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Lisa Zachrich(iD), Allison Weller(iD), Christine Baron(iD) and Christiane Bertram(iD)

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Historical experiences: A framework for encountering complex historical sources

Lisa Zachrich – *University of Tübingen, Germany*
Allison Weller – *Teachers College, Columbia University, USA*
Christine Baron* – *Teachers College, Columbia University, USA*
Christiane Bertram – *University of Konstanz, Germany*

Abstract

We encounter information about the past in everyday life through films, books and complex historical sources – such as historic sites or eyewitness accounts. Investigations of how visitors and learners engage with these complex historical sources have mainly focused on the 'something special' of the encounter on the one hand and on the clear cognitive engagement on the other. Yet, we know little about what and how learners and visitors learn from these complex historical sources and the resultant historical experiences. However, it is an important precondition for further theoretical and empirical research to fully understand these experiences. This article takes the first step in building an integrated model to understand from a situated embodied perspective the *historical experiences* derived from encounters with complex historical sources. Drawing on German- and English-language literature across related disciplines, we conceptualized the experience within an interplay of cognitive, affective and physical engagement. Within these dimensions, we identified responses that indicate the different elements of the historical experience and discuss limitations and avenues for further research.

Keywords: historical thinking; embodied learning; situated learning; historical consciousness; historic site; eyewitness of the past

Introduction

In daily life, we are inundated with information about the past. We encounter history in historical narratives in television documentaries, films, books and games with historical topics, and through *complex historical sources* – such as historic sites and eyewitness accounts of the past – that are comprised of multiple media and/or levels of interaction, and that engender intellectual, affective and physical engagement in the learner. Yet, we know very little about what and how people learn from these complex historical sources. Investigations of how people engage with complex historical sources have traditionally sought to explain the encounters as life-changing peak experiences (for example, Latham, 2013) or as atomized source work (for example, Baron, 2012). While these elements are both essential for explaining parts of the experience of engaging with complex sources, more integrated approaches (Endacott and Brooks, 2013; Wineburg, 2010) are needed to truly 'get at' the historical experience. Previous holistic models (Dierking and Falk, 1992; Hooper-Greenhill, 2004) offer generic outcomes for learning about museums, which are useful for thinking about the entirety of the

*Corresponding author – email: christine.baron@tc.columbia.edu

experience in museums, but do not capture the complexity of the unique disciplinary experiences that unfold when encountering complex historical sources.

While differences exist in the particulars of how people engage with complex historical sources, their motivation for doing so is the same: people seek out historic sites and eyewitnesses because they regard them as the most 'authentic' (Angvik and Von Borries, 1997; Jones, 2016; Rosenzweig and Thelen, 1998; Van Boxtel *et al.*, 2016) ways to connect directly to the people, objects or places that stood witness to the past because 'The bones are right there. The bones don't lie' (Rosenzweig and Thelen, 1998: 106). These encounters are primary experiences unmediated by a video/ computer screen or a text, rendering them distinct learning experiences (Greene *et al.*, 2015; Landström *et al.*, 2005; Ramlogan *et al.*, 2014; Reiß *et al.*, 2014). Attempts to discern and measure the effect of that sense of authenticity on learners, and build a pedagogy that builds on it or deconstructs it, are complicated by the disparate verbiage around it, and the ineffability of that which researchers are trying to define. Struggling to define that sense of *something* special about an eyewitness account or a historic place, researchers have generated an array of terms with overlapping meanings: 'aura of authenticity' (Sabrow, 2012, translated by the author), 'the numinous' (Latham, 2013), 'authentic' (Hampp and Schwan, 2014; Rössner and Uhl, 2012), 'authority' (Rosenzweig and Thelen, 1998; Trofanenko, 2006) and so on.

Further, the personal and subjective nature of that sense of authenticity further complicates the notion. For example, how does the learner encountering the piece of the True Cross at the Jerusalem Chapel in Bruges, Belgium, attribute its authenticity? Is it as a physical artefact that was present at the crucifixion of Christ or as a medieval relic about which believers over centuries have imbued greater meaning? Similarly, what is the proximity to historical events that an eyewitness must have in order to be considered an 'authentic' source? Did they have to physically be removing pieces of the Berlin Wall when it came down or merely have been in East or West Berlin to be considered to have 'been there'? Arguments can be made in either direction, and they rest on a multitude of subjective factors. While there is a general sense in the research literature that there is something larger happening when people engage with these sources, it remains tantalizingly unknowable, with descriptions veering closer to poetry than science.

At the opposite pole sits the discussion of source work in history education, which has largely focused on exploring the use of historical documents from a cognitive perspective (for example, Wineburg, 1991). While researchers are building on that work with other types and combinations of sources (for example, buildings: Baron, 2012; Gussmann *et al.*, 2017; documents and images: Baron, 2016; paintings: Glaser and Schwan, 2015; sound: Lee *et al.*, 2015), the pace and line of this work pose considerable problems for understanding what people learn from historical sources. Although this is a fruitful and necessary path for understanding these isolated sources, outside laboratory or formal schooling settings it is a rare occasion when individuals work with historical sources in isolation. Rather, the power of the experience of engaging with complex historical sources requires consideration of the full range of the embodied experiences – including the thoughts and emotions, and the sensory and physical engagement – that learners employ to learn about the past. Therefore, we must consider how individuals engage with the complex historical sources, and what that tells us about the *historical experience* and how that shapes learners' understanding of the past.

Although history education should enable students and educators to handle these sources competently, we know little about the actual effects that engaging with

historic sites and eyewitnesses of the past have on learners, besides some first hints on the particularity of these sources (Baron, 2013; Baron *et al.*, 2019; Bertram *et al.*, 2017; Savenije, 2016). Consequently, studies on the effectiveness of these immediate experiences with the complex sources on learning processes are needed. If we understand the components of these encounters better, we might be able to derive methods for educational practitioners to use these sources effectively, minimize the risks that acritical oversimplification poses and, thus, empower learners to become reflective citizens.

For the last thirty years, we have focused largely on understanding the cognitive underpinnings of historical sources. Specifically, this has meant using historical documents to assess individuals' historical thinking (Wineburg, 1991, 1998) or historical reasoning (Van Drie and Van Boxtel, 2008). While these and other researchers noted that there are affective elements of historical source work (for example, Sakr *et al.*, 2016; Savenije and De Bruijn, 2017; Zembylas, 2016) that are both inherent in and complicating our understanding of what people learn, extant frameworks do not offer a systematic way to consider these experiences working with historical sources. The work of two of this paper's authors (Baron, 2012; Bertram *et al.*, 2017) has focused on understanding what people learn from complex historical sources – buildings, images and eyewitnesses. With those contributions, we recognized the limitations of this line of inquiry about historical sources.

While these studies expanded the range of historical sources that researchers could consider, it became clear that even if we identified the cognitive underpinnings of how individuals work with every type of source found at a historic site or encounter with eyewitnesses, it would still not help us understand what people learn from the experience of being at a site or working with eyewitnesses. Rather, much of the power of these *historical experiences* requires consideration of the *situated embodiment* of the learner and the ways in which their experiences inform them about the past. Situated learning shifts the unit of analysis of learning from either the individual historical source or the learner towards an interaction between the individual and the source and/or environment in which it is set. These interactions encompass the cognitive, social and cultural contexts of learning (Cobb and Bowers, 1999; Greeno and Engstrom, 2014; Hutchins, 1995; Kirk and Kinchin, 2003; Nardi, 1996; Resnick, 1987).

Similarly, embodiment is 'grounded in the relationship between a system and its environment. The more [one] can perturb an environment and be perturbed by it, the more it is embodied' (Fong *et al.*, 2003: 149). Herein, embodiment is intended to highlight, in part, the frequently overlooked importance of the physical body and its role in the agency of the learner and the multi-sensory, multimodal interactions inherent in engaging with complex historical sources and associated historical experiences. While thought, affect and bodily sensations have distinct elements to them, embodiment speaks to the interdependence and interactivity between them: an idea (thought) might make us angry (emotion), which we express on our faces and a host of autonomic responses, such as quickening of the pulse or postural changes (physical; Maiese, 2014). Thus, while our framework attempts to delineate observable responses into cognitive/affective/physical responses that individuals have when encountering complex historical sources, we recognize that within the body, these systems work in concert.

The historical experiences to which we refer are direct experiences with historical sources not mediated by a video screen or an interpretative text (such as a museum panel) that prompt a larger consideration of that source's role, import or effect on historical events or persons. Standing on Omaha Beach, your feet sinking into the

sand as the tide rolls in, pondering how men in heavy gear could charge up the beach; listening to a Holocaust survivor describe what she felt when her camp was liberated; the brutal power of the noonday sun beating down on you, making visceral the inhumane treatment of slaves labouring on a Louisiana rice plantation – these are not purely intellectual experiences leading to the development of mental models. These are complex sensory interactions between the learner and the presence of the eyewitness or physical environs of the historic place, contextualized by the learner's knowledge of the persons and events of the past. More than just cognitive engagement, affective experiences or physical sensations, the complex interplay of all of these modalities plays a considerable role in understanding complex historical sources and the historical experience. Yet, we currently have no model or mechanism for assessing historic sites or eyewitness encounters as sources at that level of complexity. In essence, we are missing a deep understanding of how people experience these encounters with the past, which is a crucial precondition for encouraging historical experiences that engage a deep learning process.

The conceptual model offered in this paper considers learners' cognitive, affective and physical engagement with what we have termed *complex historical sources*. Due to the subjective nature of determining authenticity, we rest our delineation of complex historical sources – such as historic sites and eyewitnesses of the past – as being distinct from atomized historical sources – such as single documents – by their irreducible composite nature. Complex historical sources are comprised of multiple media and/or levels of interaction, and they engender an interplay of intellectual, affective and physical engagement in learners. In this article, we use examples from our own research into how people learn from eyewitnesses and historic sites to illustrate the model, although the model is applicable for use with complex historical sources beyond those examples.

Considerable work has been done to understand how individuals read historical documents and images (for example, Wineburg, 1991), and this work has been essential in shaping our understanding of how people learn history. The framework offered here is intended to consider historical materials beyond traditional text. However, in certain circumstances, documents would merit consideration as complex historical sources. For example, the US Declaration of Independence is a document that is housed in a grand rotunda in the US National Archives Building in Washington DC. In this instance, a visitor to the National Archives is likely to encounter the document as a historical or cultural artefact, rather than as a text for analysis. Here, the Declaration of Independence becomes a part of the complex historical source that is the National Archives Rotunda, and the *historical experience* of engaging with those materials in that place.

Additionally, we use the term 'engagement' to describe the range of possible ways in which someone could interact with a complex historical source – for example, talking to an eyewitness, climbing the stairs of the Duomo, analysing an artefact. Our model synthesizes research across multiple fields (including media studies, museology, anthropology, cultural geography and educational psychology) in both English and German to help us frame learning encounters with complex sources presumed to have some assignation of historical authenticity that is satisfying to the learner. Unlike other models that focus on historical thinking or consciousness, which almost exclusively consider cognition, this model, written from a situated embodied perspective (Dawson, 2014; Korthagen, 2010; Wilson, 2002), reverses the microscope and allows us to consider the holistic historical experience when encountering complex historical sources.

Research question

With the current article, we aim at taking the first step to understand learning with complex historical sources by building a conceptual framework to describe and define the learning experience in detail, its characteristics and the processes involved. We were guided by the following research question: What elements comprise the experience of encountering complex historical sources? From a situated embodied perspective, we argue that engaging with complex historical sources involves the interplay of cognitive, affective and physical experiences.

Method

To approach our research question, we conducted a comprehensive literature review, drawing upon a wide range of English- and German-language sources to identify and delineate the overlapping terms and their attributes, and the limitations that are associated with the complex encounter. Next, we held a series of small conferences in the United States and Germany, inviting researchers and practitioners across the educational, historical and psychological landscape to discuss the range of questions that arose around learning with complex historical sources and experiences. The first conference, held in Germany, brought together approximately ten researchers from a range of subjects, over the course of a week, to consider Walter Benjamin's (1965) notion of 'aura', and how the notion of the 'authentic' drove engagement and learning in history. From this, a smaller subgroup gathered three more times in the United States, and once more in Germany, to consider how to capture learning related to authentic historical sources and experiences, and thus to develop this framework. First, we conducted a systematic review of the research literature in history, social studies and museum education to identify fully articulated theories or frameworks related to what and how people learn history. To deepen our understanding of the educational research literature, we drew upon sources in philosophy, history, museology, medicine and beyond. From there, we used snowball sampling to identify empirical and theoretical literature related to the ideas or phenomena that were emerging as essential. As part of the refinement process, at each stage of development, external reviewers, including individuals who participated in the initial conference, were asked to provide feedback to help shape the framework. Our queries to the reviewers related to the clarity, veracity and coherence of the framework.

Finally, we synthesized the literature and discussions, identified crucial concepts from across different disciplines associated with the experience of interest, and built an integrated model. The constructs we used are deduced and defined by the respective discipline. For simplicity, whenever possible we used extant terms (for example, contextualization) that were already well-understood or had specific meaning in the field, rather than generating novel terms. Even within their respective disciplines, some of these constructs have ambiguous meanings, which made their use in our framework challenging. Our goal was to avoid overlapping constructs within our conceptual framework. Using respondents' accounts of their encounters with eyewitnesses and historic sites from existing data sets from our prior research, we tested and refined the model to ensure clarity in the categories.

The following sections give a brief overview of the key concepts and theories that inspired and guided the development of our framework. Drawing from the literature in media psychology, we adapted transportation theory (Green and Brock, 2000) and the model of narrative comprehension and engagement (Busselle and Bilandzic, 2008), both of which focus on the psychological processes and effects of narrative persuasion.

We identified the aesthetic encounter with artworks, researched by Csikszentmihaliy and Robinson (1990) through an anthropological perspective, as a framework for a similar experience. Also coming from anthropology, specifically anthropological museum research, we use Cameron and Gatewood's (2003) and Latham's (2007, 2013) work related to 'numen-seeking', which identifies the near-spiritual connection that visitors seek at historic sites and with historic objects. We took these considerations on the same topic (with regard to historic sites) as part of our framework, but we argue that we can add to this understanding through the consideration of cognition, emotion and embodied learning.

Another construct that we explored to develop our framework is the concept of historical empathy (De Leur *et al.*, 2017; Endacott and Brooks, 2013, 2018; Huijgen *et al.*, 2017; Savenije and De Bruijn, 2017). Situated in social studies education – in particular, history education in the United States – historical empathy describes the cognitive and emotional aspects of empathy, as distinct from purely human affective empathy, to foster learning about the past (Endacott and Brooks, 2013). Finally, we adapted the concept of presence, which describes a state of feeling to be in a mediated world without feeling the mediation. This concept comes from computer science and psychology, in particular virtual reality research (Frank, 2015; Lombard and Ditton, 1997). We argue that all of these different theories, as well as other constructs, contribute to a better understanding of the complex encounter with historic sites and eyewitnesses of the past, and, thus, we have synthesized them into the conceptual framework that follows.

We assigned the identified constructs to three main dimensions: cognitive engagement, affective engagement and physical engagement. While situated embodied cognition would subsume affective and physical engagement into cognition, our model flattens those distinctions and positions cognition as 'first among equals', so as to be able to identify observable behaviours or ideas across the range of possible responses.

We use the terms 'cognition' and 'affect', rather than 'thought' or 'emotions', as these terms are drawn from the affiliated literature and indicate a recognition of the greater scope that cognition and affect encompass, compared to just singular thoughts or emotions, as well as the underlying interrelatedness of these dimensions. For example, according to Zembylas (2007), affect encompasses an emotional and a physical response to stimuli (for example, crying at a sad film). Determining how to delineate the differences between when someone says 'I'm sad' (emotional response) and then begins crying (physical response), versus someone starting to cry and then squeaking out an 'I'm sad', or someone saying 'I'm sad', but not crying, or crying, but saying nothing, becomes something of an infinite loop. In short, we acknowledge the interrelationship of these feelings and actions, and we offer ways to categorize observable behaviours without severing the underlying interconnections between them. Further, from this stance, being able to denote either a physical or an emotional response in the absence of the other allows for the possibility of connection, but remains agnostic on whether those connections occurred in a particular instance.

 Identified within these three dimensions are differentiated responses to the historical sources that appear frequently in people's interactions with them. We understand these responses not necessarily to occur in every experience, but they display a range and constellation of possible responses that might happen. We partially renamed these responses and provide our own definitions to satisfy the specific needs of our context of complex historical sources. Additionally, we provide model statements similar to those used by respondents to help delineate the type of response each

category engendered, but also the way in which the participants positioned themselves in relation to the source – that is, at arm's length or standing in the shoes of – as that distance was critical for understanding whether they were engaging with the source in ways that were predominantly cognitive, affective or physical. Finally, we identify the unifying experience that draws together engagement across the three modalities. Although we tried to define the responses as distinctly as possible, they are, of course, interconnected. We acknowledge that an individual's responses are embedded within personal and situational characteristics: different learners might respond differently to the complex source depending on their multiple subjectivities and experiences; also, different complex historical sources will presumably lead to different qualities of historical experiences. The conceptual framework is displayed in Figure 1, summarized in Table 1 and will be explained in detail later in the article. Table 2 outlines the literature from which we draw our categories.

Figure 1: Conceptual framework of encountering complex historical sources

Framework for encountering complex historical sources

Cognitive engagement

Cognitive engagement is an important part of the complex experience of visiting historic sites and engaging with eyewitnesses. Almost all of the concepts listed above, no matter which discipline they belong to, contain a cognitive part: transportation, for example, occurs when learners focus their mental capacities to develop mental models about the narrative (Busselle and Bilandzic, 2008; Green and Brock, 2000; Sweller, 2010). Csikszentmihalyi and Robinson (1990) describe the intellectual response to an artwork

as a 'cognitive rush' that leads to critical engagement with the details of the presented story. The concept of presence implies a judgement about, and cognitive involvement with, the mediated space (Lombard and Ditton, 1997). Lastly, performing historical empathy is a decidedly cognitive act, grounded in the processes of perspective recognition and contextualization (Endacott and Brooks, 2013). All of these concepts assume that the recipient cognitively processes the presented information.

With regard to encountering complex historical sources, we assume that learners generate theoretical and historical questions about the lives of individuals and the historical and cultural context in which they were/are set, and begin to critically engage with the details of the site and story. Particularly, we argue that there are five distinguishable elements of cognitive engagement that are crucial and unique to the particular experience with complex historical sources: being deeply concentrated (for example, Csikszentmihalyi and Robinson, 1990), imagining the time, place and people (for example, Green and Brock, 2000), recognizing the perspectives of the historical agents (for example, Endacott and Brooks, 2013), linking the information to one's prior knowledge (for example, Huijgen *et al.*, 2017), and showing the insight to have learned something from the encounter (Busselle and Bilandzic, 2008). These responses are described in the following sections.

Attentional focus

Attentional focus describes a state of deep concentration during an experience (Busselle and Bilandzic, 2008; Csikszentmihalyi and Robinson, 1990; Frank, 2015; Green and Brock, 2000; Lombard and Ditton, 1997). Learners report 'losing themselves' in the experience, losing awareness of time and surroundings (Busselle and Bilandciz, 2008; Csikszentmihaliy and Robinson, 1990; Green and Brock, 2000; Latham, 2013; Lombard and Ditton, 1997). We understand attentional focus manifested in a deep concentration on the encounter with eyewitnesses and historic sites. Learners would describe this as 'I fully concentrated on the object/story presented' or 'I did not even notice anything around me while interacting with the source'.

Imagination

Imagination is a core prerequisite for narrative and historical understanding (for example, Green and Brock, 2000; Klimmt and Vorderer, 2003; Lee, 1984; Lee and Ashby, 2001; Rüsen, 2005). Referring to Schörken (1998), Brauer (2016a: 37) posits imagination as a mental capacity that 'plays a role in every act of interpreting, receiving and reconstructing the past'. It is a form of visualizing something or somebody to make something distant more familiar in order for a better understanding. Imagination is not a flight of fancy, but a crucial part of the ability to construct the world of a person in order to understand their circumstances (Brauer, 2016a, 2016b; Csikszentmihalyi and Robinson, 1990; Klimmt and Vorderer, 2003).

We understand imagination as creating a mental imagery of the past and conjuring up a scene (Busselle and Bilandzic, 2008). Learners simply had a clear mental image of the place, story or time that the site or historical agent witnessed. This can be understood as 'I can imagine the time the eyewitness talked about', 'I could picture how this place must have looked like' or 'I had some clear pictures about the scene of the past in my head'.

Perspective recognition

More specific than imagination is the response of recognizing the perspectives of the historical agents. Scholars across different theoretical positions contend that historical

perspective taking – 'the attempt to understand the motives, beliefs and behaviours of people in the past' (Kohlmeier, 2006: 34) – is a crucial component for understanding the past (Barton and Levstik, 2004; Cameron and Gatewood, 2003; Endacott, 2010; Endacott and Brooks, 2013; Hartmann and Hasselhorn, 2008; Huijgen *et al.*, 2017; Lee and Ashby, 2001).

Drawing from these conceptualizations, we define perspective taking as recognizing the perspectives of the historical agent, and understanding their thoughts, actions and decisions. Learners would describe this as 'I see their point of view' or 'I can understand why the historical agent responded to the situation in the way they did'.

Contextualization

At its most elemental, contextualization is the ability to situate events and agents in the full complexity of their historical time and place (Endacott and Brooks, 2013; Huijgen *et al.*, 2017; Van Drie and Van Boxtel, 2008; Wineburg, 1991, 2001). Enacting contextualization requires learners to '[bring] forward multiple elements of prior knowledge of a particular time period – political positions, social conventions, economic forces, cultural and linguistic traditions – to understand the particular circumstances of the time and place' (Baron, 2016: 516).

We understand contextualization as the linkage of the information displayed at the site or provided by the eyewitness to one's prior knowledge. We argue that through the linkage of information to prior knowledge of historical time periods and circumstances, contextualization allows for the learner to fully experience these complex historical sources. Statements describing this are, for example: 'I understand the historical agent's circumstances' and 'I understand the circumstances and constraints on the historical agent(s) because of the time/place they lived in'.

(Sense of) insight

Recipients who experienced transportation into a narrative return were somehow changed by the experience (Green, 2004). The experience with historic sites, as described by Latham (2013: 10), involves 'realizations about oneself, one's identity, and one's purpose in life'. The aesthetic encounter with an artwork suggests that recipients learn something from the encounter, as well as experiencing transportation (Csikszentmihalyi and Robinson, 1990; Green, 2004). Additionally, visitors report to seek – among other things – learning experiences at historic sites (Cameron and Gatewood, 2003), and students report to have learned a lot when encountering eyewitnesses of the past (Bertram *et al.*, 2017; Dutt-Doner *et al.*, 2016). Baron (2012) identified the moment of cognitive empathetic insight as the response to a physical stimulus provided by the historic site, indicating a malleability in how the experience occurs and is processed.

The encounter with a complex historical source leads the viewer to some kind of interpretative insight or profound understanding, leading to new and unexpected ideas in which 'the individual apprehends something ordinarily beyond his or her capacities' (Thrash and Elliot, 2004: 957; see also Csikszentmihalyi and Robinson, 1990; Muth and Carbon, 2013; Perry, 2002; Schindler *et al.*, 2017). Referred to as the 'aesthetic aha effect' (Muth and Carbon, 2013), people experience spontaneous inspiration and insight, enhancing their processing of information.

The (sense of) insight, we argue, can be part of the learning experience with complex historical sources that might occur as a moment of understanding, which is a result of the intellectual interaction with the content displayed. This can occur in

Table 1: Summary of the relevant elements of the framework of engaging authenticity

Dimension	Response	Definition	Typifying statement
Cognitive engagement	Attentional focus	Learners deeply concentrate on the encounter with the source.	'I did not even notice anything around me while interacting with the source.'
	Imagination	Learners create a mental image or envision a particular version of the information presented by the source.	'I could imagine, exactly, how the place looked like 100 years ago,' or 'I could picture the scene the eyewitness talked about.'
	Perspective recognition	Learners understand the view of the historical agent (the eyewitness or a person who was involved with the site).	'I understand why the historical agent who spent time at this place felt and acted that way,' or 'I totally understood the eyewitness's thoughts and feelings.'
	Contextualization	Learners link the displayed information to their prior knowledge about the historical time/ place/events.	'When I think of the circumstances the people had to deal with during that time, their actions become even more courageous.'
	(Sense of) insight	Learners believe they have a better understanding about the past because of new information/ perception gained from experience with the source.	'I know better now how life after war must have been like.'
Affective engagement	Being moved	Learners are emotionally touched by the information the source conveys.	'The object in the exhibition moved me,' or 'The story of the eyewitness deeply touched me.'
	Personal attachment	Learners identify with the historical agent through a personal connection or perceiving the story from their point of view.	'The historical agent's story reminded me of my grandmother,' or 'I could feel the feelings of the eyewitness myself.'
	Awe and reverence	Learners *feel* a deep appreciation for the historical agent and a connection bigger than themselves.	'My God, when you think of what they went through.'
	Historical proximity	Learners feel a spatial and temporal closeness to the past.	'The past became vivid.'
	Irritation	Learners have a feeling of irritation because of unexpected or conflicting information.	'I wasn't expecting that,' or 'I always thought it has been different.'

Dimension	Response	Definition	Typifying statement
Physical engagement	Physiological response	Learners react to the complex sources with involuntary bodily responses.	'Being at the site gave me an uncomfortable feeling in my stomach,' or 'The story gave me goosebumps.'
	Physical interaction	Learners physically move through the site and/or have a conversation with the eyewitness.	'I walked the same way xyz did,' or 'I could get answers to my very personal questions.'
	Sensory interaction	Learners perceive the elements of the complex sources within an interplay of their senses.	'I could smell the eyewitness's perfume,' or 'The museum felt cold and dark.'
Uniting	Unifying experience	Learners perceive the experience as a unifying moment of cognitive, affective and physical engagement.	'I had a moment where just everything came to me and taught me more than I could have learned with a hundred books.'

the form of an understanding about the distant past, or one's potentially changing conception of the world or oneself in life. Learners would describe it in ways such as: 'I suddenly knew how life must have been like', 'I have a better understanding of the past now' or 'I gained a better understanding about where I am in life'. An even deeper dimension of the understanding and insight as part of this complex experience is a *change of perspective*. This might be expressed by 'It changed my perspective on life' or 'I have a totally different understanding of the past now'.

Affective engagement

Affective engagement with the past comprises a significant element of learners' encounters with historic sites and eyewitnesses (Boler, 1999; Cameron and Gatewood, 2003; Gatewood and Cameron, 2004; Green and Brock, 2000; Latham, 2007, 2013; Mason *et al.*, 2018; Savenije and De Bruijn, 2017; Wetherell *et al.*, 2018; Zembylas, 2016, 2018). These sources are able to create an emotional involvement (Von Plato, 2009) and have the potential to 'not only reach the head of the students but also the heart' (Uhl, 2012: 279, translated by the author). Affective engagement with the past has been shown to engender 'highly connective experiences' between the learner and the historic site or eyewitness (Latham, 2007, 2013). In our framework, we identified five distinct responses making up the affective engagement with the sources: a feeling of being moved (Menninghaus *et al.*, 2015), a feeling of personal attachment to the historical agent (Brauer, 2016a; Cohen, 2001; Endacott and Brooks, 2013), a feeling of historical proximity (Benjamin, 1965; Lombard and Ditton, 1997), a feeling of awe and reverence (Cameron and Gatewood, 2003; Jones, 2016; Keltner and Haidt, 2003; Latham, 2013), and a feeling of irritation (Rose, 2016; Vogl *et al.*, 2019). It is important to note that not all affective engagement is positive. Terrible things can inspire awe. One can be moved to anger as well as empathy and joy.

Being moved

Historical pedagogy accredits historic sites and eyewitnesses of the past the chance to reach people through an emotional channel (for example, Brauer and Lücke, 2013; Krämer, 2012; Uhl, 2012; Toila-Kelly, 2018). Independent of the content of the historical source, learners report a moving experience after talking to an eyewitness or visiting a historic site (Cameron and Gatewood, 2003; Dutt-Doner *et al.*, 2016; Latham, 2007, 2013). Drawing on our preliminary analysis, we developed the concept of being moved to better grasp how this experience occurs.

We argue that the affective engagement with these complex sources engenders the feeling of being moved (Menninghaus *et al.*, 2015) by the story or site. Being moved refers to an emotional arousal in general, independent of emotional valence such as positive or negative feelings. Rather, this presents a delineation allowing for the full range of possible emotions evoked or observed. Learners would most likely respond to the information with statements such as 'I am touched by the story' or 'The story of the historical agent deeply moved me', as well as statements such as 'I was moved standing on the same spot where history took place'.

Personal attachment

A personal connection to the past has been found to be a driving force in why people seek out historic sites (Cameron and Gatewood, 2003; Endacott and Brooks, 2013; Mason *et al.*, 2018; Rosenzweig and Thelen, 1998). Feeling connected to a

historical agent allows the learner to transcend the present and make the distant past more comprehensible, encouraging the learner to consider the full humanity of historical agents, and leading to a deeper understanding than cognitive engagement alone (Cameron and Gatewood, 2003; Endacott and Brooks, 2013). Bilandzic and Busselle (2011) refer to this connection as identification, a process of simulation and adoption of a historical agent's goals and the experience of the emotions. Cohen (2001: 251) defined this phenomenological process as 'a process that consists of increasing loss of self-awareness and its temporary replacement with heightened emotional and cognitive connections with a character'.

We argue that personal attachment can appear in the form of affective connection as referred to by Endacott and Brooks (2013), Rosenzweig and Thelen (1998) and Brauer (2016a): a specific element in a person's life – a story, experience, hobby, appearance, geographic proximity – that is similar to the historical agent's. It can also appear in the form of losing one's own identity by 'temporarily substituting one's own perspective with another person's perspective on events, people, and emotions in that other world' (Bilandzic and Busselle, 2011: 34; De Leur *et al.*, 2017). At its most extreme, the latter might lead to an over-identification or uncritical identification that directs the learners to make faulty moral or ethical judgements about the past (Brauer, 2016a, 2016b; Van Nieuwenhuyse, 2011).

We understand this affective response as a feeling of personal attachment of the learner to the historical event or historical agent because of personal experiences or connections to his or her own life. This could be stated as 'I feel a personal connection to the story presented', 'Our stories (mine and the historical agent's) are very similar' or 'The eyewitness reminds me of a loved one'. However, it could go as far as 'I could feel the feelings of the historical agent myself'.

This response is closely and dynamically tied to *perspective recognition* and *contextualization* (see above). Taken together, these elements can be understood to describe the concept of empathy as defined by Brauer (2016a), as well as Endacott and Brooks (2013): the personal attachment leads the learner to 'de-distance' him/herself from the historical agent – an immediate and affective response; whereas perspective recognition and contextualization guide the learner to 'distance' him/herself from the historical agent – a cognitive and reflective process.

Historical proximity

The concept of presence as used in virtual reality research refers to the feeling of being in a mediated space – without recognizing the medium (Lombard and Ditton, 1997): 'An illusion of a non-mediated spatial environment or social entity' (Klimmt and Vorderer, 2003: 349). We adapt the concept of presence and argue that the medium is not responsible for the perception of a physically real surrounding through the medium (Frank, 2015), but for a strong feeling of temporal and spatial proximity to the place and time (Grever, 2018). This feeling of proximity is also connected to the idea of 'aura' as originally defined by Walter Benjamin (1965) with regard to an original piece of artwork. Benjamin ruminated: 'What is an aura? A strange web of space and time: the unique appearance of a distance, as close as it may be' (ibid.: 57, translated by the author). In line with construal-level theory (Trope and Liberman, 2010), the sense of distant past is malleable based on contextual factors and degrees of abstractness that the learner experiences (Trope and Liberman, 2010; Van Boven *et al.*, 2010).

We argue that the nature of the complex sources, their embodiment of the past, makes the learner feel engaged through what Savenije and De Bruijn (2017: 3) call

'mnemonic bridging', linking the past with the present. We suggest that this spatial and temporal proximity is understood in statements such as 'I could feel the distant past' or 'The past became vivid'.

Awe and reverence

Visitors of historic sites report 'a feeling of smallness or a sudden understanding of the grandeur in the meaning of the world around them' (Latham, 2013: 14). Awe and reverence refers to learners' sense of 'being in the presence of something holy' (Cameron and Gatewood, 2003: 67–8), having a 'spiritual communion' (Gatewood and Cameron, 2004: 208) or being 'carried away' (Latham, 2007: 257). In relation to a historic place it is a 'transcendental experience' that people can have in contact with a historic site or objects in an exhibit (Cameron and Gatewood, 2003: 110). Learners experience the 'transcendental reaction' of being 'struck by the power' of a place or object (Gatewood and Cameron, 2004: 211). In encountering eyewitness testimony, Sabrow (2012: 27, translated by the author) describes a similar experience as the power of an 'aura of authenticity'; the more devastating their story, the more overwhelming their appearance for the listener.

We conceptualize awe and reverence as a deep, numinous appreciation for historical agents and their circumstances or a sense of larger meaning associated with those persons, places or events. It refers to a sudden feeling about the appreciation for historical agents, one's fundamental feelings of oneself and about the world. Here, learners will often exclaim their wonderment in terms that grasp at the meaning of what they are experiencing: 'My God, when you think of what they went through' or 'Just to stand in this same place …'.

Irritation

The previous affective engagements could be experienced as having a positive valence. Yet, in certain situations, the information encountered either in an exhibit or from an eyewitness of the past can present the learner with new information that may challenge and contradict their prior knowledge. Bringing about an element of surprise, this unanticipated or contradicting information might lead to cognitive incongruity (Vogl *et al.*, 2019). For some, the cognitive incongruity they are confronted with when encountering historic sites or eyewitnesses of the past results in irritation.

Irritation as an affective response arises when the learner has an alternative understanding or different attitudes about the past than they are encountering with a historic site or eyewitness. Moreover, irritation could either result in further curiosity and effort to resolve the incongruities and building up of new knowledge (Vogl *et al.*, 2019), or lead to resistance where one ignores the new information and clings to prior beliefs as an act of defiance (Rose, 2016). In essence, we argue that a possible response to the encounter with eyewitnesses and historic sites is the *feeling of irritation* due to cognitive incongruities between their prior knowledge or expectations and the new information. Learners would most likely state this response as: 'I expected something different' or 'I was confused by the new information'.

Physical engagement

The experience of engaging with historic sites and eyewitnesses is inextricably tied to the body through sensory interaction, physical interaction and physiological arousal (Busselle and Bilandzic, 2008; Cameron and Gatewood, 2003; Ellsworth, 2005;

Table 2: Summary of literature

Foundational concepts		
Concept	**Cited literature**	**Empirical or theoretical**
Transportation theory	Green and Brock (2000)	Empirical
Narrative comprehension and engagement	Busselle and Bilanczic (2008)	Theoretical
Aesthetic encounter with artwork	Czikcentmihaliy and Robinson (1990)	Empirical
Numen-seeking	Cameron and Gatewood (2003)	Empirical
	Latham (2007)	Theoretical
	Latham (2013)	Empirical
Historical empathy	De Leur *et al.* (2017)	Empirical
	Endacott and Brooks (2013)	Theoretical
	Huijgen *et al.* (2017)	Empirical
	Savenije and De Bruijn (2017)	Empirical
Presence	Frank (2015)	Empirical
	Lombard and Ditton (1997)	Theoretical
Elements of the framework		
Cognitive engagement	**Cited literature**	**Empirical or theoretical**
Attentional focus	Busselle and Bilandzic (2008)	Theoretical
	Csikcentmihalyi and Robinson (1990)	Empirical
	Frank (2015)	Empirical
	Green and Brock (2000)	Empirical
	Lombard and Ditton (1997)	Theoretical
Imagination	Brauer (2016a)	Theoretical
	Brauer (2016b)	Theoretical
	Busselle and Bilandzic (2008)	Theoretical
	Green and Brock (2000)	Empirical
	Klimmt and Vorderer (2003)	Theoretical
	Lee and Ashby (2001)	Empirical
	Rüsen (2005)	Theoretical
Perspective recognition	Barton and Levstik (2004)	Theoretical
	Cameron and Gatewood (2003)	Empirical
	Endacott (2010)	Empirical
	Endacott and Brooks (2013)	Theoretical
	Huijgen *et al.* (2017)	Empirical
	Kohlmeir (2006)	Empirical
	Lee and Ashby (2001)	Empirical
Contextualization	Baron (2016)	Empirical
	Endacott and Brooks (2013)	Theoretical
	Huijgen *et al.* (2017)	Empirical
	Van Drie and Van Boxtel (2008)	Theoretical
	Wineburg (1998)	Empirical
	Wineburg (2001)	Empirical
(Sense of) Insight	Csikcentmihalyi and Robinson (1990)	Empirical
	Green (2004)	Empirical
	Latham (2013)	Empirical

Affective engagement	Cited literature	Empirical or theoretical
Being moved	Brauer and Lücke (2013)	Theoretical
	Cameron and Gatewood (2013)	Empirical
	Dutt-Doner *et al.* (2016)	Emprical
	Latham (2007)	Theoretical
	Latham (2013)	Empirical
	Krämer (2012)	Theoretical
	Menninghaus *et al.* (2015)	Empirical
	Toila-Kelly (2018)	Theoretical
	Uhl (2012)	Empirical
Personal attachment	Brauer (2016a)	Theoretical
	Bilandzic and Busselle (2011)	Theoretical
	Cameron and Gatewood (2003)	Empirical
	Cohen (2001)	Theoretical
	Endacott and Brooks (2013)	Theoretical
	Mason *et al.* (2018)	Empirical
	Rosenzweig and Thelen (1998)	Empirical
Awe and reverence	Cameron and Gatewood (2003)	Empirical
	Gatewood and Cameron (2004)	Empirical
	Jones (2016)	Empirical
	Keltner and Haidt (2003)	Empirical
	Latham (2007)	Theoretical
	Latham (2013)	Empirical
	Sabrow (2012)	Theoretical
Irritation	Vogl *et al.* (2019)	Empirical
	Rose (2016)	Theoretical
Historical proximity	Benjamin (1965)	Theoretical
	Grever (2018)	Empirical
	Lombard and Ditton (1997)	Theoretical
	Klimmt and Vorderer (2003)	Theoretical
	Savenije and De Bruijn (2017)	Empirical
Physical engagement	**Cited literature**	**Empirical or theoretical**
Physiological response	Latham (2013)	Empirical
	De Manzano *et al.* (2010)	Empirical
	Nacke and Lindley (2008)	Empirical
	Waterton (2018)	Empirical
Physical interaction	Kunter and Trautwein (2013)	Theoretical
Sensory interaction	Arnold-de Simine (2012)	Theoretical
	Drozdewski *et al.* (2016)	Theoretical
	Latham (2013)	Empirical
	Violi (2012)	Theoretical
	Waterton (2018)	Empirical

Joy and Sherry, 2003; Latham, 2013; De Manzano *et al.*, 2010; Nacke and Lindley, 2008; Rosenberg, 2007). For example, physically navigating through a historic site – walking, engaging with hands-on displays – 'inscribes the body in place and how our relationship to place, in turn instigates a particular kind of remembering grounded in the physical space of our present situation' (Rosenberg, 2007: 54). Similarly, interactions with eyewitnesses engage the senses, engendering visceral, 'flow'-like sensations when hearing their stories (Joy and Sherry, 2003; Latham, 2013; De Manzano *et al.*, 2010; Nacke and Lindley, 2008). We argue that learners who engage with complex historical sources physically engage with them through all their senses to respond to and interact with historical objects, places and people. In particular, we distinguish between sensory interaction, physical interaction and physiological responses.

Sensory interaction

Sensory interaction involves a component of embodied learning that takes place in the immediate encounter with complex historical sources. We draw from Latham's (2013) conceptualization of the numinous experience people feel when they encounter historic sites to further clarify sensory interaction with authentic historical sources. Latham describes a wide range of sensory engagements, including 'visually and spatially perceived elements … "the need to soak it up with one's eyes"' (ibid.: 10). Sensory interaction can be found in the 'intermediality' or dynamic that develops between the historic site/eyewitness and the learner's experience (Arnold-de Simine, 2012). With regard to eyewitnesses of the past, the sensory interaction might express itself by being able to fully observe the eyewitness while talking, and his/her reaction to one's questions.

Drawing on the work of Drozdzewski *et al.* (2016: 447), we distinguish sensory interaction with historical sources in that they can 'be smelt, touched, felt, imagined, tasted, and heard'. We define sensory interaction as the interplay between the body's senses, such as smell, taste, touch and sound, with a historical source, such as a historic site or eyewitness. Sensory interaction can be found in phrases such as 'I was struck by the smell of the shoes' or 'The museum felt cold and dark'.

Physiological response

Distinct from sensory interaction, a physiological response can be understood as an immediate, involuntary bodily reaction that one experiences when encountering complex historical sources. These encounters frequently engender some form of a physiological response including 'having a rush, a feeling of blood to the face, butterflies, tingly excitement, being overwhelmed …' (Latham, 2013: 15), all the way up to a form of flow, or optimal experience, which includes attentional existential, and temporal dimensions (Csikszentmihalyi and Robinson, 1990).

In addition to learners' own descriptions of these physiological states, these embodied responses are observable, and possibly measurable with instruments such as EEGs or ECGs (De Manzano *et al.*, 2010; Nacke and Lindley, 2008). Evidence of physical arousal would be described by phrases such as 'I teared up', 'It made my heart beat fast', 'It gave me a pit in my stomach' or 'It gave me goosebumps'. It is important to note, however, that these physiological responses are connected to the affective engagement to the complex historical sources. For example, the feeling of goosebumps occurs because the depths of a story moves us; this is different to experiencing goosebumps when walking into a room because it is cold.

Physical interaction

Distinct from these two responses are the active physical interactions that comprise the significant element of the embodiment of the historical experience. Learning does not only depend on the offer but on how the offer – of encountering complex historical sources – is used by the learner (Kunter and Trautwein, 2013). Navigating one's way through the space, feeling the need to touch the objects, receiving impulses from the site and following them are physical interactions that are often carried out by learners/visitors in order to affect their understanding of the site. In terms of eyewitnesses, this physical interaction could present itself as asking questions and having a conversation with the eyewitness. How these interactions with complex historical sources are used by the learner is a crucial part of the learning experience. Statements indicating this are, for example, 'I could get answers to my own questions' and 'I walked the same paths the soldiers walked at Omaha Beach'.

Framing dimension: Unifying experience

'The information in the work of art fuses with information in the viewer's memory – followed by the expansion of the viewer's consciousness, and the attendant emotional consequences' (Csikszentmihalyi and Robinson, 1990: 38). The aesthetic encounter is a multidimensional experience that 'integrates the visual with the emotional and the intellectual' (ibid.: 83). Latham (2013) called one dimension of the numinous experience 'unity of the moment', which is the holistic experience that frames the other responses as part of the experience. This moment involves intellect, experiences, emotions and physical responses. It is deep, dynamic and vivid (Latham, 2013: 9): 'The uniting experience is not a connection flowing through the experience, it *is* the experience.' Latham described it further as 'one whole swirling entity of these things, overlapping and connecting. It is the uniting of all these things – emotion, intellect, feeling, senses, imagination – that results in meaning for the experiencer' (ibid.: 11). This is the intertwining of all the facets of the experience responses, resulting in a sense of wholeness. It might even result in an inability to articulate the distinguishing elements of the experiences.

Based on these considerations, we argue that the overall interaction between cognitive, affective and physical engagement of the learner results in a unifying experience. Although hard to articulate, learners most closely would describe this with phrases such as 'It happened all at once' or 'I had a moment'.

Application

In order to show how this framework could help researchers, we offer two examples of how to use the framework to code learner responses. These examples are drawn from our existing research data sets and were chosen for the variety of framework elements they represent and compactness (that is, the greatest range of responses in the shortest section of text). Note that we indicate ways in which coding can overlap to draw out the depth of the experiences in which learners engaged.

The first example (see Table 3) is a female US high-school teacher on a study-abroad professional development tour reflecting on her visit to the Hiroshima Peace Museum in Japan, a site that explores the effects of the atomic bomb dropped on Hiroshima during the Second World War by the American armed forces. This teacher has 18 years of classroom experience and a master's degree in American history. We intentionally chose this example to show what a strong emotional response to a historic

Table 3: Hiroshima Peace Museum

Text	Coded statements	Element	Rationale
I stood there with a **lump in my throat**. The **skin on my arm had turned to tiny little bumps** as I laid my eyes on the remnants of the preserved hair of a Hibakusha. The hair had fallen out in the weeks following the bombing and was now, immortally preserved behind a glass case, part of a larger exhibit in the West Building of the Hiroshima Peace Memorial Museum. I was visiting the museum as part of the Japan Society's Study Tour for Educators with the intent of gathering artifacts and resources, as well as documenting the journey for my students. Yet, as I stood there staring at this straw-like bundle of hair, **I knew that more important than the lessons I would create or the resources I would bring back with me, was my role as a witness to this place for my students.**	lump in my throat	Physiological response	Visitor describes her physiological response to the exhibition piece: hair that had fallen out after the bombing of Hiroshima.
	skin on my arm had turned to tiny little bumps		
	I knew that more important than the lessons I would create or the resources I would	(Sense of) insight	The visitor understood that the experience of visiting Hiroshima Museum would somehow change her by 'realizations about oneself, one's identity, and one's purpose in life' (Latham, 2013: 10).
	bring back with me, was my role as a witness to this place for my students.	Awe and reverence	Visitor talks about her role as a teacher visiting the historic site and becoming a witness to history to bring back to her students. Thereby, she describes 'a feeling of smallness or a sudden understanding of the grandeur in the meaning of the world around them' (Latham, 2013: 14). She refers to a sudden feeling of herself and her role as a teacher, and she acknowledges a sense of larger meaning.
		Unifying experience	Her description of the situation and the resultant feeling of becoming a witness indicates a holistic experience, a moment that involves intellect, emotions and physical responses. The visitor's experiences resulted in a sense of wholeness.
Upon entering the museum, I found myself **stumbling through a maze-like replica of a bombed-out building,** passing grotesque life-like mannequins of people engulfed in flames, with their faux fire-torched skin hanging and dripping off their arms. I **took a moment to breathe** before, with **my stomach in knots and a feeling of disgust embedded deep in my gut,** I moved on to the first exhibit hall.	stumbling through a maze-like replica of a bombed-out building	Physical interaction	The visitor navigated herself through the site, 'stumbling', indicating her interaction with the site by moving through the objects.
	took a moment to breathe … my stomach in knots and a feeling of disgust embedded deep in my gut	Physiological response	Her description of the experience clearly shows her embodied responses to the objects, referring to her bodily functions.

Text	Coded statements	Element	Rationale
On display here were **various belongings of people who were either killed or injured during the bombing**. Behind one glass case was the **personal belongings of a junior high-school student, including a cap, a belt and a school uniform. 'These were just kids!' I internally screamed** to no one in particular, as **my disgust slowly shifted to feelings of anger and confusion.**	various belongings of people who were either killed or injured during the bombing … personal belongings of a junior high-school student, including a cap, a belt, and a school uniform	Sensory interaction	The visitor is describing the objects in the exhibition: items of an innocent victim of war that are so close that they are almost touchable, 'visually and spatially perceived elements … "the need to soak it up with one's eyes" (Latham, 2013, p. 10f).
	'These were just kids!' I internally screamed … as my disgust slowly shifted to feelings of anger and confusion.	Historical proximity	Her response to the victim's belongings of internally screaming indicates her strong feeling of temporal and spatial proximity to the place and time. For example, the teacher's screaming may be aimed at the perpetrators, lending itself to the teacher falling back in time and place as if she were there.
		Personal attachment	Her personal attachment to the objects connects her experience at the museum through her professional identity as a high-school teacher; the proximity to a specific element of her life contributes to her strong reaction of internally screaming.
		Being moved	The visitor's response shows her deep emotional arousal when processing the belongings of the high-school student.
		Imagination	The objects belonging to school-aged children triggered the visitor's imagination that helped to better construct the world of the person and the circumstances that resulted in the strong response.

Text	Coded statements	Element	Rationale
As **I slowly moved across the room, I could feel my muscles tense up in fear of what awaited me** in the next exhibit.	I slowly moved across the room	Physical interaction	The visitor describes her activity at the site, navigating her way across the room.
	I could feel my muscles tense up in fear of what	Physiological response	Her muscles tensed up, which indicates her embodied response towards what she will be confronted with next.
	awaited me	Being moved	The visitor fears what she will be confronted with next. This indicates her feeling of being moved in the form of the emotion fear.
My fear was justified when I was confronted with a glass-cased exhibit of a preserved part of a keloid that had been torn from someone's upper arm, alongside other bodily parts, such as deformed tongues resulting from the radiation.	My fear was justified	Being moved	The exhibition objects deeply move the visitor, indicated by her description that her fear was justified.
When I reached the end of the exhibit, before I signed the visitor book intended to capture visitors' impressions of the museum, I raised **my water-filled eyes** above me to a rock engraved with the following **quote from Pope John Paul II upon visiting the museum in 1981: 'War is the work of man. War is the destruction of man. War is death. To remember the past is to commit oneself to the future. To remember Hiroshima is to abhor nuclear war. To remember Hiroshima is to commit oneself to peace'** (Pope John Paul II, 1981 on display in the Hiroshima Peace	my water-filled eyes	Physiological response	The visitor describes her bodily response of tearing up at the end of the exhibition.
		Being moved	She was moved to tears by the emotional resonance of the story.
	quote from Pope John Paul II	Contextualization	The quotation engraved in a rock at the closing of the exhibition triggers the visitor to understand the whole site in a bigger context, linking it to her prior knowledge.
		Awe and reverence	The quote from Pope John Paul II at the end of the experience seems to stress the meaning of the Hiroshima Museum and leaves the visitor 'struck by the power' of the place. The visitor experiences deep appreciation of remembering and committing herself to peace.

Text	Coded statements	Element	Rationale
Memorial Museum, 2014). **In that moment I felt a transformation in myself that would indubitably change the way I taught about World War II and the Bombing of Pearl Harbor. In that moment, I became an educator dedicated to morality, human rights, and social justice action.**	In that moment I felt a transformation in myself that would indubitably change the way I taught about World War II and the Bombing of Pearl Harbor. In that moment, I became an educator dedicated to morality, human rights, and social justice action.	(Sense of) insight	It changed her understanding of Hiroshima. It changed how she would think about (and teach) Hiroshima and the Second World War. This indicates a deep understanding and even change of perspectives regarding her role as a teacher and the topic.
		Unifying experience	At the end of the exhibition, after reading the quotation from Pope John Paul II, the visitor experienced the intertwining of all facets of the experience she had at the site, resulting in a sense of wholeness. The moment involved intellect, emotions and her physical responses, and results in a deep understanding of her role as an educator.

Table 4: German Democratic Republic eyewitness

Text	Coded statements	Element	Rationale
Interviewer: How did you feel about everything? What did you enjoy? What did you find difficult? *Student*: For example, with the posters, that was, that was a lot of time pressure and so on, but I liked it because we knew a lot about our own topic afterwards. Not about the other topics. I found that already ... But that was already good. And then in between how they proceed I.: Yes, the historians, yes. S.: Well, that didn't interest me so much [laughs]. I didn't really understand it either, then. And ... simply because there was so little time, I think. We couldn't do it in more detail, I think. But ... **the eyewitness, the interview, I thought that was good, it interested me to see someone who lived there and experienced all that** ... But there was too little time.	the eyewitness, the interview, I thought that was good, it interested me to see someone who lived there and experienced all that	Attentional focus	The student explains how the fact that the witness 'lived and experienced all that' triggered her interest.
I.: Eyewitnesses in history lessons: What do you think about an eyewitness of the past talking about his/her experiences? S.: Yes, as I just said, I just think: **you can really feel it, you can better take on the perspective if you see the person** and	You can really feel it, you can better take on the perspective if you see the person	Personal attachment	The student indicates taking on the perspective and identifying with the person and perceiving the story from his point of view.
then think: he was really there, he experienced it, he knows. It's a different experience than reading a text. I.: You said at the beginning: You can feel it! Can you explain that a little more? S.: Somehow ... he then conveys, or **you get some kind of feeling when you hear how he talks.** And he then also **uses different voices and stresses some things, perhaps you wouldn't read that like that yourself when you read the text. And it then conveys such a certain feeling that you can't get out of the text.** ... That's how I see it!	you get some kind of feeling when you hear how he talks ... uses different voices and stresses some things, perhaps you wouldn't read that like that yourself when you read the text. And it then conveys such a certain feeling that you can't get out of the text	Sensory interaction	By noticing the details of the eyewitness's voice while talking, the student carefully listens to the story with all its vocal nuances.

Text	Coded statements	Element	Rationale
I.: What do you think, how should eyewitnesses appear in class: just live, as you experienced it, or as a video, or in the text? S.: I think live, I actually think it's the best. Because **you can ask the questions that interest you, and if you don't understand something, you can also ask. And you also see the reactions to the questions, which you probably don't see in a video.** You also don't know what's cut out of it. And so … That's why I find it better to meet directly – that's also the atmosphere when you know he's standing in front of me and he knows exactly what we're talking about now, he's experienced it and so on. I.: Does it make a difference in learning? S.: I think so, because you remember it more when you tell it personally than when you read it as a text.	you can ask the questions that interest you, and if you don't understand something, you can also ask	Physical interaction	The student clearly states the advantage of being able to interact with the eyewitness by asking questions and clarifying things she did not understand. She points also to the importance of using the learning opportunity.
	And you also see the reactions to the questions, which you probably don't see in a video.	Sensory interaction	The student indicates the possibility of fully observing the eyewitness while telling his/her story and the reactions to one's questions.
I.: Does it make a difference for you if you also know people's feelings about historical events? S.: Yes! I.: Ok, and how do you understand it? S.: I just think that when you read about events like this without feeling, then you interpret a lot yourself and think how you would feel there. **If you now hear that from someone, how he felt, then you understand the situation better, as it really was.** For example, if there were so many people protesting, then I would think now that they were all a bit scared and so on … or you could also think that they were in a large group, they were not scared, they wanted to be the opposition. But if you now know that they were already afraid, for example, then you see it quite differently. So you know it better, I think!	If you now hear that from someone, how he felt, then you understand the situation better, as it really was	(Sense of) insight	The learner states that by hearing the story of someone who was there and getting to know his/her feelings, you don't have to interpret any more but 'understand the situation … as it really was'.

Text	Coded statements	Element	Rationale
I.: We always learn something for ourselves from history. If you now only have the data and facts, you also take a message with you. If you also know people's lives with their feelings, with their decisions, with their considerations and so on, you also take a message with you. What do you think is the difference for you? S.: Well, if I know about the people what they were thinking	If you just know the thoughts, then ... you see that much more logically and understand it also why it was like that	Contextualization	The student explains that getting to know the thoughts of the historical agent helps to understand the past events more fully and situate them in a broader context, as compared to just reading a text about the event.
then, yes, I think, if I often read something like that, yes, World War II and that's how it happened, then you can't quite comprehend the decisions, yes, why they did it that way. **If you just know the thoughts, then ... you see that much more logically and understand it also why it was like that and then you can remember it better.** If you think that it happened because he thought that and that...	and then you can remember it better	Attentional focus	The student offers a meta-analysis that you remember the information given within an eyewitness's story better than reading a factual text about an event, indicating the opportunity that the personal interaction creates for deeper concentration on the learning material.

site might be, even for someone who has deep prior knowledge of the site and the events relating to it.

The second example (see Table 4) is an interview with a 15-year-old female student who participated in an in-school intervention with eyewitnesses of the past talking about their roles in the opposition movement in the Peaceful Revolution of the German Democratic Republic. The interview captures the student's impression of the encounter, and her feelings about meeting eyewitnesses of the past in the history classroom in general. We chose this example because she also discusses possible responses on a meta-level, rather than only her own immediate responses.

Figures 2 and 3 provide radar charts to sum up the quantities of the particular historical experiences given in the examples above. The axis displays the number of codings for each response within the example.

For the teacher, the Figure 3 indicates that the historical experience at the Hiroshima Museum in Japan is driven by the visitor's physical engagement (most codings are within this dimension) and affective engagement. The learner mentioned only one response (imagination) that referred to her cognitive engagement with the site. For the student engaging with the eyewitness, Figure 4 indicates that the experience of meeting an eyewitness in person is especially made up of the cognitive and physical dimensions. The student mentioned only one response (personal attachment) that referred to the affective engagement with the eyewitness.

The utility of these examples and the radar charts rests on their ability to show us patterns of interactions/responses within the range of elements identified that would normally be obscured by overly general descriptions of complex responses (for example, 'the learner had a strong emotional reaction') that typifies the current
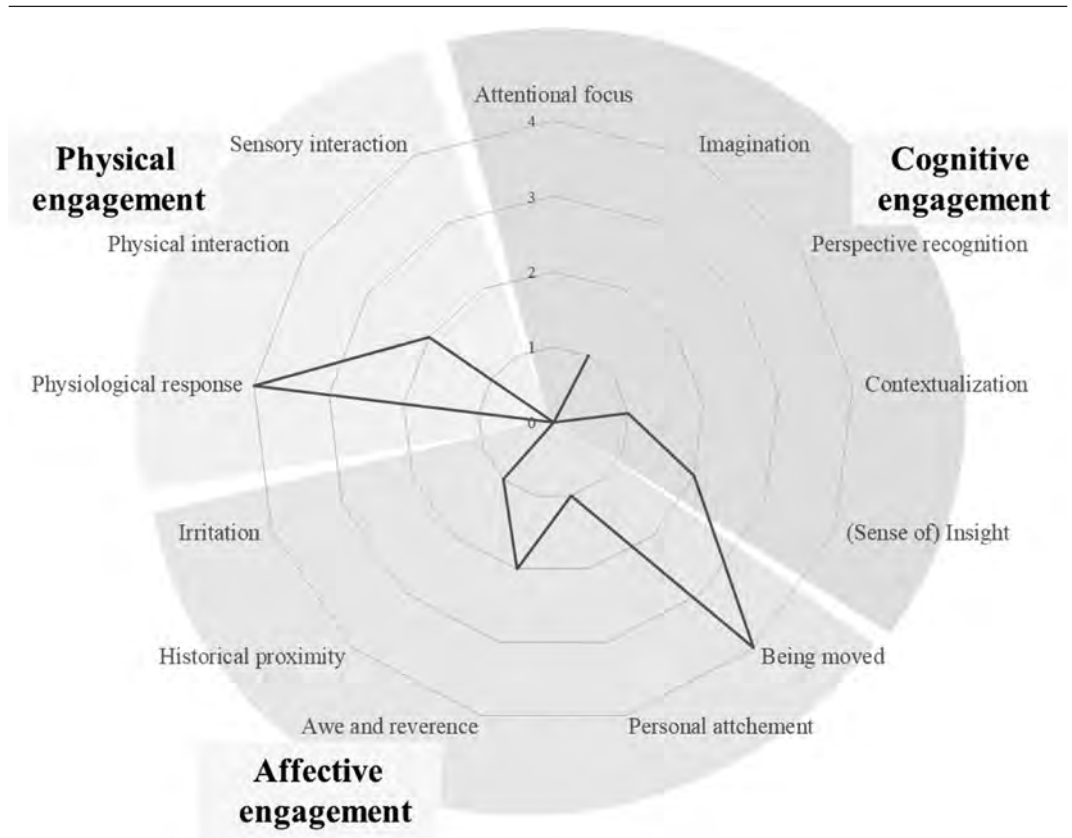

Figure 2: Hiroshima Museum example, showing the coding frequency for each response
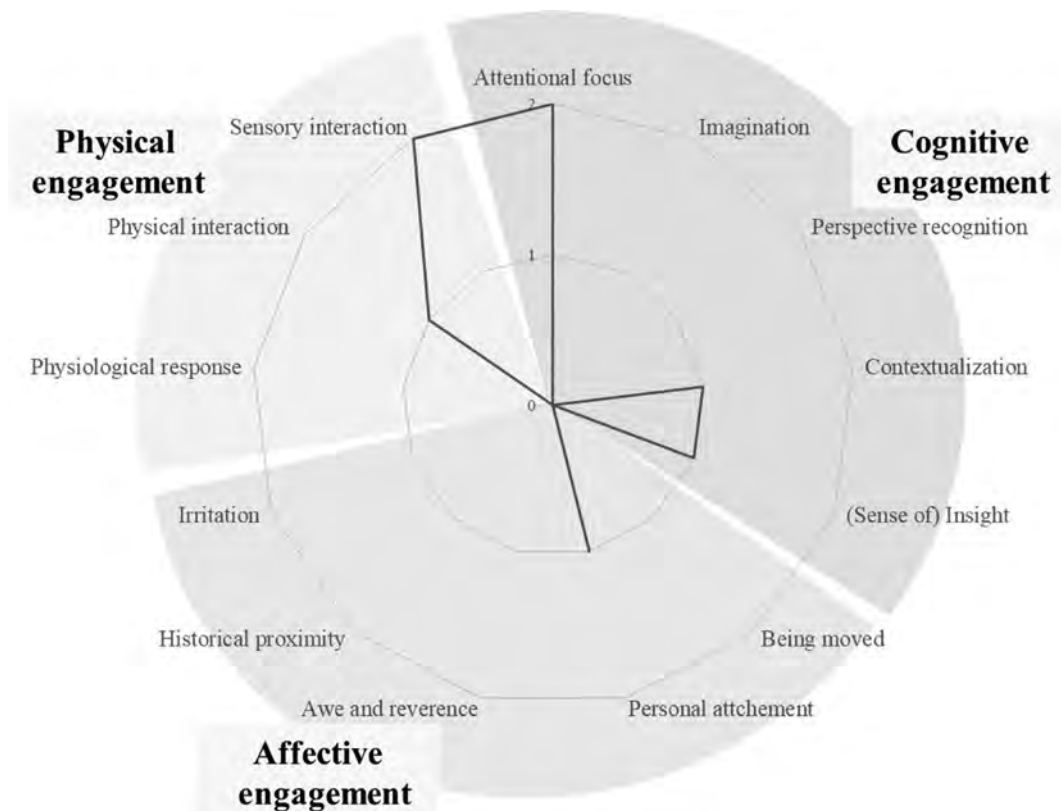
Figure 3: Coding frequency for each response for the student interview about the eyewitness encounter

literature. In this way, we are able to see how learners respond to complex historical sources and can build pedagogy or interventions that take into consideration the whole of the historical experience and the whole person experiencing it.

Conclusion, limitations and outlook

We developed a conceptual model to describe and define the learning experience with complex historical sources – namely encountering eyewitnesses of the past and visiting historic sites. We drew upon empirical, theoretical and conceptual works from a range of related disciplines, including media studies, museology, anthropology, cultural geography and educational psychology, to develop a deeper understanding of what is part of this complex experience and how we can grasp it. We argue that embedded within perceiving these sources as authentic, learners cognitively, affectively and physically engage with the learning material. In the same way that we identify a range of possible interconnected responses that can occur as part of the historical experience, the unifying experience is possible, but it is neither required nor guaranteed.

The framework is the first endeavour to conceptually encapsulate the learning experience with complex historical sources. In particular, our model contributes to a better understanding of the complex and intertwining responses involved in learning about the past. However, we recognize the disequilibrium in a model that delineates far more cognitive elements and fewer physical ones. This is a result of the extant state of the literature, rather than a determination that there are fewer physical considerations for learners. We offer this model as the beginning of the conversation about how to understand learning with complex historical sources, not the ending.

We invite fellow researchers to test this model, qualitatively and quantitatively, to deepen our understanding of the elements we have identified and further delineate underlying processes and mechanisms of these encounters. At this point, we do not know if response to one element triggers or is a prerequisite for another. Nor do we know if certain elements cluster together, and, if so, under what conditions. Further, we recognize that there are differences between encounters with historic sites and encounters with eyewitnesses that may become sharper as researchers engage with this framework. The more this model is used and refined, the more it may reveal further complexities in the intertwining dynamics of historical experiences that contribute to a better understanding of the learning processes behind these experiences.

Notes on the contributors

Lisa Zachrich is a PhD candidate at the LEAD Graduate School and Research Network and the Hector Research Institute for Education Sciences and Psychology in Tübingen, Germany. Her main research interests are complex classroom settings, especially learning historical thinking with eyewitnesses of the past and how these classroom settings affect students' motivation and learning.

Allison Weller is a high-school history teacher in Long Island, New York and a PhD candidate at Teachers College, Columbia University, New York. Her dissertation research focuses on teachers' affective practices and meaning-making at sites of difficult history.

Christine Baron is Assistant Professor of Social Studies at Teachers College, Columbia University, New York. Her research explores historical engagement with non-traditional texts, teaching and learning in museums/informal settings, and the use of museums and historic sites in teacher education.

Christiane Bertram is Assistant Professor of Social Studies at the University of Konstanz, Germany. Her research focuses on learning to think historically with eyewitnesses of the past, assessing historical competencies and speech education in history lessons. Prior to this, Bertram has worked as a high-school German and history teacher.

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