Bridging the Public and Private in the Study of Teaching: Revisiting the Research Argument

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In this essay, Rachel Schachter and Donald Freeman present the familiar problem in studying and improving teaching: how to connect what teachers know and think with what they do as they teach. They outline how research on the public and private worlds of teaching has become bifurcated, with the private side of the work often disconnected from observable practices, and contend that focusing on how public actions and private reasoning are connected is crucial to more fully understanding teaching. They revisit stimulated recall as a research procedure that connects the public and private in teaching, reviewing how it has been used in studying teachers' decision-making and questioning assumptions that generally frame the procedure as a means of data collection. This critique distinguishes stimulated recall as a procedure for collecting data from the claims and the justifications on which it is based. In shifting the basis of the approach, Schachter and Freeman argue that the procedure offers a practical vehicle for researchers to use in both connecting the two worlds and repositioning the role of teachers in the study of their work.

Keywords: stimulated recall, teachers' perspectives, studying teaching, researchers

Although teachers' work in classrooms is carried out in the public domain, there is a parallel "hidden side" of teaching (Freeman, 2002)—how teachers think and reason and what they know—that has not been as widely understood and acknowledged. This distinction between the public and private worlds, between teachers' actions as they teach and the thinking and knowledge that informs their actions, has separated the worlds in the study of teaching. Teachers' actions and behaviors are externally accessible and observable to others,

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whereas their thinking and how they "use what they know to do what they do" in the classroom (Freeman, 2016) is not. This distinction, which we have referred to as "bifurcated worlds" (Schachter, Freeman, & Parrakal, in press), has played a central role in studying teaching. Often the two worlds have been treated independently, which, over the last thirty years, has led to distinct approaches to studying each, with particular methods of collecting and analyzing data attached to each "world." More crucially, there are particular ways of establishing what it means to understand both the public and the private in teaching and to make claims about it. Actions in the public world of the classroom are often studied with the goal of improving or reforming teaching, whereas teachers' private world of knowing, thinking, and reasoning is usually studied to document and to better understand their experiences. Given these distinct focuses, researchers generally miss—or perhaps skirt or assume—how the visible or nonvisible worlds of teaching interrelate.

In this essay, we argue that focusing on the connections between public actions and private reasoning is critical to more fully understanding teaching. We argue that integrating the public and the private worlds in researching teaching is a central move in improving instruction and student learning outcomes. The contention itself is not new, at least conceptually (e.g., Clandinin & Connelly, 1988; Clark & Peterson, 1976; Elbaz, 1983; Lampert, 2003); however, it has not been widely embraced in research. There are methodological procedures available to examine these connections, though many are not widely used. We contend that this is due, at least in part, to how these procedures have been conceptualized. Reengaging with forms of data collection to connect public and private worlds needs to include reconsidering their operating rationale. This entails examining the underlying justifications used to support the analyses that these procedures generate. We refer to these justifications as *warrants*, "the ways in which our data supports the claims we make" (Thomson, 2015).

Specifically, we argue that how two sets of interpretations—the data about teachers' actions and the data about their thinking and knowing, which is expressed in language—are connected involves often unvoiced assumptions that ought to be fully conceptualized. We refer to this process that asserts connections between representations of teachers' actions (in the visual data) and their reasoning (in their commentary) as *languaging teachers' perceptions of their work*. This process of connection is enacted through the specific decisions the researcher makes during the process of collecting data, decisions that reflect assumptions about how the public and private worlds of teaching connect. In this sense, our argument is particularly addressed to the research community that studies the messy complexity of classroom teaching.

The bifurcating of public and private worlds in the study of teaching has been a persistent issue. In 1975, Lortie observed in framing his landmark study of teachers' work that "people at work are inclined to dignify and elaborate the significance of the tasks they perform to earn a living . . . Classroom teachers

are no exception. It should be helpful, therefore, to examine the form their elaborations take" (1975, p. 111). Forty years later Kennedy (2016) observed in reviewing research on teacher learning in professional development that "we have misplaced our focus on the actions we see when what is needed is a focus on the purposes those actions serve" (p. 9). Her observation reflects both the general state of work in this area and the assumptions that have underpinned much of the research (e.g., Bell et al., 2012; Mashburn et al., 2008). Thus, it seems from Lortie's framing in 1975 to Kennedy's observation in 2016 that the discussion about the public versus private focus has been a long-running issue in understanding and documenting the study of teaching.

Although the educational research community has studied both the public and private sides of teaching, the public side seems to have dominated much of the research, as Kennedy (2016) has noted (e.g., Grossman, Loeb, Cohen, & Wycoff, 2013; Irwin, Madura, Bamat, & McDermott, 2016; Kane & Staiger, 2012; Mashburn et al., 2008). This may be because it is in many ways more feasible to study, document, and measure what is observable about teaching (the public), particularly in large-scale research. Regardless of the reasons, the public side of teaching has gained focus both consistently and recurrently, and this deference to the public side has fueled the de facto split between the two sides of teaching. We argue that this break is problematic when researchers seek a full and integrated understanding of classroom instruction. When teachers' thinking and reasoning are not evident in the data, the individual's role in, and the social context of, the work tend to dissipate.

Indeed, many research efforts, across diverse forms and levels of teaching, operate from the view that the public world of teaching can be documented in a context-neutral way. However, such efforts risk losing the nuance in understanding the "how" of teaching and thus perhaps missing "the significance of the tasks [these teachers] perform" (Lortie, 1975). Research on teaching in early childhood settings offers an example. In their review of teaching in Head Start classrooms, Irwin and colleagues (2016) described early childhood teachers' instruction by focusing on what they could observe about practices through quality measures. They described teachers' classroom quality as "good, fair, and poor [with] *good to excellent* classroom environment scores (means ranged from 5.0 to 6.3 on a seven-point scale) and above-average sensitivity in teacher interactions with children scores (mean of 2.6 on a four-point scale)" (pp. 5–6). The resulting categorizations of teachers and their teaching according to these ratings were based solely on what could be viewed in the public world of teachers' practices. This framing did not include teachers' perspectives about how they carried out the practices, and therefore one could fairly say that the resulting ratings did not represent the full picture of what teachers were doing as they taught these observed lessons. "Doing" in this instance meant only the actions they were taking; it did not include how the teachers thought or reasoned, or the knowledge they used to enact the particular forms of instruction that led to the high scores on the observation measure.

There is clearly a role for studying the public acts of teaching. However, we argue that the claims made in such research need to be tailored to the warrants that can support them. One can study broad patterns in classroom activity and make claims about how they impact students, as Rowe (1974) did in her studies of wait time. Rowe examined how the pause or silence teachers allowed between posing a question and nominating a student to answer it impacted the responses. The work identified an optimum "wait time" that seemed to increase the complexity of student answers. As the practices become disembodied performances, however, the opportunity to investigate how their use is informed by individual and/or contextual factors found in the private world of teaching is forgone. As Carlsen (1991) noted in his sociolinguistic review of teacher questioning,

> Wait time is seen as teacher behavior, rather than as a joint production of teachers and students. Wait time is operationalized by measuring silence, rather than by struggling with the more ambiguous problem of identifying the point at which the full question is apparent to listeners. (p. 171)

The idea that research on the public world of teaching can be objectively documented is rendered further problematic when teaching is viewed as relational work (Cohen, 1988) as Carlsen observes in the the example just above. In addition to the dimensions of individual thought, this approach loses sight of the roles that context in its many forms—physical, social, organizational, historical—plays in informing the work of teaching (Engestrom, 2005). Additionally, the forms of data collection themselves do not generally capture the complex role learners play in the relational work of teaching and how differences among them can contribute to the ways teachers carry out instruction (Richmond, Bartell, & Hadley Dunn, 2016). Since teachers are the ones who must cultivate these relationships with their learners, while also balancing the other demands and elements of the teaching context, their perspectives about how they do this work are crucial. When the focus is on documentations of practice that do not capture the intentionality behind teachers' actions, teachers become implementers rather than agents in their teaching.

Conversely, there have certainly been, and continue to be, studies that advance the private side of teaching. However, they are not always connected to the public side of teaching; nor do they account for teachers' perspectives on what they do. For example, Sizer's (1984, 1992, 1996) "Horace" series of studies of the working life and conditions of the archetypal high school were based on extensive interviews with secondary teachers about their teaching and conditions of work. Documenting teaching this way, through talk about it, which continues to be utilized by researchers in interviews or other narratives, starts to shift this imbalance between reporting on teachers' actions and examining "the purposes those actions serve" (Kennedy, 2016, p. 9). However, interview data itself poses its own issues around positionality and perspective (Kvale, 2008; Mishler, 1991; Polkinghorne, 1983).

Our point is that teaching is more than what can be observed or what can be told through interviews. Connecting reasoning to actions is central to understanding why classroom practices happen as they do. Further, to improve instruction, understanding the knowledge, thinking, and reasoning behind it are key. To move beyond documenting observed instruction or gathering of teachers' perspectives separate from specific acts of instruction, the research challenge lies in connecting teachers' thinking and their perspectives with what is being observed. We argue that this challenge is at once procedural and conceptual and that these two dimensions need to be addressed in concert by researchers.[1]

Stimulated recall (SR) is a research procedure that purports to make this connection. With a well-established history in the study of teaching, SR is in many ways an archetypal procedure that both illustrates and makes methodological assumptions about the types of connections that can be made between the bifurcated public and private worlds in studying teaching. Through this procedure, the researcher collects and connects visual and language data and warrants those connections as languaging teachers' private views of their public teaching practice. Here we describe the SR procedure and its history to highlight how the procedure can be used as a bridge between the worlds. We then examine how researchers can make decisions that support the concurrent collection of data on the public and private worlds of teaching, focusing specifically on the unique role of languaging perceptions in this process. In reframing this procedure commonly used in educational research, we demonstrate how the decisions of the researcher shape the type of information that can be learned about teaching.

Stimulated Recall as a Research Procedure That Connects the Public and Private Worlds of Teaching

The SR procedure has been used in psychology since 1953. It became popular in studying teacher thinking beginning in the 1970s and continuing through the 1990s. As a research procedure, SR involves collecting observational data, usually through recording instances of teaching, and later asking the teacher to provide language data about those observations. In this way, SR illustrates the process of languaging the teacher's perceptions to connect the two sides of teaching. Simply outlined, the procedure involves three elements: a *visual* segment of classroom activity is recorded, from which a *focus*, or particular instance, of activity is subsequently "sampled," or *recalled*, when the focus is later replayed and the teacher is asked to discuss it. In this way, the procedure allows the researcher to potentially collect data about both the public and private domains of teaching. The basic steps of the procedure can be varied in many ways depending on the research focus. For example, the visual recording can focus on the classroom generally, on a specific activity, or on particular students. The focus can be selected by the researcher, by the teacher, or

through time sampling. These decisions about what to select lead in turn to how the recall portion is structured (Schachter & Freeman, 2015).

SR as a research procedure is not a recent development in the study of teaching. In reviewing refereed research publications since 1950, we found thirty-six articles and reviews that used SR as a data-collection procedure to investigate teaching (see appendix).[2] We were interested in two particular dimensions of these accounts: the instructional contexts they addressed (types of teachers, students, subject matters) and, to the extent it was possible to determine, the theoretical frameworks on which the researchers based their use of the SR procedure. The former gave a sense of how widely applied the procedure has been used in studying different contexts of teaching. The latter allowed us to examine researchers' conceptions of the interrelation between the public (visual) and the private (language) domains of teaching and, particularly, if and how they warranted those connections.

Instructional Contexts

According to this review, the SR procedure has been employed to investigate teaching in a variety of instructional contexts: from teachers working in higher education settings (e.g., Bloom, 1953; McAlpine, Weston, Beauchamp, Wiseman, & Beauchamp, 1999), to teachers in early childhood classrooms (e.g., Cherrington & Loveridge, 2014; Moyles, Adams, & Musgrove, 2002), to teachers learning to teach in preservice settings (e.g., Rich & Hannafin, 2008; Wear & Harris, 1994). Studies have also spanned teaching in a variety of instructional contexts, including math (e.g., Putnam, 1987; Roth, 1996), science (e.g., Butefish, 1990; Nilsson, 2008), social studies (e.g., Clark & Peterson, 1976; Dunkin et al., 1998), foreign and second language instruction (e.g., Gass & Mackey, 2000; Meijer, Verloop, & Beijaard, 2002), technology use (e.g., Tondeur, Kershaw, Vanderlinde, & van Braak, 2013; Vesterinen, Toom, & Patrikainen, 2012), music (e.g., Rowe, 2009), and physical education (e.g., Gilbert, Turdel, & Haughian, 1999; Housner & Griffey, 1985). The publication dates of these studies seem to suggest that the SR procedure has fallen out of use more recently; however, this review highlights the feasibility of using the SR procedure across wide-ranging classroom contexts, which points to the promise of its renewed use.

Theoretical Frameworks

The studies we identified include a range of theoretical frameworks or orientations, underscoring the fact that the SR procedure has been used in a variety of ways. Overall, there seems to have been a broad shift from using SR as a procedure to study teaching as a process of interactive decision-making, starting in the 1970s through the 1990s, to using the procedure as a professional development tool, beginning in the 1990s and continuing currently. However, we found that researchers have rarely used SR procedures to specifically focus on teachers' own perspectives on their work; rather, researchers seemed to

have used their own orientations to teaching to frame the ways they used the procedure. For example, in one of their studies of interactive decision-making, Clark and Peterson (1976) identified in advance four different input-use and decision-making paths that teachers could take and then coded teacher responses to questions according to those four paths. Used in this way, the SR procedure elicited teacher responses that mapped onto how the researchers were operationalizing teaching.

More generally, these frameworks for studying teaching seem to have been shaped by researchers' ideas about the teaching process. In the reviewed studies from 1954 to the 1980s, teacher thinking was generally conceptualized as decision-making (e.g., Clark & Peterson, 1976; Parker & Gehrke, 1984), often based on a cognitive information-processing model (Shavelson & Stern, 1981). In an early review of research on teacher thinking, Clark and Yinger (1977) wrote, "The teacher is seen as a decision maker," as someone "constantly assessing the situation, processing information about the situation, making decisions about what to do next, guiding action on the basis of these decisions, and observing the effects of these actions on students" (p. 292). In this theoretical framework, researchers typically engaged teachers in SR procedures using close-ended questions meant to prompt information about their decision-making during instruction. The aim was to examine the categories of reported decisions as related to improving student learning (e.g., Butefish, 1990; Parker & Gehrke, 1984; Peterson & Clark, 1978). In a sense, this cognitive approach reflected the process-product orientation that was prevalent in the study of teaching and learning at that time (Dunkin & Biddle, 1974).

Beginning in the late 1980s and continuing through the early 1990s, the research orientations and the use of SR procedures in the studies we reviewed began to broaden views of the private world of teaching (Clandinin & Connelly, 1988; Elbaz, 1983). It was during this time that the study of teaching was moving from being a strictly process-product paradigm to embrace socioconstructivist orientations. These theoretical frameworks shifted away from cognition-based theories of teacher thinking to incorporate social and temporal contexts in understanding how teachers conceived of and thought about their classroom practices (Freeman, 2016). Shulman's (1987) proposal of "pedagogical content knowledge" (PCK) distilled this shift. Although PCK has been widely taken up as a particular form of teaching knowledge, Shulman's original proposal included the often overlooked argument that teachers' "pedagogical reasoning" is informed by and drives the multiple types of knowledge, including PCK, that are used in instruction. PCK could be publicly documented through what teachers did with their students as they taught; their pedagogical reasoning, however, was always hidden, a part of their private world.

Even as these constructs emerged in research on teaching, cognitive orientations continued to shape how they were interpreted (e.g., Putnam 1987; Westerman, 1991). Researchers did start to incorporate ideas that teaching involved the application of knowledge in particular contexts, and there was a

trend toward more situational and context-driven theoretical uses of the SR procedure. However, these orientations seemed to wane in the 2000s (e.g., Moyles et al., 2002; Schepens, Aelterman, & Van Keer, 2007; Tondeur et al., 2013).

Warrants and Their Underlying Assumptions

Throughout these evolving uses of SR as a procedure, researchers have warranted the connections between the observations of teaching (the public) and the language generated about them (the private) in different ways. These warrants—underlying justifications that researchers draw on to support the analyses and findings—have depended on assumptions about the role of language in expressing thinking, assumptions that are often tacit or taken for granted in the process of studying teaching. The theoretical framings of the procedure have generally detached the data collection from teachers' views of their work. In the process-product orientation, for example, researchers have focused on languaging specific moments of instruction they found interesting. The warrant in this approach assumes that the teacher's language equates directly with what they may have been thinking at the observed moment. Research focused in this way has generated data that addresses the researcher's interests in the observed instruction. Assuming that talk equates to thought, the approach does not necessarily surface teachers' particular perspectives about that moment of teaching.

In contrast, as views of meaning as context based and socially constructed took hold in studying teaching, these postpositivist orientations fueled shifting uses of the SR procedure. Anchored in phenomenological warrants (Polkinghorne, 1983), researchers began to draw on the procedure to descriptively document teachers' own views of their work. Our review found a few studies that employed this approach (e.g., Dempsey, 2010; Schachter, 2017; Schepens et al., 2007; Vesterinen et al., 2010). Shifting the focus to teachers' perspectives orients the researcher toward a different view of visible practice, one that accounts for the role of the social context as well as for how the teacher thinks about the instructional moment as situated in that context. These dynamics shape what the teacher is willing to tell the researcher about the observed moment of teaching.

For example, through a case study that employed SR procedures, Tondeur and colleagues (2013) were able to more fully understand how teachers' motivation as well as how variables in the school context informed the moment-to-moment use of technology in the lesson: "the observed lessons in combination with the recall interviews provided evidence that the teachers developed an integrative knowledge base of technological knowledge and skills, as well as knowledge of learners, subject matter content, and pedagogy necessary to teach with technology in the classroom" (p. 445).The interplay between these elements would not have been accessible in this way had the researchers depended only on their interpretations of what they observed or

taken teachers' explanations from closed-ended surveys. Instead, they were able to use language to bridge the teachers' public activity and their private thinking and reasoning.

The Public and Private Worlds of Teaching in Contemporary Research and Practice

Beginning in the early 2000s, the views of teaching in the reviewed studies led researchers to explore the use of the SR procedure to examine prospective orientations of teaching. By "prospective orientation," we refer to using visual data from current teaching to think about what one might change or do differently in the future. Here SR procedures were used to facilitate reflection on practice and to encourage professional learning (e.g., Cherrington & Loveridge, 2014; McAlpine & Weston, 2000; Moyles et al., 2002). In these studies, the SR procedure often served as a starting point to create a dialogue and enable examination of practice. For example, Cherrington and Loveridge (2014) used the procedure in their interviews with teams of early childhood teachers to facilitate collective dialogue among team members that encouraged further reflection and improved practice. This type of approach embodies a view of the SR procedure as a means for accessing, and perhaps subsequently shifting, teachers' thinking about aspects of their teaching (Nilsson, 2008).

The prospective orientation is also now evident in how video recordings of classroom practice are used in preservice preparation and in-service professional development. Indeed, the increased technological capacities associated with video recording have made it an important tool in teacher development (Schachter et al., in press). In 2014, in response to the rapid growth of its use in these contexts, Gaudin & Chalies (2015) systematically reviewed over 250 studies using video to support pre- and in-service teacher learning. Their review documents that procedures in these contexts generally mimic the structure of the SR procedure: teacher-learners are asked to review a recorded instance of teaching (usually their own) and to talk or write about it as an instance of (their) teaching. They found that in most cases these videos were used to engage in interpretations of and reflections on teaching in ways that were similar to those described by Cherrington and Loveridge (2014). Thus, the videos were being used in these teacher education contexts as a bridge to connect the public and private worlds of participants' teaching, much as they are used in SR as a research procedure. The difference is that this bridging is seen as a means of triggering change or supporting improvement in participants' practice. Thus, the use of video elicitation in teacher education is aimed at moving beyond description of teaching to focus on participants' understanding of how to change or improve it. Languaging the observed instance of teaching provides the central vehicle for working those changes.

Although use of the SR procedure to study teaching has waxed and waned over the last four decades, the complexities of the research procedure itself

have not been closely scrutinized. The procedure relies on languaging teachers' experience by recalling their verbal reports of what they were thinking during particular moments of instruction as captured on video. Within the general framework of interactive decision-making, researchers asked teachers to generate language about the observations of their teaching and then used that data to document what the researchers saw as efficacious instructional moves. More recently, in using video elicitation in teacher education activities or in studying teacher reflection, proponents have sought to use the language generated through the SR procedure as a vehicle for changing specific classroom practices. Both of these uses of language are highly prescriptive, however. In the former, the teacher's language is being used to label their decisions; in the latter, the teacher is meant to use language to examine what they have done in order to focus on areas of change or improvement. Distilling teachers' language into instructional moves, as is done in these process-product, interactive decision-making studies, or using teachers' language as a vehicle to access and change their practice, as is done in reflective studies or teacher education, obscures the fact that the language itself constitutes important data.

Indeed, in contrast to these uses, we take the more general position that researchers can use the language generated through the SR procedure as articulations of the private world of teaching, thus serving to surface teachers' perspectives on their work. The process of languaging teaching that happens in the SR procedure serves to descriptively document teachers' views of their work within these contexts of their observed practices, thus bridging the two worlds. However, this language does not just simply emerge. Rather, the researcher must provide opportunities for the teacher to voice—use language to express—what they are doing. Focusing on languaging teaching, we argue, necessitates that researchers employ a distinct theoretical framework in using SR as a procedure to connect publicly accessible images of visual information with participants' private, individual thinking and reasoning.

Revisiting the Underlying Theorization: Considerations for Researchers

How the SR procedure surfaces teachers' perspectives on their work in the classroom depends on decisions the researcher makes before and during the data collection process. (The same can be said about any procedure that combines visual and language data about teaching.) The process turns on the theoretical framework the researcher uses, whether explicitly or implicitly, to understand the meanings that the teacher makes in and about their teaching (Freeman, 1993, 2016; Schachter, 2017). This meaning-based orientation begins with the assumption that the activity of teaching as well as how it is discussed in the research process are socially positioned. This positioning plays out in a series of decisions the researcher makes in using the SR

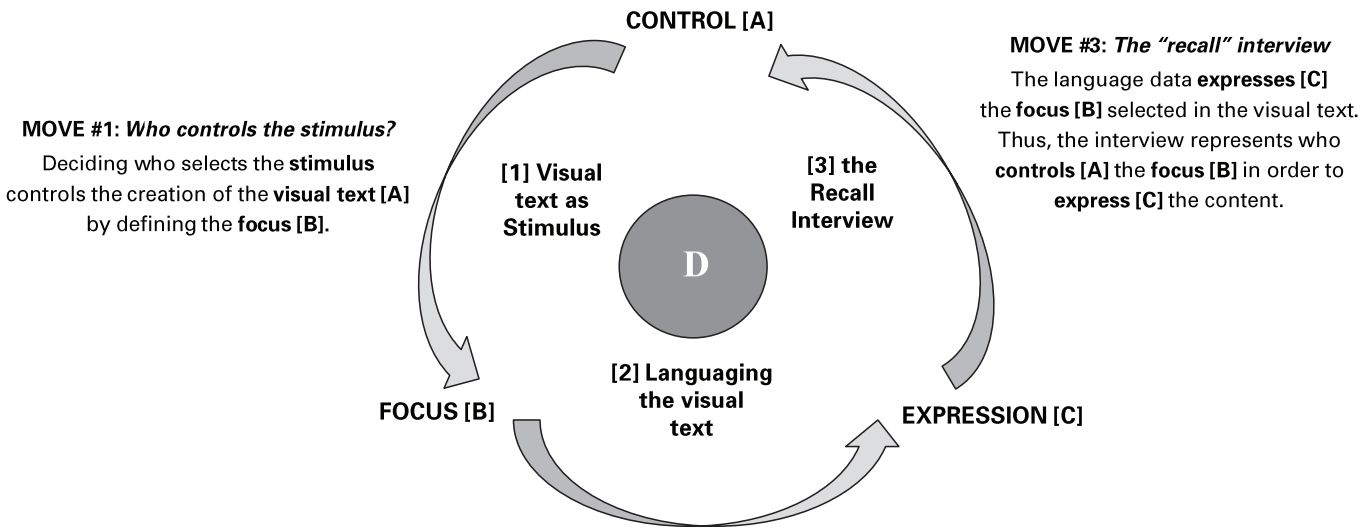
procedure to study teaching. The decisions structure how meaning is made (or comes about) through the interactions that allow for surfacing teachers' private world of teaching and connecting it with the public world of enacted classroom activity.

In using the SR procedure, the central assumption is that a moment of observed practice caught on video can be excerpted from the social setting and fabric of teaching-learning interactions at a particular moment in time. This excerpted moment can serve to stimulate the teacher to recall their thinking about that moment and thus to articulate it. This premise surfaces two basic methodological issues: Is this recall actually what the teacher was thinking at that moment captured in the video? How is the recall process itself shaped by the social context in which it is happening, and how is it a product of the interaction between the teacher and the researcher?

These questions go to the central premise of SR as a procedure for studying teaching. SR connects two points in time: the moment captured on video and the moment it is recalled in the interview. These two moments are bridged through language, which introduces several methodological issues that need to be considered when attempting to capture teachers' perspectives on their work. In connecting these two moments, the SR procedure becomes essentially a social interaction (the interview) about a social interaction (the classroom activity). By making meaning from the visual through the verbal, the language in the former interaction provides the bridge between these two moments. The articulation has two facets. There is also the language used by the researcher about the observed activity, the words used in selecting it, in asking about it, and in probing the teacher's response. And there is the language the teacher uses to respond to the researcher, the language used by the teacher to name and describe what they were thinking at the moment captured in this visual text.

In mapping these two facets, we outline three dimensions: selecting the observed moment, or *control*; determining what to examine in that moment, or *focus*; and using language about that focus, or *expression*. Figure 1 represents these dimensions spatially, as areas, each of which involves the teacher and the researcher in a social interaction; the overlap leads to decisions that call for balancing both the researcher's and the teacher's different perspectives and agendas. Within the area, there is a principal decision from which the area takes its name. The decision in *control* involves who selects the segments from the recorded teaching to determine the visual information that stimulates the recall (Move #1). This decision about what to select separates specific visual information—the *visual text*—from the entirety of the recording. The visual text has a particular *focus* that brings the teacher's thinking into the public domain as the person who is controlling the selection decides what to ask (if they are the researcher) or what to say or "recall" (if they are the teacher) about it (Move #2). The decisions about *control* [A] and *focus* [B] circumscribe the *expression* [C] of what is said by teacher and by researcher (Move #3). This

FIGURE 1 *How the stimulated-recall procedure languages the private world to make it public*



sequence of decisions articulates the content that is stimulated in this process of recall.

The SR procedure is a series of contingent decisions and interactions that are usually led by the researcher. There are two sets of decisions: those about what to select from the recorded images as the visual text to be discussed and those about what to say about it. These decisions can allow researchers to organize how they use the procedure to surface teachers' perspectives. Whereas they may seem operational, these decisions instantiate a theoretical framework that is critical in using SR as a procedure to study teaching. Specifically, we contend that a meaning-based orientation is critical to surface teachers' perspectives that more fully bridge the public and the private worlds of teaching. To illustrate these decisions and how they are shaped by researcher assumptions, we use data collected using SR by Schachter in early childhood classroom contexts.

Decisions About Determining the Visual Text [Move #1—Control (A) in Figure 1]

In operational terms, deciding who has control in selecting the visual text often comes down to who is managing the playback of the recording. This process of selecting observed activities to focus on establishes control over the visual information, thus privileging either the researcher's or the teacher's perspective on what they are viewing. The social interactions between the researcher and the teacher inform the dynamic of control in who defines what becomes the visual text. This selection determines what there is to talk about; thus it creates the basis for the language data.

In the two examples presented in table 1, the visual text that "stimulates" the "recall" interview is described in the middle column, and the "recall" is language data from the interview, transcribed in the right-hand column. In the first example (in the first row), the researcher has controlled the focus, stopping the video to select the observed activity; then the teacher has commented on the visual text that the researcher selected. In the second example (in the second row), the teacher has managed the video, stopping it to choose the observed activity; the teacher has controlled the focus and thus has created the visual text. Although the length of the segments differs, we concentrate here on the content of the responses in these two excerpts. In the first, the teacher appears to be justifying the visual text by explaining it. The language data seems somewhat forced, perhaps triggered by the need to respond to the visual text that the researcher has chosen. The teacher ends by saying almost defeatedly, "I don't know." In the second exchange, the response seems to capture a point of interest for the teacher. This visual text leads to language data that is more elaborate and appears to articulate more fully the teacher's perspective on the visual text. In this instance, the teacher is explaining their thinking and connecting it to an ongoing plan for teaching, noting, "I have

TABLE 1 *The stimulus: How control creates the visual text that focuses the recall interview*

Who has control	*Who creates the visual text*	*What stimulates language data*
The researcher controls the video	The teacher is reading a book. The line of the text is, "The boy grew five more centimeters." The teacher stops reading and says, "Zack, the book says 'The boy grew five centimeters.' Does that mean he is getting bigger or smaller?"	I thought I would ask the math question to Zack first, because he really likes math, but I could've asked—didn't—I could've—I don't know, that one could've gone to anybody. [Travis]
The teacher controls the video	The teacher and child are looking at a book and see a marble racetrack. The teacher brings the boy over to a table and hands him a paper towel roll. The teacher then goes to the closet to get more rolls and tape.	He was looking in the book and saw a marble racer. But the truth is, I have been saving these things to make a marble racer with them for a long time, but they hadn't seemed interested in it, it wasn't in their interest, so I would've been mak[ing] it myself. So when he said, "I want one of those," immediately I remembered I put that out because that is also a good thing. I mean, they're learning movement; it's scientific, it's mathematics, it's got to move different ways. How long do you think it's going to get out? How many tubes did we use . . . [Abigail]

been saving these things." The teacher also articulates a view about teaching, noting that "it wasn't in their interest, so I would have been mak[ing] it myself." These comments differ from the sense of justifying and describing an action evident in the first case.

In both of these examples, as they work with the video recording, the researcher and teacher are transforming the observed activity in the visual text into language data that is stimulated within the social interaction of the interview process. Decisions about what to focus on locate the observed activity within the researcher-teacher interaction and generate the visual text. As these decisions are unfolding, they bring up questions of who controls the choice of the content and who manages the discussion about it. When the researcher chooses the focus, they are eliciting the teacher's perspective on the researcher's area of interest within their classroom practice and thus controlling to a greater or lesser degree what the teacher may say. It follows then that to fully elicit their perspectives, the teacher would need to share or maintain control the instances of instruction they wish to focus on and to talk about.

TABLE 2 *The recall: The teacher elaborates the focus*

Visual text	*Researcher's prompt*	*Language data*
The teacher has set up an art project, saying, "Ira do you want to come work on our dinosaur?"	"In this moment, what were you thinking?"	Yesterday, he had really wanted to work on it, and he had just a really tricky day, and a bucket full of flour, water, and newspaper was just too much for him. So I wanted to make sure that he knew if he wanted to work on it, he could work on it today. That's all. [Hailey]

Decisions About What Is Said About the Visual Text [Move #2—Focus (B) in Figure 1]

As the visual text is selected, discussion ensues between the researcher and the teacher. There are questions, prompts, and responses, all of which attach language to the visual text and generate the language data (Freeman, 1996). In this process the researcher may shape the language data through the types of questions or prompts they use. As in any interview situation, the open-endedness of the question or prompt can shape how the teacher responds (Patton, 2002). Even in cases in which the focus in the visual text is selected a priori, as happens with time sampling, when the teacher is asked to comment at regular intervals (Schachter & Freeman, 2015), there are ways to ensure that the teacher's perspectives are more fully elicited. For example, the researcher and teacher can agree on the sampling in advance, or negotiate selection of the visual text, and/or mutually develop the prompts about it. These decisions shape the aspects of the observed activity that are nominated for discussion in the visual text and whose perspective is privileged about it.

In the example in table 2, the researcher has stopped the video to probe the teacher's thinking based on an interest in how the teacher is working one-on-one or in small groups with children. When asked about their view of this instructional move—inviting the child into the activity—the teacher offers an elaborate and contextualized description of their thinking. The response extends the discussion of the visual text, incorporating information about classroom history and context. These comments help the researcher better understand what was relevant to the teacher both generally and in this specific instance of practice. In this case, even though the researcher selects visual text, they manage the focus to create space for the teacher to elaborate on the visual text in a way that is meaningful, which allows the teacher's perspective to emerge.

Deciding How Perspectives Are Languaged [Move #3—Expresson (C) in Figure 1]

Ultimately, the choices about control and focus transform the visual text into language. The focus creates the content in the visual text; the interview then

TABLE 3 *The researcher's question drives languaging of the teacher's perspective*

Visual text	*Researcher's prompt*	*Language data*
The teacher has written "Pizzeria Uno" on the chart paper. The teacher reads it aloud while pointing to the words. One child says, "That's like my name."	"In this moment, what were you thinking?"	Teacher: Not only was she doing letter recognition, because she realizes it's in her name also, so she's doing different forms of—I can never say the word . . . fon—/f/—okay— Researcher: Phonics? Teacher: Not phonics. It's phono— Reseacher: Phonological— Teacher: Phonomes. Researcher: Oh, phonemes. Teacher: Phonemens. Researcher: Phonemes. Teacher: See, I can't even repeat it after somebody says it. It's okay. The kids look at me like I'm crazy. [Abigail]

generates the language data about it. As others (e.g., Kvale, 2008; Mishler, 1991) have said of the dynamics of interviewing more generally, the language used to talk about visual text comes from somewhere; it is shaped by the interpersonal history and dynamic between researcher and teacher. The choice of words is not neutral; rather, the teacher chooses what to say (or not say) in part as a function of who they are speaking to and the context in which the interview is occurring. The excerpt in table 3 illustrates how the dynamic between researcher and teacher can shape expression about the visual text. In this instance, the teacher discusses why a child, Kayla, might have volunteered that the name of the restaurant Pizzeria Uno is like her name. In languaging the situation, the teacher appears to be searching for the word *phoneme*.

In searching for this linguistic term, the teacher may be trying to address the researcher's focus on language and literacy instruction in the visual text they had selected. In responding to the researcher's attempt to leave space in the questioning, the teacher looks for the professional term that is part of the discourse of literacy instruction (Freeman, 1993, 2016). In this sense, the choice of terms in the response shows a hierarchy among researcher, teacher, and "kids" when the teacher says, "I can't even repeat it [the word *phoneme*] after somebody says it. It's okay. The kids look at me like I'm crazy." The exchange suggests that the process of languaging the visual text is not simply a process of putting words on images. There are profound dynamics involved, as with language use in any social context; the process brings up the complexities of power and position that happen in any interpersonal communication. These dynamics are part of how the teacher expresses a perspective on the observed activity and how they see themselves relating to the children in their classroom.

Conclusion

In gaining access to teachers' perspectives on what they are doing as they teach, SR as a research procedure serves as a procedural bridge that can link the public and the private in teaching. It can connect the visual text, which captures visible, external aspects of teaching, with an understanding, as expressed in the interview, of the internal thinking on which those actions are based. The procedure can address the bifurcating of these two worlds. More fundamentally though, the procedure brings to the fore questions of how these two worlds are linked and the warrants by which the researcher asserts those connections. When used within a meaning-based orientation, the SR procedure can position teachers and their work differently. Depending on decisions about control and focus in the visual text, the procedure can bring the teacher's perspectives about classroom instruction into the research process, thereby presenting researchers with the possibility of increased insight into the complexity of studying teaching. This broadening is central to embracing multiple perspectives on the phenomenon of instruction and to learning about the relational work of teaching.

The SR procedure highlights the fact that, like any research undertaking, the procedure happens in the social context in which researcher and teacher are socially positioned and interacting. The decisions researchers make enact assumptions that shape the understandings and knowledge that emerge about teaching. The assumptions appear in the claims they make about what their data analysis means and how they warrant their findings. Within these relational dynamics and interactions between teachers and researchers, there are implicit, if not explicit, power dynamics at play that have important consequences for understanding teaching. These dynamics influence, for instance, what teachers choose to show in the visual data or to share in languaging it with researchers, which in turn shapes the conclusions that researchers can draw from their analyses.

This dilemma is not a new one. In grappling with it, researchers have employed a variety of procedures to study teaching (e.g., reflections on multimedia case studies: Abell, Bryan, & Anderson, 1998; Masingila & Doerr, 2002; multiple types of ethnography: Adair, 2011; Souto-Manning, 2010; Tobin, 1988; Xiao & Tobin, 2018).[3] SR is another procedure that can be used to decenter researchers' interpretations and bring to the fore teachers' perspectives. Using such research procedures does not ensure that every aspect of a teacher's thinking and perspectives on teaching will emerge, however. There is no guarantee that teachers will fully share their perspectives with researchers. In fact, they may prefer to maintain some of the private aspects of their work.

It is certainly the case that how researchers position teachers in the research process—whether through planned decision or by happenstance—has direct implications for the types of data generated. When teachers are seen as one of the variables in instruction, as they can be in many large-scale observation-focused studies, the view of teaching and learning that results is partial and

impoverished. The centrality of the relational aspects is diminished in these studies when the work itself can be reduced to an equation. The views of teachers' work that result from this common emphasis on the public side of teaching divert attention from the underlying processes and knowledge involved in teaching. However, when teachers are central actors in studying teaching, the work becomes complicated by the very elements that make it real. Socially couched explanations become, for better or worse, the currency of understanding and improving teaching (Freeman, 2016). The assumptions researchers make about the public and private sides of the work, and the decisions they make about if and how these worlds interconnect, frame everything that follows in the research process. Operationalized in how the research procedures are used, these assumptions have consequences for research findings, as well as for the policies that aim at improving classroom practices that can flow from them.

Ultimately, the research community needs to use multiple and converging ways to understand what goes on in classrooms. Considering instruction as a whole—both its public and private worlds—entails including information about the visible activity and the meanings teachers give to and make from those activities. Attending to teachers' perspectives through the use of the SR procedure offers one procedural means of doing so. The SR procedure raises issues of control, focus, and expression in the research methodology broadly that are manifested in specific decisions about data collection—in what constitutes the focus of the visual text and how that focus is languaged as content. Through these specific moves and how the researcher and the teacher interact in the process, researchers are making and warranting claims about connections between the public and private worlds of teaching.

The argument in this essay is addressed to the educational research community in particular. For those who do such research, these examinations are central to establishing the validity of the claims they make about classroom teaching and teachers' work. However, there are clearly implications for other communities as well, including those who prepare teachers or who make and carry out education policies. These constituencies can likewise benefit from closer scrutiny of how the private world of how teachers think, reason, and know is rendered in the public sphere.

Most centrally though, examinations of teaching need to bring to the fore the complexity and messiness of the work, aspects that are often overlooked or not well understood in studying teaching or making proposals to improve it. For too long, in trying to fully understand the work of teaching, we have settled for studying what we can document while skirting questions of what we cannot readily gain access to. This examination of SR as one procedure for collecting data offers both a view into the heart of the problem and a possibility for how to think differently about it.

APPENDIX *Selected Stimulated Recall Articles (by Year)*

Author(s)	*Year*	*Country*	*Instructional context*	*Theoretical frame*
Bloom	1953	USA	Higher education faculty	Cognitive information processing
Morine & Vallance	1975	USA	Elementary school teachers	Interactive decision-making
Clark & Peterson	1976	USA	Experienced social studies teachers	Interactive decision-making
Peterson & Clark	1978	USA	Middle school social studies teachers	Interactive decision-making
Clark & Yinger	1978	USA	Methodological/Review	Cognitive information processing
Shavelson & Stern	1981	USA	Included as part of a review	Interactive decision-making
Morine-Dershimer	1983	USA	Methodological and study of middle school teachers	Cognitive information processing
Fogarty et al.	1983	USA	(In)Experienced elementary school teachers	Information processing
Parker & Gehrke	1984	USA	Elementary school teachers	Interactive decision-making
Housner & Griffey	1985	USA	(In)Experienced physical education teachers	Thinking decision-making; cognitive processing
Putnam	1987	USA	Elementary school math teachers	Psychology problem-solving frame; Shulman for ideas of knowledge
Butefish	1990	USA	Middle and high school math teachers	Interactive decision-making
Westerman	1991	USA	(In)Experienced elementary school teachers	Interactive decision-making; Shulman notion of connecting knowledge to learners
Freeman	1991, 1993	USA	Foreign language teachers	Phenomenological
Wear & Harris	1994	USA	Preservice teachers	Cognitive, recall
Roth	1996	Canada	Expert upper–elementary school math teachers	Epistemological view of teaching as a social practice
Dunkin et al.	1998	Australia	Elementary school social studies teachers	Knowledge in use (similar to Shulman)
Gilbert et al.	1999	Canada	Youth hockey coaches	Interactive decision-making

Author(s)	Year	Country	Instructional context	Theoretical frame
McAlpine et al.	1999	Canada	Higher education teachers	Model based on reflection (draws from multiple reflection theorists)
Gass & Mackey	2000	Chile	Methodology in second language research	Unclear
McAlpine & Weston	2000	Canada	Higher education math teachers	Reflection; knowledge use as a process
Meijer et al.	2002	Nether-lands	Teachers of foreign language	Interactive cognitions; practical knowledge
Moyles et al.	2002	UK	Early childhood teachers	Reflection; constructivist
Lyle	2003	UK	Sports coaches	Cognitive; interactive decision-making
McAlpine et al.	2006	Canada	Higher education teachers	Integration of cognition and instruction; teaching as situated in contexts
Schepens et al.	2007	Belgium	Student teachers in secondary education	Situated learning; practical knowledge
Gatbonton	2008	Canada	(In)Experienced ESL teachers	Pedagogical knowledge
Rich & Hannafin	2008	USA	Preservice teachers	Interactive decision making; reflection
Egi	2008	USA	Examined effects of SR on task performance	Cognitive
Nilsson	2008	Sweden	Preservice science teachers	Reflection to develop PCK
Rowe	2009	UK	Music teachers and students	Methodological; partici-pants' perspectives
Dempsey	2010	USA	Methodological paper	Ethnographic
Vesterinen et al.	2010	Finland	Research and methodological paper; technology in grade 2	Pedagogical thinking; interactive nature of teaching
Tondeur et al.	2013	Belgium	Elementary school teachers around technology use	Context embedded perspectives
Cherrington & Loveridge	2014	New Zealand	Early childhood teachers	Reflection; constructivist
Schachter	2017	USA	Early childhood teachers	Phenomenological

Note: Articles were identified via a search of the ERIC database at the University of Nebraska using the Boolean search code of "stimulated recall" and "teach*" with a cutoff date of 1950. Articles were manually inspected to determine if they addressed the use of SR to study teachers and/or teaching.

Notes

1. Autoethnographic studies that provide insights into teachers' thoughts about their classroom practice (e.g., Paley, 1986, 2009; Tobin, 1988) are notable exceptions.
2. The first year we found published research using the SR procedure to study teaching was 1950.
3. For reflections on multimedia case studies, see Abell, Bryan, and Anderson (1998) and Masingila and Doerr (2002); and on multiple types of ethnography, see Adair (2011), Souto-Manning (2010), Tobin (1988), and Xiao and Tobin (2018).

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