al., 2019). Within philosophy of history, Zammito (2013) and Paul (2021) have emphasized the need for situated accounts of historians’ practices.

The practice of historiography can be considered epistemic in the sense that it is centrally an effort to grasp aspects of the past that once existed and to form some sort of representations of (parts of) past world(s). Engaged in such a practice, the epistemic aims of historians are manifold, including aiming to challenge or develop existing knowledge about the past as well as to motivate and direct future inquiries (Kainulainen et al., 2022a). Thus, as epistemic processes, we consider

those procedures and activities that historians use to attain knowledge, understanding, narratives, and other epistemic aims.

To analyze the practices of historians, we have drawn on the AIR model, a situated model of epistemic cognition developed by Chinn et al. (2011, 2014; Chinn & Rinehart, 2016; see also Barzilai & Chinn, 2018). The AIR model conceptualizes epistemic practices through three components: (a) epistemic Aims and their value (i.e., the goals and their meaning or significance), (b) epistemic Ideals (i.e., the standards or criteria for determining whether goals have been reached and for evaluating epistemic output), and (c) Reliable epistemic processes for producing epistemic products (see below for an explanation). In our larger research project, we are investigating all three components of epistemic cognition in the domain of history (see Kainulainen et al., 2019, 2022a, 2022b). This study focuses on the third one, reliable epistemic processes.

Reliable epistemic processes (see Goldman 1999) refer to the “methods or procedures that have a high likelihood of achieving the epistemic aims” (Chinn et al., 2020, p. 168). These processes take place at various scales, ranging from individual processes (e.g., evaluating the credibility of a source) to group (e.g., collaborating on a historical paper) and institutional processes (e.g., the review processes of academic journals) (Chinn & Rinehart, 2016). A significant part of historiography involves forming cognitive and textual products—such as narratives or colligatory expressions—that “cannot *as such* ... have a counterpart in reality” (Pihlainen, 2013, p. 14), nor do they have “truth-makers, that is, entities that would make them true or false, in the past.” (Kuukkanen, 2015, p. 11). Therefore, building on ideas from epistemic pluralism (see Coliva & Pedersen, 2017) and critical epistemology (see, Imaz-Sheinbaum, 2022), our understanding of epistemic processes in historical inquiry relies on an expanded understanding of historians’ intellectual aims and outcomes. These can include understanding, explanation, narratives, and others, many of which can simultaneously and meaningfully guide inquiries (Kainulainen et al., 2022a).

### Research question

We aim to strengthen the basis of inquiry-based learning in history through empirical work that provides an expanded understanding of expert historians’ epistemic processes. In this exploratory task we simply ask: *What epistemic processes do historians describe as being part of their investigations?*

## Methods

### Participants

The participants were 26 Finnish historians (all with a PhD degree) recruited through contacting various history departments and writing an invitation to a national online forum for humanities scholars. The historians represented a variety of different faculties and sub-disciplines of historical research.<sup>3</sup> The stage of their careers varied from post-doc researchers to emeriti professors. Around the time of conducting the interviews, our sample included about 11% of both history professors (six professors) and lecturers (six lecturers) in Finland (see Karonen, 2019). In addition, the sample also included one professor who worked abroad, two professors emeriti, as well as several post-doctoral and senior researchers. All participants were affiliated in some way with at least one of four different universities in Finland. With respect to the participants’ academic degrees, research careers, publications, and academic affiliations, we consider all of them to be recognized experts contributing to historiography in and of Finland.

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<sup>3</sup>E.g., social history, history of ideas, political history, cultural history, European and World history, Nordic history, and global history.

All participants gave informed consent for the research use of their data. In order to protect the confidentiality of the participants, we refer to them only by a number ID and exclude their universities, degrees, and details of research topics in all of the excerpts below.

## **Interviews**

Interviews were chosen as the method for forming and collecting data, due to their suitability for accessing finer-grained contextualized aspects of epistemic practices (Mason, 2016). The first author conducted semi-structured interviews in Finnish with the historians. The interview protocol (see [Online Supplement 1](#)) allowed for open answers and time for further elaboration on upcoming themes or details of interest. Individual conversations did not cleave to the planned protocol word-for-word, but instead proceeded on the basis of content and meaning. Some interview questions were grounded in the AIR model, focusing on aims, ideals, and/or reliable processes of historiography, and parts of the interview protocol drew also on ideas from other research on epistemic cognition and science studies. Following the exemplar of Samarapungavan et al. (2006) with expert chemists, the interviewer first asked historians to describe an ongoing or recently finished study or research project. Later in the interview, many questions were linked to this described project (e.g., "How would you describe a typical work day of researching this topic?"; "What are the settings you work in, and what do you do in those settings?"). The length of interviews varied from less than one hour to almost three hours, averaging at 90 minutes.

## **Data analysis**

For this paper, we analyzed those sections of the interview most directly relevant to historians' epistemic processes. The transcribed interviews were analyzed by means of a qualitative content analysis (see Schreier, 2012) that proceeded through multiple iterative and collaborative stages. The analytic procedure relied mainly on descriptive, in vivo, initial, and process coding (see Saldaña, 2016). Coding was done mainly inductively from the interview data. While earlier categorizations for historians' inquiry processes existed, we chose this approach because these earlier categorizations (a) addressed only some parts of historical inquiry (such as analyzing sources and making inferences from them), and/or (b) were formulated through empirical studies that were about historians participating in designed tasks, instead of addressing historians' own inquiries.

We began the development of the code book through exploratory reading of transcripts, followed by all authors individually identifying possible initial epistemic processes, hereby called *codes*, from a purposively selected set of interview extracts (from different kinds of interviews as well as historians with different specializations and varying years of experience). These developed codes were compared, and another set of extracts was individually coded by all. Eventually a set of codes were negotiated to begin with. This was followed by the first author coding full interviews while continuing to develop new codes during the analysis. The full set of interviews was split into several subsets between which the full authorial team negotiated the grouping of codes into *categories*, rules for coding, merging or deleting of codes, and boundary cases for codes. The coding scheme was also tested and developed through discussions at several conferences and coding meetings with colleagues. Through these various social processes, we aimed to reach reliability for our analysis in terms of concordant and interactive objectivity (Douglas, 2009). That is, we aimed to strengthen our findings by seeking agreement both between individuals as well as collectively through debate and discussion. We did not aim mainly for completely replicable coding, but instead, for credible, dependable, and confirmable coding (see Cho & Trent, 2014; Schreier, 2012; Yilmaz, 2013).

We used the NVivo analysis software (Versions 11–12) for coding, where we mainly worked with full responses (interpreted in the context of the surrounding questions and discussion).

Overall, the criterion for choosing the coding unit was primarily formal, and in exceptional cases thematic (see, Schreier, 2012). Thematic choosing of unit could be made when (a) the response was very long (e.g., several minutes); (b) the response was very clearly structured into two or more larger segments; or (c) the response was meshed with short utterances or clarification questions by the interviewer. However, many responses were rich in detail and included many more or less overlapping processes; such sections were accordingly coded with multiple codes. On an average interview, we coded 29% of the interview using 22 different codes 144 times.

The coding scheme was reviewed on several occasions by all authors, followed by discussions leading to clarifying descriptions of codes, merging/splitting codes, or recategorizing them. The final coding scheme was assessed by a coauthor coding a representative sample of responses. Following a practice round with one tract of responses, the coders discussed and refined several codes. After that, the coauthor coded a second tract of responses. Both the rounds included only responses that were new to the coauthor, i.e. responses that had not been used (a) during collaborative development of codes, (b) during previous rounds of assessment, or (c) as examples in the coding scheme document. This round involved a sample of 24 coded processes with 71% interrater agreement using a scheme of 113 codes. Thus, considering the large amount of interview data and the complexity of the coding scheme, independent agreement was achieved in a strong majority of sampled instances. The agreement was considered sufficient, when considering that our analysis does not rely on the frequencies of codes and categories but instead, on their overall existence. Table 1 presents an example of our final coding. For transparency of our analysis, we publish our full coding book (see, Online Supplement 2) that lists all used codes accompanied by descriptions, rules of application, examples, and frequencies of code usage.

We identified a wide range of processes related to the practice of historiography. The final coding scheme consisted of 107 codes for processes, arranged into 14 categories (excluding an “other” category with six codes). The full coding scheme is summarized in Online Supplement 2. Table 2 displays an overview of the 14 categories, along with a narrative description of key processes that were included within each code (excluding the other category), and the number of historians who described one or more processes in each category.

## Results

The majority of the results section is dedicated to discussing epistemic processes that have not featured in prior representations of historians’ thinking in IBL models. First, however, we begin with a brief summary of the entire set of processes that were identified in our analyses.

**Table 1.** Coding historians’ epistemic processes: an example.

Example quote	Code	Category
“I follow this normal kind of way in historical writing, <sup>1</sup> so this Anglo-Saxon influence is very visible in it. So I write the kind of ready text for the reader who does not necessarily know the topic. <sup>1,2</sup> So, it is not like literature, but it is still a kind of running story in the way that it is born by itself. <sup>3</sup> I don’t very much consciously hunt those methods anymore. I know and trust myself. <sup>4</sup> That it actually is born in that presentation stage. That text lives its own life as I write it. It winds into new directions. <sup>1,3</sup> One can see that the original list of contents changes. It might change a lot. <sup>5,6</sup> So suddenly something in this story that is being born in the text <sup>3</sup> , it changes quite a lot.” (Historian 3.68 <sup>a</sup> )	<sup>1</sup> Writing (general)	Writing
	<sup>2</sup> Consider audience	Explicitly social processes
	<sup>3</sup> Transcendental or transformative writing	Writing
	<sup>4</sup> Intuition	Cognitive strategies
	<sup>5</sup> Form and use textual structures or narratives	Writing
	<sup>6</sup> Change structure	Editing and changing

This one quote contained six different codes, or epistemic processes, from four different categories.

<sup>a</sup>Identifier: (Historian[number].[coded utterance])

**Table 2.** Overview of categories of epistemic processes described by the 26 historians.**Writing (26/26)**

Processes associated with writing included making notes—including notes about relevant theories, interpretations, and methods. Processes included particular tactics for writing, such as writing gradually or slowly, writing out ready content, writing selectively, and starting from a theoretical standpoint. Some historians emphasized that writing is often the action through which intellectual content is created.

**Broad approaches and methodologies (25/26)**

This category of processes includes a broad range of heuristics and approaches used by historians to advance their thinking and writing. These included selecting and applying various research designs and methodological approaches, such as comparative designs and microhistory as well as empirical methods like network analysis, discourse analysis, interviews, questionnaires, and other specific quantitative or qualitative methods. Historians described using theories to frame their research as well as ethical reflections that guided their work. Other processes included were heuristics such as maintaining a perspective, going back and forth between ideas in a cyclical way, forming tentative dispositions, and taking general approaches such as a skeptical approach or an inclusive approach.

**Reading (24/26)**

Historians regularly referred to the central role of reading, both of primary documents as well as other secondary sources. They mentioned particular processes including close and systematic reading and reading between the lines.

**Explicitly social processes (23/26)**

Historians emphasized the value of collaborative work in general, as well as specific social processes, including discussing ideas with others, collaborating both with peers and non-peers, seeking and receiving feedback from peers, seeking assistance from archivists and librarians, distributing labor, and networking. They considered the audience and attended conferences. They also discussed dealing with public harassment.

**Collecting materials (21/26)**

These processes involved the search for sources and archives, including collecting materials, copying and photographing them, working to improve data sets (e.g., widening its scope), and organizing notes based on the materials. Several historians also emphasized the need to select sources responsibly or systematically.

**Cognitive techniques (17/26)**

Historians describe a broad range of cognitive techniques they used to guide their work, including asking questions, looking for relations to other phenomena, developing arguments or themes, considering the relationship between the whole and the parts, and engaging in historical empathy. They considered how historical phenomena get underway, considered how historical phenomena changed over time, and sought historical analogies. They looked for both regularities and variations that they could write about. Ideation techniques included intuition, the use of graphical methods, and free association.

**Editing and revising (16/26)**

These processes involved editing and revising ideas, both ideas already written as drafts of texts and ideas in earlier periods of development. Specific processes including narrowing down the focus, changing or adjusting perspectives to see in a new way, changing the structure of the writing, and changing the core question, premise, or hypothesis.

**Source analysis (15/26)**

In addition to mentioning general processes of source analysis, historians described specific processes including interpreting source content, conducting statistical analyses of source material, quantifying material, and conducting visual analysis.

**Epistemic virtues (15/26)**

Historians described a variety of epistemic virtues. These included curiosity, interdisciplinarity, being critical, being pluralistic, cognitive flexibility and tolerance of ambiguity, having a thick skin, honesty, and carefulness.

**Organizational processes (14/26)**

Organizational processes included a range of processes for organizing time and work, including creating and adhering to schedules and plans, and coordinating work on multiple simultaneous projects. Historians discussed making research plans, and already developing many of the ideas or theoretical frameworks involved in research projects in those plans. Historians also mentioned more specific processes such as taking breaks or walks.

**Tools (13/26)**

Historians described using a broad range of tools (high and low tech) for carrying out their work, such as phones, tablets, and computer software (e.g., for accessing, organizing, and analyzing materials). The increasing use of technological tools was often referred to as revolutionary. (This category does not include semiotic tools like language and numbers.)

**Contextualization (12/26)**

Processes in this category indicated that historians build and reflect on the context in their work. This could involve contextualizing events, facts, or the documents describing them in their historical setting, as well as building up an understanding or representation of the historical context in which the topic is located.

**Working with languages (5/26)**

Several historians described processes of deliberating with and about language, such as choosing which language to work with, or thinking actively with different languages during a project as a cognitive aid.

**Emotions and affect (3/26)**

Some historians also mentioned processes of regulating and reflecting on emotions, including working through emotions experienced during the research process.

This provides a fuller portrait of the very rich and varied processes that the historians described using. Then—also briefly—we discuss those categories that overlap with processes reported in previous studies of expert historians’ reasoning. In some instances, our results extend beyond findings of previous research, and so we note these extensions. Then we discuss in greater detail the five *themes*<sup>4</sup> of processes that have not featured in previous research and that, we argue, can be reasonably incorporated into IBL in history.

### **The wide range of epistemic processes discussed by historians**

As noted, the final coding scheme consisted of 107 codes for processes arranged into 14 categories, plus a miscellaneous other category including six codes (Table 2; see Online Supplement 2 for the complete set of processes, including “other processes.”) In expounding the AIR model, Chinn et al. (2014, Chinn & Rinehart, 2016) argued that people use *many* different reliable processes to achieve their epistemic aims; our results support this expectation in the case of expert historians, given the numerous processes they mentioned. In addition, the range of processes described is very broad. They cover many phases of research, from ideation to writing, as well as many aspects of research, from heuristics and methods used to processes for organizing the work.

### **Epistemic processes discussed in previous research**

In this section, we briefly highlight four themes of processes that have been discussed in previous research and that also appeared among the processes described by the historians in this study. Within most of these themes, our findings provide some extensions and elaborations of previous work (for data examples, see Online Supplement 2).

In line with previous research, most historians discussed *source analysis* in their interviews. The specific processes in this category included examining a source document to determine basic details such as authorship and type of source and interpreting the content of documents in light of authors’ perspectives. Going beyond what some previous studies have discussed, some historians noted that source analysis can involve quantitative analysis such as tabulating information from various sources in tables to permit *quantification* and *statistical analysis*. It can also involve *visual analysis* of images or of handwriting, such as recognizing that a preserved letter contains the shaky handwriting of a 70-year-old.

Also in line with previous research, the historians emphasized processes of *contextualization*. These processes involved placing events and facts in their historical setting, as well as building up an understanding or representation of the historical context in which the topic is located. Contextualization could involve locating sources properly within their time or space as well as building up an overall sense of the historical context. This cluster of processes is very close to the forms of contextualization that were identified by Wineburg (1991, 1998).

The historians in this study identified a number of specific *cognitive techniques* that they used. In their synthesis of past research, Voet and De Wever (2017) identified cognitive techniques for “specifying and constructing historical knowledge” that included asking questions, activating prior knowledge, making analogies with other historical periods, selecting and interpreting information, and developing arguments. In addition to engaging in these processes, historians in our interviews further engaged in *historical empathy*, a process commonly considered in history education. Our study adds additional cognitive processes that historians found valuable, including: *looking for relations to other phenomena, considering the relationship between the whole and the parts, considering how historical phenomena get underway, considered how historical phenomena changed*

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<sup>4</sup>We use the word *theme* (differentiated from the word *category*) here because while some of the themes are formed from singular categories that emerged from the coding, other themes are a combination of two categories.

over time, and looking for both regularities and variations that they could write about. All of these are useful strategies or processes for developing and improving historical ideas that could be added to strategies featured in IBL curricula in history classes. (See [Online Supplement 2](#).)

To write histories, historians must obviously *read* both primary and secondary source materials, *write*, and *revise*. Because most studies of expert historians have been limited to asking historians to analyze and interpret a small number of assigned documents, these studies have not addressed the fuller range of historians' reading and writing processes. The historians in the present study emphasized a broad range of processes in these categories. Further, the historians mentioned some particular processes that have been less commonly emphasized in IBL in history, such as *starting writing from a theoretical standpoint*, *adjusting perspectives* during revisions to see things in new ways, and *changing the core question or premise* to better fit the ideas that are being developed (see [Online Supplement 2](#)).

### ***Epistemic processes less discussed in previous research***

Next, we discuss at greater length five themes of historians' epistemic processes that are relevant for the development of IBL in history education, but that have been less emphasized to date. These are: collecting and archiving materials; using and understanding tools and languages that mediate historians' epistemic processes; recognizing affect and virtues in historical research; broad approaches and methodologies; and the social processes involved in historical research.

#### ***Collecting and archiving materials is an integral part of the practice of historiography***

Before working with research materials, historians first need to locate and select the ones relevant to their projects and exclude those that are not. Accordingly, historians referred to the collection of data or materials as part of their epistemic practice. They *searched for and explored sources and archives*. Archives were both collections to look for (i.e., the objects of search) as well as spaces in which searches and some analyses were conducted. Historians' searches involved browsing and skimming through different archives, libraries, their collections, and series of documents in them:

[I]n the beginning there was of course the kind of phase when I needed to go through those sources and find out what has happened and what kind of sets of materials exist and where. I have run around archives and image archives. (H15.41)

Now I have not used archival sources at all but instead, I surf around libraries and look for printed source material. (H12.40)

In many cases these processes were conducted digitally from historians' homes and offices. *Copying materials* selected as sources was often done by taking photographs or other digital copies. Although some archival facilities still required the historians to make photocopies or simply write down everything relevant, other archives allowed historians to operate digitally:

Nowadays one can take photographs in many archives and libraries. And what previously needed to be written down, it is now in different kinds of cloud services as images, this material. So, this is a kind of change that has not been much explicated in historical research, but we all know it has been a big one. (H13.45)

Some historians described detailed protocols for *organizing and relocating their own notes*:

I have developed this system for archives, especially when I am abroad. ... First, I go through it [the selected set of documents] quickly for an overview. So, if I have around 10, 15 or 20 folders, I have a week, so I need to see how to get the optimal benefit from it. Then I have gotten to know it, and I put these kind of notes in between them. Then I go through them more systematically and make a kind of summary of it, about what this contains. And then I photograph it. Then I go through them, and through that list of contents I mark the days I have photographed them. (H7.42)

I organize those notes according to the work order I will need them. Then I take those thoughts into the text, and take it aside. I archive that paper. I rarely throw out anything like this. There can be something relevant for a later stage, so this creates quite an extensive kind of research archive. (H3.62)

Finally, some historians mentioned collecting material around—not only about—their topic of interest, to be sure they have been comprehensive. This also allowed them to develop a better contextualized understanding of their topic, and it afforded greater flexibility later on when *deciding on the scope of material*, in case the original limits of one's focus needed adjustments:

That archival material is quite scattered. So, everything that I would like to do is probably not possible. I will have to start narrowing it down somehow, and to think about how to narrow it down. (H16.45)

In sum, for the interviewed historians, the practice of historiography also involved searching and finding relevant materials. This includes both locating places (such as archives) that hold relevant sets of materials, and searching and browsing in those locations. Documents or other materials are not sources *as such*, but are accorded that status through the agency of someone selecting and using them in that manner. This selection process is central to the practice of historiography; choices of what to select as sources shape the interpretations of past events and phenomena. The interviewees also referred not only to selecting their sources, but also later on adjusting their decisions by narrowing or widening the scope of sources to be used. Such decisions were made in tandem with specifying research questions, aims, or hypotheses.

### ***The practice of historiography is mediated by tools and languages***

This theme combines the use of tools and language, which is viewed as a kind of tool in sociocultural theory (e.g., Wertsch, 1998). The historians discussed both kinds of tools. To begin with, some of the historians discussed processes related to *deliberating with and about languages*. This provides an important addition to prior work on expert historians' practices, which has previously focused largely on English-speaking scholars. In Finland, for example, there are two constitutional national languages (Finnish and Swedish), while international audiences can best be reached with publications written in other languages. Historians emphasized their need to be able to read, interpret, write, and publish in several languages:

And as a Finnish historian this also has to do with language. Which is, in my opinion, a big factor. I write quite evenly in three languages, and then sometimes even with a fourth one. And I aim to read with even more languages. So, I guess it is kind of part of that professional skill, learning to write. And I am quite ambitious in that linguistic expression because I think it is such a central part of historians' research results. (H26.24)

Some historians also referred to tensions related to their language choices:

Probably it will be in English, because that first one [book] was in English as well. The international audience is there the most important. If I write it with one of the domestic languages, Finnish or Swedish, it would be labelled as propaganda to either direction. So, since it is a sensitive topic to some extent, it has to be done in English also for that reason. (H3.46)

Similarly, some historians brought up working with and publishing in specific languages as important choices amidst larger projects or individual studies:

And that language question is central there. It has even slowed down my work because at times I have not been able to decide which language to write in. ... This environment where I work, it supports English language publishing all the time. ... And then again, whether I write about him in Finnish or English, it has a very different kind of, the way it is structured ... Because in the Finnish context, and participating in the Finnish discussion, different kind of things are interesting than if he would be dealt with as a kind of "case" in some larger international context. (H23.42, 50)

*Using tools* refers to historians' use of concrete objects, artifacts, devices, and software for some specific research-related task. Historians discussed computers, tablets, mobile phones, cameras, various software, and handwriting as relevant for their work:

I have noticed that directly from my index finger to my brains there is some kind of a line that helps me think. When I write by hand, I have to somehow become more aware of it. If I write with the computer, I can write with my ten fingers so fast that I don't have to think about it. But by hand it goes somehow more slowly and smarter, so that more thoughts come to mind. (H16.55)

Some historians also described in detail the systems they had developed to use different tools for writing notes as well as collecting and organizing materials:

I have a software for my literature database, to which I make notes about literature. ... So I try to make notes about research literature so that they cumulate for me in the reference database, and then I can go back to those materials. If possible, I prefer first writing notes of research literature into Endnote and only then begin to write worked-through remarks into that manuscript ... Then I have had my own card index database for notes made from archival sources. (H21.39)

In sum, languages and tools mediate historians' epistemic practices in significant ways. First, our findings suggest important aspects of linguistic mediation. Knowing different languages enables and restricts historians' access to specific kinds of source materials, and using specific languages has consequences for historians' own reasoning as well as for the audiences they may reach with their work. Second, the practice of historiography involves various mediating tools through which historians search, access, and use their materials. Historians discussed the advantages of using both more traditional tools (sticky notes, notebooks) as well as electronic devices (tablets, cameras) and digital tools (software) for their work. A focus on historians' tools allows better recognizing such dimensions of knowledge production.

### ***Virtues and affect support and challenge the practice of historiography***

The third theme relates to virtues and affect. Virtues can be viewed as faculties or processes that are reliable at producing knowledge; for instance, honesty is a virtue that quite evidently makes error less likely and trustworthy knowledge more likely (see Baehr, 2016). Emotions or affect can also play a role in the cultivation and exercise of virtues (Zagzebski, 1996), and so we discuss affect here, as well.

A majority of the historians mentioned virtues that are needed in the practice of historiography. Historians referred to several kinds of virtues as part of and impacting their research practice. Specifically, the historians mentioned *honesty*, *carefulness*, and *curiosity* as important virtues for historians. They also mentioned *cognitive flexibility* and a *tolerance of ambiguity*. Some historians challenged strict notions of disciplinarity by characterizing historiography through the virtue of *interdisciplinarity* (or trans-, cross-, or multidisciplinarity)<sup>5</sup> in terms of being able to work with ideas and approaches from other fields as well as being open to collaborating with other disciplines:

[W]e are not only interested in what the discipline of history is doing, but we are ready to cooperate with whoever in a kind of 'catch it where you can' mentality. And this applies to methodological and theoretical matters. We are strongly seeking for cooperation also in terms of content, and are not only trying to deepen and sharpen our own perspective. (H5.88)

In addition to operating across disciplinary boundaries, some historians referred to the virtue of *pluralism* or diversity in terms of having the ability to use and combine different theories, methods, emphases, values, levels of analysis, questions, and types of sources. These could be from within a single discipline and thus pluralism was distinct from multidisciplinarity.

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<sup>5</sup>In a deeper examination of interdisciplinary practice, Nersessian (2022) has also considered interdisciplinarity in terms of a set of epistemic virtues (such as interactional expertise and epistemic awareness), but we limit our analysis to discussing it as a single virtue at a more general level.

Considered as a virtue, pluralism implies here both a descriptive stance regarding there being many valid and valuable kinds (of methods, theories, emphases etc.) as well as a relative preference and versatility in operating with such plurality.

Every historian should also have a kind of level, where they ask about the kind of change that was going on in the society, and how these events and phenomena—which can be exciting as such—contributed or hindered or were otherwise connected to that change. ... One should have a kind of macro perspective involved. And vice versa, with just a macro perspective ... one cannot produce any good explanations for events. (H4.34)

When thinking about history and its significance, maybe it would be good to accept a kind of diversity of values, so that we would not build a too strong canon but instead, accept that historians have diverse commitments and that sometimes some kinds of emphases are more relevant than others. (H21.60)

The unpredictability of investigations and the indefinite nature of the knowledge maintained through historiography was seen to require virtues such as a *sense of relativity*. *Criticalness* toward different kinds of theories, societal critique, or critical view on research materials was also considered a virtue:

[T]he deeper I go into that material, the harder it is for me to make some conclusions because I become increasingly critical ... towards the material. ... Each time one can say “yes, but”. ... I believe that if we are empirically careful, critical, and so on, we can gain knowledge about something. (H24.26, 54)

Historians also described emotions and affect as part of their practice of historiography. Thus, in line with our extended view on epistemic processes, we include them in our analysis. In our interviews, some historians described *excitement* as part of their research process:

A historian must have a great passion to their own topic. Otherwise it will not turn out as, not to say as good, but it will not be the same. That’s why it’s so great that one can select. (H26.106)

One historian described *regulating and reflecting on emotions*, emphasizing the need to recognize one’s own emotions both when working on a long research project, or when addressing research topics that could arouse specific kind of emotions:

[I]t was massively boring when I went through the material. It became so, that you don’t even want to look that way. So, the pleasure related to those materials disappeared. Which probably belongs to the research process, that you have to grind through them quite a lot. ... And then again when research continues for a while, then you can find that joy again, and perhaps from a slightly different perspective. ... It’s part of the professional skill ... to be able to inspect things through a certain kind of balance and dispassionateness, and to be able to discuss them critically. But not in a way that you let your own emotions lead that research. Of course, those emotions must exist, but they also need to be explicated as part of that process. But not in a way that it is the starting point to that [study]. (H10.60, 68)

In sum, the interviewed historians discussed virtues and affect when characterizing their epistemic practice. Historians referred to virtues such as criticalness (in terms of both evaluating information and theories as well as societal critique), carefulness, pluralism (relating to the ability to work with various different kinds of sources, theories, methods, and levels of analysis), and an interdisciplinary mindset. In addition, awareness of and reflection upon historians’ affects may also say something relevant about the process of forming historical knowledge. At least this reflection seems important for historians themselves.

### ***Broad approaches and methodologies guide and structure inquiries***

IBL in history frequently centers source analysis, source interpretation, and integration of information from various sources as the core of the method of historical inquiry. And, as we have seen, historians did indeed describe processes of source evaluation, interpretation, and integration as central to their work. Yet historians also spoke of broad approaches and methodologies that guided their scientific work. In this we include such (partly overlapping) approaches as general heuristics, methodologies, and research designs as guidelines or rules running across several stages

of research or even an entire study. For instance, rather than proceeding in a strictly linear fashion from one research phase to another, many historians mentioned going back-and-forth with different phases of research or progressing through a *cyclical* (or spiral) *process*, sometimes referring to ideas from hermeneutics (i.e., philosophical theories of interpretation):

Phenomenology and hermeneutics have kind of been my starting points. Precisely that idea about the situation of interpretation: how you ask impacts what you get out of the material. And that is a dialogical process where the material speaks to you always in a different way as your understanding grows. ... In the research process there revolves this kind of spiral movement ... that ... continually cumulates into the knowledge I have and how I write about it. (H10.26)

Historians spoke of different kinds of *research designs and methodological approaches*—sometimes in ways that guided analyses, and at other times in ways that structured entire investigations or even careers (e.g., through seeking research ideas, materials, questions, and so on). These included quantitative or qualitative research traditions, network analysis, microhistory, or comparative research, among others:

I decided that ... I want my study to have a clearly microhistorical element, that is, an idea about how through individuals and small groups ... to shed light on larger phenomena and the interaction of individual and society (H18.22)

Comparative research, which I started doing in my dissertation ... it has changed my conception of many things and I cannot turn it off once I have taken it up. ... I have a strong internalized comparative thought (H23.24, 62)

Historians also discussed broad approaches to positioning themselves toward the studied topics. Historians try to *choose or maintain interesting foci, start projects inclusively or skeptically, distance themselves from the topic*, or, as in the following quote, *grasp emerging topics* as the investigation proceeded:

I kind of have no plan for how to do this like “check-check-check” [gesturing strict linear phases] ... [H]istorical research is—and almost needs to be—pretty much ad-hoc. If one were to know beforehand how it would go, then ... one could start writing that book immediately. ... Every day one kind of decides that, okay, based on yesterday, this is what’s to be done today. (H14.55)

Some historians considered it important to take enough time for the investigation and *progress slowly* rather than fast, as well as to recognize when to *let go of projects* (e.g., when they are finalized or when they fail). Many also mentioned different kinds of *ethical considerations* as overall approaches guiding the work:

First of all, I am interested in research ethics in the case of this topic because this is a very vulnerable group of people. So, how can I as a historian tell about their life in an ethically right way, because the material is very rough. And I am not going to anonymize but instead, I must find other paths. (H20.38)

One historian especially considered it essential to *reflect on the conditions of doing* (one’s own) *research*:

[W]hat different possibilities there are when doing interpretation, and what kind of interpretative spectacles one puts on, and why. So, to think precisely about the conditions for doing research. ... [H]istorians who do research sponsored by firms, they must have the freedom to bring about the unpleasant matters there ... [T]here must be that freedom to be critical, and that must be held on to, and it needs to be there in the premises. If not, one must not conduct the work. (H10.22, 68)

In sum, historians reflected on several broad methodological approaches that guided their epistemic processes. Those mentioned clearly go beyond the sourcing strategies frequently emphasized in IBL curricula. Historians also formed and reflected on research designs and analytic approaches that framed their investigations, and were involved in ethical reflections throughout the course of their practices, relating, for example, to just treatment of living and dead subjects in their work and considerations of the conditions under historical investigations are conducted.

### **Explicitly social processes constitute a major part of the practice of historiography**

Knowledge is created socially, drawing on others' ideas, collaborating with others, and developed with an eye toward audiences. Thus, we assume that all the epistemic processes the interviewed historians name include a social aspect. Still, some of the historians' representations of epistemic processes explicitly highlighted the social dimension.

Historians often mentioned *collaborative work* in general, as well as—more specifically—*collaborative writing*:

In that final chapter of our book, which we wrote really quickly, and [COLLEAGUE] was in [CITY] for a few weeks last year when we put all the pieces together and wrote the introduction. (H24.50)

Another typical social process was to *consider one's audience* (e.g., domestic, international, historians, other specialists, lay people, or children) while conducting one's work:

[I]f I write an article for a non-fiction book, then why not develop at the same time a more academic question, and ... at the same time I can think of an article to edit from it for an international public. With national/domestic material it is always a challenge, how to form the kind of question that is somehow meaningful (H17.40)

[Teaching] forces me to think about big questions, [or about some main threads in some book that I am writing, and to test how well it opens up to others. (H22.64)

Various kinds of *discussions* were often mentioned, including discussions with members of the public in addition to collaborators and other historians.

So, this is the historian's answer: I have read. But of course, I have also aimed to listen, to discuss with people who know about the topic. ... For example [GROUP] have a lot of knowledge about their own past. And when I have held lectures, people have come to chat and tell me their experiences and given tips about sources and so on. So here again we get to this interaction and its significance. (H13.43)

Through interactions with others, historians *received feedback* for developing their work. One historian also indicated how the choice of studied topics may be partly guided by the possibility of working in a less solitary setting where one can think through speaking:

Nobody in my immediate surroundings is doing this kind of research, so it is always so great if I get to discuss with other people in some project. ... One important thing always is to find peers, and that is why one should choose the kind of research topic that relates to some project around which there are other people. Because the work is so much easier when one can bounce thoughts around and discuss with others rather than dribbling with them alone. Because that "word mouthing" of course always takes the thing forward. (H12.44)

Historians described interacting with others through their choice of research methods, such as *interviews and questionnaires*. In addition to collaboration with peers, historians also sought *the help of non-peers* (e.g., students), or *archivists and librarians*. One historian also mentioned a darker aspect of their work: because of their research topic, they had been harassed, and even received death threats via phone and email. This then required seeking help from colleagues with similar experiences about how to *deal with public harassment*.

In sum, historians used a variety of processes that were fundamentally and explicitly social. Such processes involve interactions among peers, as well as other professionals and the general public.

## **Discussion**

In this article, we have reported on an empirical interview study investigating the epistemic processes that historians describe in their own words as part of their own research projects. We aimed to broaden the base of empirical research on the practice of historiography, and through this, strengthen the empirical basis for IBL in history education. Our analysis identified a very wide

range of epistemic processes relevant for producing historiography. Some aligned with processes identified in previous research, while often elaborating and extending these processes. However, a significant number of the epistemic processes we identified were not emphasized in previous educational research on historians' thinking.

### ***Extending the scope of epistemic processes considered in history education***

This study corroborated a number of reliable processes for historians that have been discussed in earlier studies: source analysis; corroboration; cognitive techniques (such as asking questions, constructing arguments, or engaging in empathy); and processes of reading, writing, and revising (e.g., Leinhardt et al., 1994; Leinhardt & Young, 1996; Rouet et al., 1997; Schneider & Zakai, 2016; Van Drie & Van Boxtel, 2008; Voet & De Wever, 2017; Wineburg, 1991). However, we also identified some specific processes that extend the above-mentioned categories. For instance, within the category of source analysis some important additional epistemic processes include visual and quantitative analysis. Historians also pointed to a valuable range of cognitive techniques that have not been discussed previously and that should also prove useful in IBL in history. These include, for example, considering how historical phenomena get underway, analyzing important changes over times, and searching for regularities and/or variations in the phenomena under investigation. Among writing strategies are the processes of writing from a particular theoretical standpoint and adjusting perspectives while writing to see things differently.

We also identified a range of additional epistemic processes that historians considered important for their practice but that have not been centered in IBL in history education thus far. We clustered these epistemic processes into five themes: collecting and archiving materials, considering the tools and languages as mediators in epistemic work, considering the affects and virtues of historical research, considering broad approaches and methodologies, and considering the social processes involved in the practice of historiography. We believe all of these can have significant input for the development of IBL in history education.

First, IBL in history should be expanded to include the core processes involved in searching for relevant materials that might be used as sources (for other inquiries into such processes, see, e.g. Carminati, 2019; Duff & Johnson, 2002; Hall, 2018; Korkeamäki & Kumpulainen, 2019; McGrew, 2022). Generally, selecting sources requires historians to find solutions to address the overflow (see, Fellman & Popp, 2013) or abundance (see Milligan, 2019) of information in archives and other locations. When asking questions about personally and societally relevant matters, laypeople must also begin by locating and choosing relevant sources; IBL in history could help them learn to do so (see Monte-Sano & Thomson, 2022). In addition, while various aspects of archives and archiving can be complex, some basic ideas (e.g., the mediating role of archives, collaboration with archivists, and power relations involved in archiving) can surely be addressed in history education (e.g., Cutrara, 2019; Hangen, 2015). It is also possible to bring simulated archives into schools or to access online archives. Archiving is after all a practice that takes place in some form in contexts already familiar to students, such as schools themselves (e.g., school records) or homes (e.g., parents collecting and arranging photographs of their children). To give examples of possible educational uses of archives, students might discuss what even counts as an archive. What materials are *not* archived? Which are archived in inaccessible ways, and how might this be taken into consideration in the study of a specific historical topic? How might biases enter into what is archived?

Second, the practice of historiography is mediated by languages and tools. While discussing publishing in different languages and in different (e.g. academic or more “accessible”) styles, Laveaga (2020, p. 441) argued that “[i]n the battleground of who gets to narrate history, *how* to write and speak is as important as what is researched.” Such tensions in language politics are relevant to history education, and especially so in many postcolonial or post-conflict contexts (see,

Psaltis et al., 2017). Fogo and Breakstone (2019) argued that IBL approaches are especially suitable for addressing difficult histories. In such settings, history educators may want to also consider language-related issues as part of such guided inquiries. In higher education contexts, teachers might consider allowing students more agency in choosing languages of their inquiries and have them reflect on the preconditions and possible consequences of their choices, as well as the political tensions that are involved.

We also found that historians' epistemic processes were characterized by the use of very practical tools and their restricting and enabling characteristics. Discussions about the practice of historiography have increasingly addressed digitalization and digital tools and how they have changed the nature of archives and analyses (e.g., Milligan, 2019; Salmi, 2021; Schwandt, 2022). Yet in educationally oriented studies of expertise in history, the topic has not yet received much attention (see, however, McGrew, 2022). Koolen et al. (2019) proposed that in addition to more traditional notions of source criticism, historians also need what they called *digital tool criticism*. Thus, in addition to asking "who," "what," "where," "when," and "why" questions about the creation of materials used as historical sources, one should also ask questions regarding the tools used for accessing and processing the (digital) sources, such as "who made the tool?," "why was it made?," and "how does the tool function?" (Koolen et al., 2019, p. 373). Such questions seem extremely fruitful also for IBL in history education.

Third, historiography is connected to virtues and affects. As for virtues, historians referred to such virtues as criticalness, carefulness, curiosity, sense of relativity, cognitive flexibility, and tolerance of ambiguity. Importantly, historians emphasized different forms of interdisciplinarity as part of their practice (see also Jordanova, 2019). These included opening up research questions for other disciplines, collaborating with people from different disciplines, getting trained in many disciplines, and applying theories and methods from different disciplines. Historians also referred to the virtue of pluralism—the capability of using and combining different theories, perspectives, methodologies, source types, tools, and levels of analysis; this could be from within the discipline of history or could involve multiple disciplines (overlapping with interdisciplinarity in such cases). The fact that interdisciplinarity is not often a part of IBL practices in history likely stems from several origins. For one, disciplinary framing is an obvious match with subject structures of education more broadly. For another, many of the influential studies conducted with historians (e.g., Leinhardt & Young, 1996; Wineburg, 1991) were conducted decades ago, and it is possible that interdisciplinarity was not yet as common aspect of historiography—or the discourse about it—as it may be today. In addition, the earlier work focused on such details of historians' activities (e.g., reading and comparing individual documents) that may be less likely to highlight the interdisciplinarity of the work in comparison to this study. IBL designs could enable crossing over such disciplinary boundaries at later stages of history education, after students understand different disciplines that might be combined in fruitful ways.

IBL in history can also acknowledge the emotions and affects related to historical study. In the theory of history, emotions or affects are often considered an integral part of the practice of historiography (e.g., Barclay, 2018; Rossi & Aarnio, 2012; Rösen, 2012). Arguments for including emotions as part of IBL have been suggested in both science (Jaber & Hammer, 2016) and history (Goldberg & Schwarz, 2017). Thus, in addition to better connecting IBL in history to expert practices, recognizing emotions or affects seems relevant both to motivating students and helping them learn to regulate emotions when addressing divisive or controversial topics. Learning to 'feel like a historian' might then imply that by "encouraging students to linger in inquiry and by helping them recognize, reflect on, and manage their feelings, teachers can help students develop productive meta-affective stances and dispositions." (Jaber & Hammer, 2016, p. 215) In this, history educators should also be aware of how different instructional practices "moderate and influence the relations of emotion and reasoning" (Goldberg & Schwarz, 2017, 16) in varying ways.

Fourth, historians' investigations were framed by various broad approaches, research designs, analytic perspectives and methodologies that guide the more detailed aspects of their work. The historians also referred to ethical reflections throughout the course of their practice. Although these aspects have already been considered as part instructional designs in history classrooms (e.g., Löfström et al., 2021), they have not been foregrounded as core to the construction of historical models in discussions of IBL in history. We believe that better acknowledging these kinds of epistemic processes is, to some extent, a matter of reframing existing activities. In addition, history students could learn about some approaches as well as to distinguish between different broad approaches to historiography (e.g. macro/micro perspectives, using theory to guide inquiry, considering the degree of authorial distance); these could prove useful when students compare and evaluate historical accounts by students. However, some of these, such as exploring more nuanced methodologies, may be better to reserve for higher levels of history education.

Finally, the practice of historiography is thoroughly social. While collaborative inquiry and engagement with communities has been at the core of IBL generally (Duncan & Chinn, 2021; Hmelo-Silver et al., 2007) and to some degree in history (van Boxtel et al., 2021), IBL in history has not explicitly emphasized that historians collaborate and engage with communities (see, however, Monte-Sano & Thomson, 2022). That is, while instructional designs based on IBL have included working together with others, the typical processes considered to represent core facets of how historical knowledge is constructed (e.g., Voet & De Wever, 2017) do not commonly emphasize such social processes (see, however, Seixas, 1993). Nor have studies of historians (the present study included) involved designs that examine in detail the collaborative and other social processes of historical inquiry (see, however, Schneider & Zakai, 2016). Because collaboration is often already included in IBL designs, it should be only a small step to explicitly treat collaborative practices as core to historical knowledge development. For example, IBL environments could emphasize processes of peer feedback cycles, writing history collaboratively, and engaging with various publics. Some inquiry projects in history have already focused on students' guided collaboration with scholars and in community engagement (Goldenberg, 2019); further explorations of how historians collaborate and engage with publics could further enrich IBL designs in history education.

Above, we have discussed why and how some additional features of the practice of professional historiography could be incorporated into IBL in history education. We do not suggest that teachers of younger students should address anything close to the full range of epistemic processes we have discussed. However, in the longer continuum of history education (from earlier to later stages of K-12 and through higher education), educators might consider expanding inquiry designs to better account for the range of activities involved in the practice of historiography. Our argument is not that these aspects have never had any role in IBL or other history education approaches. Instead, our argument is that in IBL approaches to history, these aspects have not been taken as central aspects of the practice of historiography, nor have these expert practices been studied empirically by educational researchers in pursuit of models of historical inquiry.

Our focus in this paper has been on regrounding IBL in history through an interview study examining a broader variety of historians' epistemic processes. However, it is not possible to translate every process that historians use meaningfully into IBL. Moreover, history teachers may address the narrower range of epistemic processes already emphasized in IBL models only in a "fragmentary" or "cursory" manner (Voet & De Wever, 2017; see also Koutsianou & Emvalotis, 2021; Puustinen & Khawaja, 2022). Thus, to avoid expanding the range of relevant processes too far, we have aimed to compress our findings into some core elements that at least might be considered.

All of this does not mean, however, that education should remain silent about processes that are not incorporated into IBL designs. On the contrary, it may be very important for students to learn about professional practices in ways that reach beyond conventional idealizations (see Philip & Sengupta, 2021). In learning about such aspects of expert practices, other educational approaches than IBL may also prove valuable. For example, in a study by Tala and Vesterinen

(2015), teacher students learned about the nature of science and modeling in a contextualized way by interviewing researchers from various fields of science. Such an approach could be also used for learning about the epistemic practices of historiography by having students interview historians, and it could also allow taking up hidden, silenced, obscured, or undesirable aspects of professional practices in ways that also allow for collaborative normative reflection (i.e., classrooms asking together questions such as “Is this how historical research should be like?”).

Theories of historical consciousness locate historical thinking or the practice of historiography as one part of a complex set of dispositions that is also tightly connected to orientations and conclusions related to the past, experiences of the present, and expectations of the future (Körber, 2021; Seixas, 2017). Thus, the kind of extended empirically-based understanding of the practice of historiography we have suggested could provide interesting investigations into historical consciousness as well. Essentially, our findings should be valuable for any history educator—regardless of the instructional approach—who is interested in addressing what Chapman (2024) terms the *meta-historical aspect of learning history*: developing “knowledge about how we construct knowledge of the past—e.g., understanding historical inquiry” (p. 3), and not simply knowledge about the past. Even educators applying a more direct instruction approach can gain from these findings. For example, history educators can develop pedagogical model representations of a few real or imaginary historians with varying dispositions and settings (i.e. historians with varying research aims, questions, as well as historical, political, social contexts) presented together with their implemented epistemic processes—which would to some degree vary between the historians. Such models could prove valuable for deepening students understanding of the range of epistemic processes—as well as other components of epistemic practices—within and beyond IBL.

### ***Limitations of the present study and suggestions for future research***

We acknowledge some limitations of our empirical work. To begin with, using an open-ended interview approach, we were likely to miss the kind of detail that many earlier studies were able to address in their studies where historians read and interpreted documents. For instance, in the kind of discourse produced and analyzed in our study, sourcing and corroboration both merged into broader notions of source analysis, source criticism, or critical reading of sources. In this study, our focus was not so much on the concrete steps of source analysis (despite the undoubted importance of this) but rather the variety of means through which historiography is practiced in actual research projects.

We recognize epistemic processes as part of intentional practices and see them as intertwined with the aims historians set for their work. For example, some inquiries of historians may emphasize more the development of new ideas or challenging existing interpretations, whereas others may emphasize more aims related to the dissemination of one’s findings or bringing about societal change (Kainulainen et al., 2022a). The choice of specific aims will certainly influence the epistemic processes involved. As our purpose in this study was more on exploring the range of different epistemic processes, future studies could investigate the linkages between epistemic aims and processes by, for example, following a handful of historians working on their projects. Based on our theoretical and empirical work, it seems likely that historians with different kinds of (more or less) epistemic aims (e.g., emphasizing the aim of popularizing research over the aim of developing one’s own epistemic competences) and ideals (e.g., emphasizing lay interest over originality) will differ to some degree in terms in the epistemic processes implemented in order to fulfill such outcomes (Barzilai & Chinn, 2024; Kainulainen et al., 2019, 2022a, 2022b).

Further studies in different subfields and research settings would likely challenge, validate, or extend some of our findings. For example, some historical subfields are more theory-intensive than others (e.g., work that engages with memory theory, gender theory, or postcolonial theory; see, Partner, 2013), and the role of different theories can vary across different settings in which research

is conducted (e.g., the ‘postcoloniality’ of postcolonial theory is rooted in different ways in former colonizer/colonized contexts or across Global South/North or Non-/Western divisions; see Chakrabarty, 2000; Ohara, 2022). The range of biases in the basis of research on historians is important also for designing history instruction since, as Smith (2020) has argued, educational approaches to historical thinking have been almost exclusively characterized by Western forms of scholarship. Furthermore, in our study, as well as in much of the previous educationally oriented studies of historians, the participating historians operated in the institutional context of academia. Many expert historians indeed work in the academic context, and universities’ meritocratic systems provide a convenient way for researchers to monitor the participants’ education and work experience through degrees, publications, titles, and so on. However, many historians work outside academia—and this includes historians with societal influence and wide readerships. Thus, future research on expert historians should extend beyond academic contexts, as well as beyond Western contexts, in order to improve the scope of empirical studies on the practice of historiography.

Since the 1970s, sociologists and anthropologists have observed—and have sometimes even participated in—natural scientists’ activities, interaction, use of tools, and other aspects during actual scientific practice authentic settings (e.g., Knorr-Cetina, 1995; Latour, 1999; Lynch, 1985). From the perspective of science education, such ethnographic research has been highly influential for the extensive body of science education approaches centralizing IBL or scientific practices (e.g., Duschl & Tahirsylaj, 2021; Erduran, 2015; Roth & McGinn, 1998). Turning to studies of historical research, the contrast is striking. As Fox and Maggioni (2018) noted, empirical research of multiple source use has not investigated historians’ work in the context of their own historical inquiries. Furthermore, empirical studies have seldom investigated historians’ practices beyond multiple source use. Tran and Noël (2018) observed that despite the vast richness of topics that anthropologists and ethnographers have pursued, “there still doesn’t seem to be anything resembling a full-fledged ethnography of historians” (p. 51). In a similar vein also philosophers of history have urged more studies of historians at work. Paul (2011) called for the kind of empirical scholarship on historiography that would move beyond the historians’ published output to investigate the practices and epistemic cultures through which historical writing is produced. More recently, Paul (2021, p. 172, italics in original) suggested extending questions from the “aesthetic, moral and political aspects of historical *writing*” into “how this writing emerges out of historical *studies*—historians’ habits of reading, note-taking, thinking, corresponding, collaborating, teaching, supervising and reviewing (not to mention writing grant applications).”

We, too, see this as an especially valuable direction to take for future research on historians and the practice of historiography. Some researchers have already taken important early steps in this direction, such as the ethnographies of Lamont (2009) on professors in funding review panels (including reviews of history projects and reviews by historians), Antonijević (2015) on digital humanists’ (including historians’) research practices, the autoethnographic papers by Carminati (2019) and Hall (2018), and Stanley’s (2017) elaboration on the range of archival research practices. In addition to the educational implications, we hope our findings also suggests ideas for the kind of activities, environments, or units that might be fruitful to focus on more detailed investigations of historians’ situated epistemic practices.

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