

**The Learner's Perspective Study¹:
Exploiting the Potential for Complementary Analyses**

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Paper presented as part of the symposium "Primary Research, Secondary Research and Research Synthesis: Theory, Value and Linkage" at the Annual Conference of the American Educational Research Association, New Orleans, April 2-5, 2002.

Abstract

This paper discusses the theoretical foundation for research into classroom practice and the associated methodological entailments of such a theory. Key considerations addressed include: A practice-oriented analysis of learning; Research as the enactment of the researcher's epistemology; Classroom practice as a conjoined and co-constructed process of "instructed learning"; Analytical approaches based around voice and text; and, The utilisation of complementarity. Because of the international nature of the research the related issue of cultural authorship is discussed. Research teams undertaking large international studies have an obligation to anticipate such analyses and syntheses in a fashion that supports the inclusion of a greater range of cultural perspectives than has previously been the case.

¹ This research project has benefited from funding provided by the Australian Research Council (Grant #A79930738) and the Spencer Foundation (Grant # 200100121). This assistance is gratefully acknowledged.

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Introduction

The purpose of this paper is to set out the characteristics of a research methodology, utilising video data, which anticipates secondary analyses and the subsequent synthesis of these analyses. Points are illustrated by reference to two research studies, one using Australian data (*The Negotiation of Meaning Project*, published as *Perspectives on Practice and Meaning in Mathematics and Science Classrooms*, Clarke, 2001), and the other the current nine-country international project *The Learner's Perspective Study*. Some methodological issues associated with the anticipation of secondary analyses and synthesis are discussed.

Essential to an understanding of the methodology is recognition of its essential focus on classroom practice and the meanings associated with that practice. Greeno observed that "Methods of instruction are not only instruments for acquiring skills; they also are practices in which students learn to participate" (Greeno, 1997, p. 9). With regard to the learning of mathematics, some classroom practices will resemble those of other communities who habitually make use of skills specific to mathematics (the mathematical activities of accountants or surveyors, for example), and some practices will be classroom-specific in the sense of relating to the process of learning (providing particular forms of explanation, asking particular types of questions when in doubt, seeking and offering assistance, and so on). Greeno also made reference to "patterns of participation" developed by students (Greeno, 1997, p. 9). As will be seen in the sample of classroom data discussed in this paper, Lauren and Karen had developed a form of structured dyadic practice that certainly constituted such a pattern of participation. One of the principal interests motivating the current nine-country *Learner's Perspective Study* is the consideration of the culturally-grounded character of such patterns of participation.

This paper addresses three substantive issues: (i) the characteristics of a research design that integrates data on patterns of participation in practice with data on the meanings that individuals construct for that practice and from that practice; (ii) the inevitable reflexivity between epistemology and theories of learning held by the researcher and their enactment in the practice of research; and (iii) the anticipation in research studies employing multi-method approaches (particularly those incorporating video) of possible complementary analyses of the complex data generated.

A Theory of Researching (Classroom) Practice

Classrooms are complex social settings, and research that seeks to understand the learning that occurs in such settings must reflect and accommodate that complexity. If we approach social settings (and the situations they frame) as multiply-constructed and open to multiple construal, then the methodology employed in their study must offer a voice to the several participants in these settings and avoid the identification of authority with any one voice. We must avoid the threat of over-simplification of setting or situation; a threat more likely to be realised if we were to commit to a single interpretation. Instead, we need to acknowledge the multiple potential meanings of the situations we are studying by deliberately giving voice to many of these

meanings through accounts both from participants and from a variety of “readers” of those situations. The implementation of this approach requires the rejection of consensus and convergence as options for the synthesis of these accounts, and instead accords the accounts “complementary” status, subject to the requirement that they be consistent with the data from which they are derived, but not necessarily consistent with each other, since no object or situation, when viewed from different perspectives, necessarily appears the same.

Learner’s Perspective Study – Data Collection in Brief

Data collection in the Learner’s Perspective Study involved a three-camera approach (Teacher camera, Student camera, Whole Class camera) that included the onsite mixing of the Teacher and Student camera images into a split-screen video record that was then used to stimulate participant reconstructive accounts of classroom events. These data were collected for sequences of at least ten consecutive lessons occurring in the “well-taught” eighth grade mathematics classrooms of three teachers in each of the nine participating countries (Australia, Germany, Hong Kong and mainland China, Israel, Japan, The Philippines, South Africa, Sweden and the USA). This combination of countries gives good representation to European and Asian educational traditions, affluent and less affluent school systems, and mono-cultural and multi-cultural societies.

Each participating country used the same research design to collect videotaped classroom data for at least ten consecutive math lessons and post-lesson video-stimulated interviews with at least twenty students in each of three participating 8th grade classrooms. The three mathematics teachers in each country were identified for their locally-defined ‘teaching competence’ and for their situation in demographically diverse government schools in major urban settings. The three lesson sequences were spread across the academic year in order to gain maximum diversity of local curricular content. In a major component of the post-lesson student interviews, in which the split-screen video record was used as stimulus for student reconstructions of classroom events, students were given control of the video replay and asked to identify and comment upon classroom events of personal importance. Each teacher was interviewed at least three times using a similar protocol.

With regard to both classroom videotaping and the post-lesson interviews, the principles governing data collection were the minimization of atypical classroom activity (caused by the data collection activity) and the maximization of respondent control in the interview context. To achieve this, each videotaped lesson sequence was preceded by a one-week familiarization period in which all aspects of data collection were conducted until the teacher indicated that the class was functioning as normally as might reasonably be expected. In interviews, the location of control of the video player with the student ensured that the reconstructive accounts focused primarily on the student’s parsing of the lesson. Only after the student’s selection of significant events had been exhausted did the interviewer ask for reconstructive accounts of other events of interest to the research team. Documentation of the participant’s perspective (learner or teacher) remained the priority.

“Complementary Accounts Methodology” (Clarke, 1998 and 2001) has been employed with some success in one major study of mathematics and science classrooms in Australia, and is presently providing the structure for a second major study of eighth grade mathematics classes in nine countries. Complementary Accounts Methodology, as my co-workers and I have developed and applied it, is distinguished from other approaches to classroom research by:

- the nature of the data collection procedures, leading to the construction of "integrated data sets" combining videotape, interview and other data,
- the inclusion of the reflective voice of participant students and teacher in the data set,
- an analytical approach that utilises a research team with complementary but diverse areas of expertise to carry out a multi-faceted analysis of a common body of classroom data.

The object of our research is the integrated documentation of not just the obvious social events that might be recorded on a videotape, but also the participants' construal of those events, the memories, feelings, and actions invoked, and the mathematical and social meanings and practices which arose as a consequence. The research procedure was designed explicitly to achieve this integration. The examples used in this paper to illustrate particular points are drawn from analyses of a common body of classroom videotape and interview data published as *Perspectives on Practice and Meaning in Mathematics and Science Classrooms* (Clarke, 2001) and from research currently in progress into “well taught mathematics classes” in Australia, Germany, Hong Kong and mainland China, Israel, Japan, The Philippines, South Africa, Sweden and the USA (*The Learner's Perspective Study*). With regard to the second study, data collection is complete in Australia, Germany, Japan and the USA and reports of some preliminary analyses of these data will be provided in another forum (AERA Symposium 37.29: *International Perspectives on Mathematics Classrooms*, Thursday, April 4, 2002).

A Practice-Oriented Analysis of Learning

I am convinced of the viability and value of a practice-oriented analysis of learning – in part because it situates mathematical and scientific activity in relation to the social settings in which I am interested, but also because it allows us to interrogate those settings with respect to the practices they afford and constrain. Analyses focusing upon the practices of a system (or setting) offer our best hope of accommodating the complexity of the phenomena we are interested in, but doing so in a manageable fashion. I distinguish the practice of individuals (a teacher's practice or a learner's practice) from ‘professional practice’ in the sense of established ‘legal practice’ or ‘medical practice.’ In this regard, I posit the notion of an individual having constructed a body of practice in which s/he engages regularly, but which is subject to refinement, modification, rejection, and replacement over time. Such individual practice will be a subset of the practices of the various communities of which each individual has membership and will conform to the affordances and constraints of the settings and situations in which those individuals find themselves.

There are differences between this view of learning as emergent individual practice and the social theory of learning articulated by Wenger (1998). These differences relate to the degree of agency accorded to the individual (i) to choose the nature of their participation in community practice, and (ii) to contribute to and change that practice. Such differences are largely ones of emphasis, with Wenger foregrounding the community into whose practice the learner is being initiated, while I am more interested in the acts of interpretive affiliation whereby the learners align themselves with various communities of practice and construct their participation and

ultimately *their* practice through a customizing process in which their inclinations and capabilities are expressed within the constraints and affordances of the social situation and the overlapping communities that compete for the learner's allegiance and participation. In particular, Wenger stresses the multiplicity and overlapping character of communities of practice and the role of the individual in contributing to the practice of a community. In another respect, I am also in significant sympathy with Wenger's perspective.

The kind of social theory of learning I propose is not a replacement for other theories of learning that address different aspects of the problem. But it does have its own set of assumptions and its own focus. Within this context, it does constitute a coherent level of analysis; it does yield a conceptual framework from which to derive a consistent set of general principles and recommendations for understanding and enabling learning (Wenger, 1998, p. 4).

This theoretical position, as stated by Wenger, implies a legitimate complementarity to theories of learning. The criteria for legitimacy are coherence, a domain of applicability, an implicit consistency with empirical evidence within that domain, and the potential to inform our understanding of learning and our promotion of learning in that domain. The legitimacy and utility of complementary analyses follow directly from this position.

Research as the Enactment of the Researcher's Epistemology

In discussing the emergence of mathematical meaning in a second-grade classroom, Krummheuer (1995) invoked Goffman's (1959) notion of a "working consensus" as the immediate goal of classroom argumentation. Goffman's conception of a working consensus as a transient convergence on a locally viable interpretation is a particularly apt characterisation of the goal of the consensus process operating in many interpretive research teams (for example, Cobb & Bauersfeld, 1995; Stigler & Hiebert, 1999). Our research (this study and Clarke, 2001) problematises such consensus and attempts to synthesise portrayals of practice from 'complementary accounts.' In both approaches, the alignment of methodology with theory and the reflexive relationship between them acknowledges an inevitable symbiosis.

Among other points, this paper proposes the inevitable existence of multiple reflexivities between theory, research into practice, and the practice of research. The argument is predicated on three basic premises:

1. The discourse of the classroom (say) acts to position participants in ways that afford and constrain certain practices.
2. The discourse of educational research acts to position participants in ways that afford and constrain certain interpretations.
3. The adoption of a theory of learning in social situations will inevitably find its reflection in the manner in which those situations are researched.

These fundamental reflexivities are seldom acknowledged.

In her paper "Psychometricians' Beliefs about Learning" (Shepard, 1991), Shepard contends that the disputes of the testing community can be explained in terms of differences in the beliefs about learning held by the various educational measurement specialists. In particular, Shepard argues that the beliefs of many psychometricians derive from an implicit behaviourist learning theory in flagrant contradiction with evidence from cognitive psychology.

What Shepard does to good effect in her paper is reverse engineer psychometricians' learning theories on the basis of their test instruments. Reverse engineering consists of analysing

an artifact (a tool or a test) from the perspective of the purpose it was intended to serve (see Dawkins, 1995, p. 120). Dawkins combines the notion of reverse engineering with the idea of ‘utility function’ (that which is maximised in a system) to identify the biological mechanisms underlying the survival of species. The fruitfulness of this approach is fully evident in Shepard’s provocative question, “But what if learning is not linear and is not acquired by assembling bits of simpler learning” (Shepard, 1991, p. 7).

It is essential that we interrogate our actions as researchers and reverse engineer our study designs in order to deconstruct the epistemology and the learning theory on which our research is predicated. In my own case: Research guided by a theory of learning that accords significance to both individual subjectivities and to the constraints of setting and community practice must frame its conclusions (and collect its data) accordingly. Such a theory must accommodate complementarity rather than require convergence and accord both subjectivity and agency to individuals not just to participate in social practice but to shape that practice.

Instructed Learning

Central to the *Learner’s Perspective Study* is a view of classroom practice as collaboratively constructed through the participation of teacher and students. Whether we look to the contemporary French use of “didactique”, the Japanese “tagushushido”, the Dutch “leren” or the Russian “obuchenie”, we find that other communities have acknowledged the interdependence of instruction and learning by encompassing both activities within the one process and, most significantly, within the one word. The existence of such a term in English would transform our interpretations of the activities of the classroom and encourage (or compel) us to identify communal practices and the progressive participation in a common discourse as essential features, rather than fragmenting the classroom into teaching and learning activities undertaken by individuals. For the moment, I am using the term “instructed learning” to refer to the body of collaborative practice that occurs in classrooms. Instructed learning, as I have framed it, utilises a process of interpretive affiliation to position individuals in a given social setting. Individual participation in the practices of the social setting is subject to the dual affordances and constraints of the setting and of the individual’s capabilities and inclinations.

But co-construction of *practice* and joint participation *in practice* do not connote commonality of purpose among the participants in that (classroom) practice. Among other things, teachers and learners are distinguished by the goals they bring to the classroom situation. For the learner: How best should s/he act (includes “think”) in order to benefit from participation in the activities of the classroom? For the teacher: How best should s/he act (and think) in order to maximise the benefit accruing to the student from their participation in the activities of the classroom? In that sense, both teacher and learner share a common purpose, but they are not positioned identically within that purpose, and their classroom participation will both confirm these positionings and co-construct them.

The conception of learning as a form of incrementally increasing participation in an existing body of social practice (for example, Lave and Wenger, 1991) brings methodological entailments. Such a conception invokes simultaneously the need to document that practice and to relate changed participation in practice to other changes specific to the individual. One challenge for theorists has always been to account for the demonstrable diversity of individuals’ knowings within the evident commonalities of action associated with participation in a common social setting. A valuable perspective is offered by consideration of the extent to which features of the social setting constrain or afford particular practices associated with instructed learning

and thereby constrain or afford the learning itself. In the current international study of competent mathematics teaching, the cultural basis of these affordances and constraints is of particular interest.

Voice and Text

Our current research, as outlined earlier, is highly dependent on the recounting of various texts: classroom dialogue ('public' and 'private'); teacher and student written material; and teacher and student interviews. These texts provide the basis from which to consider how the individuals in the classroom are positioned by the discourses in which they participate. It is important, however, to note that the discourse of educational research also acts to position participants in ways that afford and restrict certain interpretations. For example, analyses that attribute characteristics such as interest, motivation or values to individuals require a theory of psychology of the individual, albeit a socially-situated individual, that recognises personal histories and perceptions. Analyses intended to identify patterns of social interaction characteristic of social groups or settings require a theory of social situations in which social events and social structures are the constituent elements, and in which the collection of data on individual subjectivities is subordinated to group behaviours.

To reiterate the principles on which the methodology is founded: A study of learning in classroom settings is incomplete without the simultaneous documentation of the social and cultural practices in which the learner participated, the instructional materials, physical configuration of the classroom, and other contextual features with which the learner interacted, the teacher actions that preceded and followed the learning under investigation, and the extent to which the practices of others were reflexively related to the learner's activities and the personal consequences of those activities. Such research requires a methodology that accords value and voice to all participants in the classroom. Such a methodology must document both the practices in which individuals participate and the meanings that individuals associate with those practices. One participates in social practice as a member of a social group, but this membership is a matter of interpretive affiliation by the participating individual. It is an oversimplification to discuss classroom practice as though it were constituted the same for each individual. The nature of an individual's participation is itself an interpretive act.

To draw the distinction between social and cognitive processes is not to preclude the influence of one upon the other (in either direction). Cobb (1994) framed the relationship as one of reciprocal contextuality, where the reflexivity between social and cognitive processes can be located in the implicit presence of each theoretical perspective in the other.

Learning as acculturation via guided participation implicitly assumes an actively constructing child . . . Learning as cognitive self-organization implicitly assumes that the child is participating in cultural practices (Cobb, 1994, p.17)

Erickson's earlier characterization of the classroom was strongly reflexive, "The researcher seeks to understand the ways in which teachers and students, in their actions together, constitute environments for one another" (Erickson, 1986, p. 128). This is highly compatible with instructed learning being constituted as a single conjoined constructive process engaged in by teacher and students, experienced individually but co-constructed

In both the *Negotiation of Meaning Project* (Clarke, 2001) and the current *Learner's Perspective Study*, the study design sought to juxtapose the observable practices of the classroom (documented through videotape and written product) and the meanings attributed to those

practices by individual participants (documented through video-stimulated post-lesson interviews and questionnaires). The analysis of such data takes the form of inter-textual analysis identifying linkages and tensions between forms of classroom text.

The Documentation of Co-constructed Classroom Practice

Consider the following transcript (from Clarke, 2001). (All utterances are by students. Karen and Lauren were subsequent interviewees, S19 and S20 were not):

Turn	Transcript
1	S19: It says how many sheets of graph paper would you need to show one million one millimetre squares.
2	L: To show one million, you know you don't divide it by one hundred, because there's more than a hundred one millimetre squares. I mean you're going to find the area of this.
3	K: What?
4	L: You've got to find the area of this, there's more than one hundred one millimetres.
5	K: That's right. I was doing length by—oh screw that.
6	L: One hundred one millimetre squares. Take length—
7	K: Um, there's how many down here?
8	L: And along that side there is—
9	K: Ten, twenty, thirty, forty, fifty. How many are there down there?
10	L: There's a hundred one millimetres there.
11	L: No, there wouldn't be.
12	K: There wouldn't be, that's not right.
13	L: There'd be two hundred and fifty.
14	K: Yeah.
15	L: Yeah, there'd be two hundred and fifty.
16	K: And we just totally screwed it all—
17	L: Length of graph.
18	K: OK, so it would be length times width [inaudible]
19	L: And uh, two hundred and fifty millimetres. Width—
20	K: What's width?
21	L: That's—
22	K: That's ten, twenty, thirty, forty, fifty, etcetera.
23	L: eighteen, one hundred and eighty.
24	K: Times one hundred and eighty. OK here we go. Two hundred and fifty times one hundred and eighty equals forty-five thousand. OK, that's forty-five thousand. We need a million. What's a million divided by forty-five thousand and times it by that?
25	L: Hang on, hang on, hang on, hang on. Don't go too fast. OK. Therefore there are forty-five thousand million mm squares.
26	S20: Forty-five thousand million?
27	L: Yeah.
28	S20: Forty-five thousand.
29	K: Twenty-two point two.
30	L: On one piece. Of graph paper.

As text, the dialogue between Lauren and Karen makes a fascinating study. Incomplete statements, unclear referents, interruptions, pronoun use, all provide clues to the existence of a rich and well-established pattern of dyadic practice built around shared purpose and shared meanings. Clarke (2001) argued that this example provided useful illustration of the pre-existence within the Lauren/Karen dyad not just of intersubjectivity regarding the meanings of the mathematical terms they exchange during their interaction, but also the pre-existence of established ways of working as a dyad. Lauren's contributions were frequently interpretive or explanatory with respect to the task or a particular procedure. Karen, on the other hand, advanced the discussion by asking many questions of Lauren (and, implicitly, of herself), and by verbalising calculations.

The co-construction of these patterns of dyadic practice involves the iterative refinement of intersubjectivity, just as is the case for mathematical meanings. However, in this case, the matter of the meanings relates to the individuals' social practice, and the product of this process of iterative refinement is a body of dyadic practice, specific to the Lauren/Karen dyad. It was argued by Clarke (2001) that Classroom Practice is similarly co-constructed by teacher and learners². The *Learner's Perspective Study* seeks to explore this argument, framed on the basis of Australian data, in the classrooms of other cultures.

Juxtaposing Reconstructive Accounts and Video Data – Discrepant Accounts

In this example (from Clarke, 2001), the teacher and student had developed a form of classroom practice that was unlikely to advance the student's learning. Use was made of video-stimulated recall to prompt reconstructive accounts by both the teacher and the student in relation to the same event.

Mrs Brown (on viewing video): *You see Joanne was just looking around the ceiling etc., like that and I am sure she was off with the birdies.*

Joanne (on viewing video): *It's funny 'cause when I was um, like I was just looking there and it looks like um, and it looks as though I'm not listening at all but I, I was listening to everything that she'd say.*

This excerpt serves to illustrate, among other things, the manner in which the practices of the classroom are co-constructed through the actions and the inferences of the participants. The teacher's behaviour towards Joanne was predicated on a typification grounded in her observation of Joanne in class. Joanne's negative attitude to the teacher was similarly grounded. The practice of that classroom included elements constituted through Mrs Brown's and Joanne's reciprocal interpretations of each other's actions and their consequent actions. The interpretations of meaning, value, and intention, each of the other, are more than the social mechanisms by which Joanne refines her practice as a learner of mathematics; they are, in fact, the substantive base of that practice. While both Mrs Brown's and Joanne's actions in that setting are constrained and afforded by socio-cultural norms, they are also shaped from one minute to the next by the reciprocal interpretation of the meaning of the other's actions. The post-lesson video-stimulated interviews provide an opportunity for participants to re-view events in which they have participated from an outsider's perspective but with an insider's insight into their motivations and intentions. The tension between the event as read as participant and the event as read as

² The idea of co-constructed classroom practice bears significant similarity to Brousseau's Didactic Contract (Brousseau, 1986), but with greater agency accorded to the learner.

observer is evident in the statement from Joanne above. For the researcher, the transcribed classroom dialogue and the interview transcripts constitute sets of interrelated text that can be used in a mutually interrogative fashion.

Differences between the documented practices recorded on videotape and the participants' discrepant accounts of those practices only emerged through the juxtaposition of video and interview data. Williams and Clarke (2002) have explored some of the issues related to the interpretation of video and interview data, particularly in situations where the two data sources suggest discrepant interpretations. Williams and Clarke (2002) used data from the *Learner's Perspective Study* to develop independent accounts of one student's classroom practice and associated learning during a single lesson using video and interview data separately. The resultant accounts were inconsistent in several places, but some convergence of interpretation was possible through their juxtaposition. On the other hand, some differences were irreconcilable on the basis of one lesson's data, but could be resolved with recourse to the lessons preceding and following the incidents in question. The synthesis of such complementary accounts at the level of data poses a methodological challenge different from the problem of the synthesis of research reports of entire studies (Suri, 2002). At the heart of the synthesis of data-level accounts are the questions, "Whose perspective is being documented?" and "Whose practice do we seek to understand?" In the current analysis of the Australian data from the *Learner's Perspective Study*, such analyses are being employed to construct distinct Learner Prototypes: 'positions' occupied and 'forms of practice' constructed by learners in the classrooms being researched. Such Learner Prototypes will provide detail on learner perspective and practice alternatives available to students. Data from classrooms in other countries can then be examined for similar or different Learner Prototypes. The conjecture driving this analysis is that available Learner Prototypes will be culturally derived.

Utilising Complementarity

The distinguishing characteristic of the research design for the *Learner's Perspective Study* is the inclusion of four levels of complementary account: (a) At the level of data, the accounts of the various classroom participants are juxtaposed; (b) At the level of primary interpretation, complementary interpretations are developed by the research team from the various data sources related to particular incidents, settings, or individuals; (c) At the level of theoretical framework, complementary analyses are generated from a common data set through the application by different members of the research team of distinct analytical frameworks; and (d) At the level of culture, complementary characterizations of practice and meaning are constructed for the classrooms in each culture and these characterizations can then be compared and any similarities or differences identified for further analysis, particularly from the perspective of potential cross-cultural transfer. Examples have been given of complementarity at levels a and b. The utilisation of complementarity at levels c and d depends on the feasibility of secondary analyses of a common body of classroom data.

The Potential for Secondary Analyses and Synthesis

It is useful to open with a definition from Gene Glass' seminal 1976 paper:

Secondary analysis is the re-analysis of data for the purpose of answering the original research question with better statistical techniques, or answering new questions with old data (Glass, 1976, p. 3).

While Glass' emphasis on statistical techniques is overly constraining, the 1976 paper distinguished three highly important forms of research activity: primary, secondary and meta-analysis. In 1976, Glass asserted "Some of our best methodologists have pursued secondary analyses in such grand style that its importance has eclipsed that of the primary analysis" (Glass, 1976, p.3). In 2002, it is particularly incumbent upon those of us employing videotape to study classroom phenomena, to ensure that our data collection anticipates and affords subsequent secondary analysis.

Arafeh (2002) and others have demonstrated the potential of the video data collected in the first *TIMSS Video Study* to sustain secondary analysis. As the education research community continues the internationalization of its data collection, such secondary analyses will become much more prevalent. Pragmatically, they will also become an economic imperative. The cost associated with conducting comparative international studies is not justifiable if the data are only analysed from a single perspective by a single research team. International collaborative studies of classrooms have the potential to provide significant insight into the optimization of the practices that support learning. This potential will not be realized if the analysis of such large sets of complex data is restricted to one theoretical framework or one cultural perspective.

Pragmatic Decisions, Secondary Analyses and Complementarity

Inevitably, any analysis of classroom video data reflects the interests and theoretical and cultural orientations of the researcher conducting the analysis. In the first *TIMSS Video Study*, national representative sampling was a priority (Stigler & Hiebert, 1999). An immediate pragmatic consequence was the collection of single lessons only. The power to make generalizations about national patterns of lesson structure was bought at the cost of explanatory power related to the antecedent and consequent conditions by which the motivations and consequences of teachers' actions might be understood. Similarly, the researchers' interest in teaching practice led to an exclusive focus on 'public talk' (Kawanaka & Stigler, 1999) at the expense of documenting student 'private' collaborative work.

In the case of the *Learner's Perspective Study*, the pragmatism functioned differently. Because the documentation of "the learner's perspective" was a priority, a three camera approach was necessary to record student as well as teacher practices, student-student 'private' talk had to be documented, and post-lesson interviews utilised to unpack the multiple subjectivities in play in any classroom interaction. Similarly, the decision to document sequences of lessons for a particular class traded representative sampling for the power to study patterns of practice over several lessons and to situate a given teacher or learner action in terms of the events that led to or arose from that action.

The two data sets generated by the *TIMSS Video Study* and the *Learner's Perspective Study* are both amenable to secondary analysis. They are not, however, necessarily amenable to the same types of secondary analysis. As is demonstrated by Rongjin, Aleandersson, Leung and Marton (2002), some overlap of analytical method is still possible. Importantly, the analyses

carried out on these two data sets have a high potential for synthesis. Consider the 50 Japanese lessons collected in the *TIMSS Video Study* using a one-camera, no interview approach, and the 30 lessons collected in the *Learner's Perspective Study* using a three-camera, post-lesson interview method. The first data set has the capacity to suggest practices and lesson structures frequently employed by Japanese mathematics teachers. The second data set can be utilised to examine the consequences of those teacher actions and the consistency with which a particular teacher makes use of a particular lesson structure. The identification in the *Learner's Perspective Study* of a teacher action that students found to be particularly helpful can prompt an investigation of its prevalence within the *TIMSS Video Study* data. In this sense, the *TIMSS Video Study* and the *Learner's Perspective Study* are complementary and mutually informing. They are also open to research synthesis (see Suri, 2002).

An example of the synthesis of research reports of complementary studies can be found in the work of Shimizu (2002), in which the characterization by Stigler and Hiebert (1999) of Japanese mathematics lessons as conforming to a particular 'cultural script' is contrasted with Shimizu's analysis of some of the Japanese data from the *Learner's Perspective Study*. Shimizu's analysis revealed the identified 'cultural script' to be only one of several patterns of lesson structure evident when sequences of lessons from individual teachers were analysed rather than single lessons from many teachers (Shimizu, 2002).

Transparency

In our research, members of the research team interpret the data, using particular forms of analysis, consistent with the researcher's interests. These interpretations are our "readings" of the combined accounts offered by the video camera, and the transcribed reconstructive accounts obtained from classroom participants. These accounts are the evidence on which our various readings are founded.

Any number of interpretations, guided by any number of interests, can be built on the same foundation of evidence; but an interpretation ignoring that evidence can never be a defensible one (Vendler, 1997, p. 24).

In the *Negotiation of Meaning Study* (Clarke, 2001), we constructed different interpretations based on a common body of data. Helen Vendler, quoted above, is introducing her interpretations of Shakespeare's sonnets. In her introduction, Vendler is critical of the type of literary critic who "leaves it up to the reader to construct the poem" and states her goal explicitly: "I have hoped to help the reader actively to that construction by laying out evidence that no interpretation can ignore" (Vendler, 1997, p. 24). Extrapolating this to the context of educational research, if our data collection is to anticipate multiple analyses, then there is a heightened obligation to provide a detailed account of the data collection, and equally to provide a detailed description and justification of the method of analysis. This transparency of data collection and analysis is all the more imperative because the two processes were not originally conceived together and cannot be used for mutual justification in the conventional manner.

Data sets as complex as those generated in the *Learner's Perspective Study* must be developed in anticipation of multiple secondary analyses and, consequently, of the possible research synthesis of those analyses. Suri (2002) has articulated the principles under which the synthesis of qualitative data might be legitimately conducted. Some of these also apply to the

anticipation of secondary analyses. In particular, transparency of data collection process provides the basis from which the feasibility of any particular secondary analysis can be assessed. As has been illustrated above, a given data set is amenable to some forms of secondary analysis and not to others. The account of the process of analysis must be similarly transparent.

Cultural Authorship

The coding of data in both the first *TIMSS Video Study* and the *TIMSS-R Video Study* anticipate statistical analyses and conform to the cultural values and aspirations of the researchers directing the study. A report such as that produced by Stigler and Hiebert (1999) is inevitably reflective of the curricular interests and priorities and the cultural values of the authoring culture. It seems reasonable to suppose that an analysis reported by a German or Japanese research team would highlight different aspects of classroom practice and draw different conclusions. This is not a criticism of the methodological rigor of the *TIMSS Video Study* or the legitimacy of the published analyses of its data. My purpose is to raise the issue of cultural authorship and to suggest that international studies in education must facilitate the undertaking of analyses that reflect different cultural perspectives.

The analyses now emerging from the *Learner's Perspective Study* reflect the interests and priorities of the various research groups participating in the project. Some interests, such as the characterization of the Learner's contribution to Classroom Practice, are shared by all contributing research groups. Other emphases are specific to a particular group of researchers and may reflect the curricular priorities of that country or the value attached by the researcher's culture to learner autonomy or collaborative activity, for example. One of the distinguishing features of the *Learner's Perspective Study* is the anticipation that value will accrue from research reports with different cultural authorship.

Among the methodologically most interesting aspects of the *Learner's Perspective Study* has been the collaborative negotiation of the study design, the method of data collection, the general and local analyses, and the evolution of the process whereby the various complementary accounts can be integrated into a rich and useful portrayal of mathematics classrooms internationally.

The Future of Secondary Analyses of Videotape Data

Of all data sources currently available to researchers in education, videotape data seems most amenable to secondary analysis. In this paper, I have set out how research studies with which I am involved have made deliberate use of such secondary analyses to realise the potential of classroom videotape data. I have also attempted to identify some of the issues associated with such analyses. Further, the potential of videotape data to sustain secondary analysis carries an associative potential for the synthesis of those analyses. The *Learner's Perspective Study* is predicated on the principle that the complexity of social settings such as classrooms can only be studied through a research approach that matches that complexity with (i) adequate recognition of the perspectives of all participants and specific embodiment in the data collection of those perspectives, (ii) deliberate utilisation of both primary and secondary analyses to provide a wide range of theoretical perspectives on the social setting and situations being studied, and (iii) an acceptance from the outset of the obligation to anticipate and enact the synthesis of the subsequent primary and secondary analyses into an integrative amalgam of interrelated

complementary accounts. In an international project such as the *Learner's Perspective Study*, the issue of cultural authorship must also be addressed. Suri and Clarke (2001) have identified some of the issues associated with the synthesis of qualitative data collected within a single culture. The synthesis of research reports written from different cultural perspectives poses interesting methodological challenges that may become more visible as the international research community in education finds ways to support the inclusion of cultures whose voice, to date, has been heard only as the objects rather than the authors of research.

Acknowledgments: The research studies reported in this paper benefited considerably from research grants provided by the Australian Research Council. This support is gratefully acknowledged.

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