KEVIN MILLER: Okay. Well, thanks. What I want to talk about today is a couple of specific issues since we don't have very much time for these presentations. Namely, the issue of making videos about classroom processes for people to watch which is one of the important applications of these that we've talked about already. I think I have enough time. So as for questions, if you're going to ask a question that you think I could probably answer, go ahead and do it while I'm talking. But the ones if you think I probably can't answer, why don't you hold that off till I run out of time.

AUDIENCE MEMBER: That's quite a theory of mine.

KEVIN MILLER: Right. That's right. Well, you'll get a sense as we go along I think. First of all, I want to thank the many people who've collaborated on the work I'm going to talk about and the several government agencies, particularly IERA that generously supported it. Okay. I wanted to talk about I think that there are a class of temporary problems for working with video and some deeper, more persistent ones. And I'll try to talk about which I think are which. But then I want to make about three points. So first of all talking about video's anecdotes so the power and peril of anecdotes for affecting the way people think and feel. Secondly, the issue of getting
people to notice the right things when they watch video, and I'll talk about what I think the right things might be. And finally, I think the power of video in terms of getting people to see things that aren't here that is a particular use of cross-cultural video as a way of getting people to move out of the limitations of what they've experienced in their own particular cultural context.

Okay. I think I'm about to alienate everybody on the next panel, but the kinds of technical problems that really confront us today and are quite pressing I think will go away. That difficult as they are, issues of compression, bandwidth and so on we can expect will go away or at least will be different a few years from now. On the other hand, problems related to how human beings represent, process and learn from video, you know, those things change on a much slower time scale, and they're likely to be more persistent. And it's that second set of questions that I want us to think about during this bit of time. Okay. First of all, pretty much any newspaper you pick up follows a pretty standard script. This is about the horrors of algebra, but here are many other examples. The standard script for writing a newspaper article is you begin with a picture and a description of a cute kid who has this problem. And then finally you start talking about some
data. So you begin with an anecdote, you talk about whatever data presumably caused you to write the article in the first place, and then you return and wrap it with talking about the story. Now, obviously, as social scientists we all know that, you know, the law of large numbers says that anecdotes aren't necessarily very reliable. If you look at human reasoning though, this story is quite different. A real nice study that Gene Brogida and Dick Nisbid did quite some time ago, they presented University of Michigan psychology undergraduates with course survey information presented in one of two ways, either the stranger was the confederate that said, oh, I took this course and here's what I thought about it or they said we surveyed everybody in this class and here's what the whole class said. And there's a clear difference in the persuasiveness both in terms of students' ratings of influence and looking down the road at whether students actually took the courses that got positive recommendations. And if a stranger says falsely I took this course and here's what I thought, people were much more persuaded by it than if actual data from the entire class was presented. So anecdotes are very powerful. Newspapers are certainly on to something. The reason I think it's relevant to us here is that I think videos tap
into the same persuasive power. I watched this. I saw it myself. It's an anecdote of personal experience. And I think that puts a real responsibility on those of us who think about collecting and using video representation. Because they will be taken as more representative than they may be, we really need to establish that kind of representativeness. Now, there's several approaches that people have done for doing this. One, and the approach, one of the approaches used in Tim's video study is to be very careful about trying to sample representative events. So if you look at typical classrooms or a typical set of classrooms that represent a probability sample of what's going on in Germany at this grade at this particular time, then that's a way of establishing representativeness. Another thing that they did and what's probably the most commonly done is to show what you have to experts afterwards and say, well, you know, does this seem typical to you or does it seem unusual? And in my experience that's a good check because you may often find as we have with some of the initial Chinese video who've done that, in fact, experts suggest it's not very representative and often they turn out to be right.

There are a number of ways though that you can analyze what you have, and here's one. The materials
represented here are not actually videos but a set of comments on a standard set of videos. There are techniques like Hummell's, they give you a nice graphical representation of responses of a bunch of people or videos coded along a variety of dimensions and given this. So these are results. A are Chinese teachers, B are American teachers. And as you might expect, the American teachers are more diverse. But in both cases, you can pick examples that are more or less representative. Now, I don’t have time to go into this more deeply. Clearly, this is more complicated than I'm suggesting because, well, what do you take into account when you decide about representativeness. There's the, you know, this is representative of, well, an old joke with a punch line that goes, you know, other than that, Mrs. Lincoln, what did you think of the play, that some things are very important and others aren't. If you just sort of throw them all in together then, okay, it may be representative but not in terms of what's important. But nonetheless -

KEVIN MILLER: -- American problem in our work. So you can think of two general sources of explanation for things that happen. Either personal attributes, you're the sort of person who does this, or the situation that you're in. Social psychologists doing research in the United States
found that Americans have a tendency to give attributions based on personal attributes. Well, you do this because you're that sort of a person. It turns out that this is something that Americans as opposed to East Asians are particularly likely to do. So that when we've shown video to, say, American viewers, both teachers and college students that tend to talk about what we call personality characteristics, this is a good teacher, this teacher seems really sharp, really competent and so on, I think this is bad news from an educational point of view. Because these are just the sorts of things that you can't really change as opposed to looking at the kinds of explanations that someone gives, the kinds of decisions you make in the course of teaching and so on.

Even worse in some way, these kinds of impressions are formed very quickly. Anita Ambati's work is the best, what she calls the thin slice research that Malcolm Gladwell has popularized in the book Bling. It shows that we form these judgments very quickly. So in the study I represent there, she showed silent, ten-second clips of video to judges, and if you saw at least three of them, there were remarkably high correlations with course ratings for the instructors for whom this was taken at the end of the semester. People, you know, suffered through
the whole semester in that course. Now, how you go about doing this slicing a map, and so what we did is we replicated that study, although we didn't with the sound. But also, we gave viewers a job to do, either when we stopped the video, we asked them to either rate the kinds of personal qualities that had come up in these free descriptions or the kinds of teaching and learning processes that also had come up in the descriptions that we'd gotten before. And you can see that. So the first stop is after ten seconds. So what does each of these data points, these are just different personality characteristics we looked at correlated with a final point after you'd seen 20 minutes of the class. And you could see remarkably for this first grade lesson we used, after ten seconds that the correlations are almost all significant and really are quite high. And we found the same pattern for fourth grade classes. People are really quick. Ten seconds, you form you judgment, doesn't really change.

On the other hand, the judgments of characteristics of the classroom instruction show a very different pattern, that it takes, I mean here it takes about five minutes for people to kind of form their opinion, but it's a very different time scale than was
going on with the personality judgments. So there's good and bad news from this. It seems to me impressions about teachers' personal attributes are formed really fast and are quite stable. From other research I didn't talk about those are the things that Americans, both in service teachers and college students tend to focus on if they don't have a task to perform. On the other hand, if people are given a task to do, if they're asked to pay attention to certain things, then what it is they notice is fairly malleable which I think is a ground for optimism.

Okay. Third issue, video I think has a real power to help us see what isn't here. No, not what isn't there but what isn't here as a way of getting beyond the cultural scripts of teaching and learning that Stigler and Hebert and many other people have talked about. That it's possible to see things that really don't happen in American classrooms that can be quite instructive for perspective teachers and other people to think about. The other thing I've noticed as a conjecture is that if you watch video of an American classroom, the sort of small differences in accent and the way people dress and all those sorts of things can be really hard to ignore. But for some reason, looking at, say, Chinese classroom video which is what we've worked, because that's so different in so many ways,
I think it might actually be easier to get people to focus on more central issues. But clearly, this requires even more contextual support than showing American video because whatever you see is going to be a large proportion of the Chinese educational experience you have had. So the kinds of responsibility that we've talked about are even deeper if you think about showing things that go beyond people's personal experience.

Okay. So using the Rashoman quote, you know, because one idea of video is that it's like a Rorschach test, that people just bring what they know or what they believe to watching video and it'll look completely different depending on who you are. Clearly, video cases are complex materials. Viewers approach it with quite different lenses and can notice very different things. Not all those things that one might notice are created equal. Some are more useful from an instructional point of view I think than others. I also think that learning to learn from video cases is a key educational concern. That watching a class is a major aspect of teaching expertise or expertise in general. One of the main characteristics of the experts is they can quickly hone in on the key causal features in the domain in which they're an expert. And one of the things that a teacher clearly is expert in, an
experienced teacher is in watching the classroom and understanding what's going on. To develop this, both viewers and we need to develop a model of viewers in the process of viewing and an understanding of the pedagogical practices that might promote viewing expertise.

Now, the focus of this meeting is on videography and related issues, but I think this is a related issue because it is important to begin with the end in mind because in this case, that requires us to collect rich, contextual information and ways of situating video cases in the larger context in which they come. So as the immortal, he's immortal so far, Yogi Bera would say you can observe a lot just by watching. That's certainly true, but watching is a very complex phenomenon that requires extensive work in and of itself if we are to get the payoff from these techniques that they really promise. So I'll stop there.

PANEL LEADER: Thanks.

(Applause)

KEVIN MILLER: Oh, okay. So now, you could ask those other questions. Yes, Jerry?

JERY CONFREY: Let me repeat my questions on this morning's sessions cause it seems relevant here which is do you see ways in which good video for research purposes and good video for instructional purposes do or do not need to
be different?

KEVIN MILLER: Sure. You know, a good example would be one thing that we don't know the answer to but people have opinions is whether when you're learning you should see sort of exemplary models of what it is you're trying to learn. You know, this is quite an open question it turns out in lots of domains including this one. But one answer and I think actually the popular answer, although I'm not sure I agree with that is that what you should learn are lots of good examples that you should go and emulate. So if that's the answer in the instructional case, it clearly isn't the answer in the research case. You want to come up with a good representation of reality and the causal factors that might be related to different outcomes. Yeah. Go ahead.

AUDIENCE MEMBER: Well, I was 50 years old when I started learning to fence formally, and we watched videotapes of Olympic fencers and much more (inaudible) filmed fencing. And you couldn't even see what was going on in the Olympic fencing it was so complicated and so fast. There's some virtue in --

KEVIN MILLER: Right. I mean you need to find ways of simplifying the situation when you're a learner. You know, people have talked to, well, Bennett would know about this.
Apparently, I heard they claim that, say, when people are first throwing and the phenomenon of what's called throwing like a girl involves kind of sort of locking, have fewer degrees of reel in your moving which is a characteristics of novices in many domains, particularly I guess your elbow. As people become more expert, they move more joints in a more fluid way than you could imagine if you're starting something for the first time you don't want to do that because the combinatorial explosion will ground you. Yeah?

AUDIENCE MEMBER: I just want to throw into the mix a very interesting video that Roy Peeshe had at a conference last year at Stanford which was I believe it was they were teaching young kids, and they had coming into a language they didn't know, I believe it was Mandarin, and in direct interaction the kids picked up the Mandarin phonemes. Then they did a really high quality video, showed it to them, and the kids picked up nothing and so that there is -- I raise that only as something to think about it.

KEVIN MILLER: No, let's think.

AUDIENCE MEMBER: Yeah.

KEVIN MILLER: Right.

AUDIENCE MEMBER: Okay.

KEVIN MILLER: Well, and also, I mean going back,
following up on that and also going back to Jay's comment the way that I believe, I think there's a lot of potential, in fact, for video representations to be better than reality. And the one example I can think of, if you ever watch the old TV show, Homicide, it was set in Baltimore, well, one of the things that was interesting is whenever anything important happened, they sort of stop and show it repeatedly over about five seconds from multiple points of view, an amazingly good attention getting device. I mean I don't know how to do that when I'm talking. I could try I guess, but you could do that with a video representation and you can see how that could be a way of highlighting important points in a way that goes beyond what reality does.

AUDIENCE MEMBER: Just to build on that comment, it's interesting to me that, you know, when you ask these teachers why they do lesson study, they say you develop the eyes to see. I mean they literally see themselves as developing vision. And although they always videotape lesson studies, they don't primarily use that (inaudible). They primarily use their eyes.

KEVIN MILLER: Right. Sure.

AUDIENCE MEMBER: But thinking about what is the connection between a live experience and a video experience
and then probably (inaudible).

KEVIN MILLER: Right.

AUDIENCE MEMBER: But if the video is only constraining your view and an important of learning to teach is self constraining that, you know, figuring out what to attend to, then you're missing that. You're short circuiting that whole part. When you've got the video, you've already told people what they have to attend to.

KEVIN MILLER: Uh-huh. Right. On the other hand, one advantage is that, you know, field work is very inefficient in a sense that most of the time nothing, well, often nothing very interesting happens where a lot of interesting things happen in classrooms that would take you thousands of hours to see in a typical classroom. So there's a way of giving people the right examples and putting them together in a virtual world that you couldn't do in reality. So it's a com -- a --

AUDIENCE MEMBER: So I think about my psychological theories and three sociological theories and any possible outcome of all the above experiments, has anyone ever looked at this? You know, empirically --

KEVIN MILLER: This --

AUDIENCE MEMBER: -- do teachers learn from video that is, you know, designed a certain way? I mean has
(inaudible) this?

KEVIN MILLER: I don't think it's been done.

AUDIENCE MEMBER: So I don't know. Jay's question's a great one, but isn't it just an empirical question at this point?

JAY LEMKE: Yeah.

KEVIN MILLER: Yes. No, this is something that we want to do.

AUDIENCE MEMBER: Yeah, I mean and even the previous problem.

KEVIN MILLER: I mean actually, I would say that Randi probably has come the closest by having people compare different videos. You know, it turns out to be a very powerful way of getting people to notice certain sorts of things that they don't see in a single video or a single --

AUDIENCE MEMBER: Yeah, well, at least that. Yeah, yeah.

KEVIN MILLER: Right. Let's see, Rogers's in there to check.

ROGERS HALL: So one of the things that your talk makes me think about is that among the people who do teacher professional development that I hang around that the story told not publicly but behind the scenes is usually, oh, my God, do you see how they're seeing us. And
so the question comes on for deeply ingrained perceptual expertise. How do you go about dislodging it into another form of professional vision?

KEVIN MILLER: Right.

ROGERS HALL: Which is really I think the underlying agenda of a lot of teacher professional development, particularly with in service teachers. Maybe it's particular to the part of the country I live in. I don't know. So that's just an interesting thing. And the more general version of that is, well, how is it that people who come from very, very different disciplines ever manage to do anything together at all?

KEVIN MILLER: I guess that's now, we're talking about --

AUDIENCE MEMBER: And don't we want to ask why we would want to change the way that teachers are already looking at video?

KEVIN MILLER: Sorry. You're --

AUDIENCE MEMBER: Wouldn't we want to also ask why change the way teachers are looking at video in development?

KEVIN MILLER: Certainly. And I think there is one simple answer to your question. It doesn't get very deep into it, but viewers need a job to do and that one thing
about experts is they know what the task is and novices often don't. And experts often think, well, it's obvious what you should be thinking about or paying attention to when you watch this, and it never is. Sharon, (inaudible).

SHARON DERRY: Well, I just wanted to make the point that I think that the idea that it's a simple empirical question whether research video can be repurposed and instructional video on this --

KEVIN MILLER: Not (inaudible).

(Everyone talking at once.)

SHARON DERRY: It's a very -- I mean but it's -- I'm not even sure it's an empirical question that makes any sense because I mean you can have ten weeks of research videos and you could repurpose pieces of that and repackage that in a million different ways, good and bad, short and long. It's edited but it need not have a lot of narrative or pointing to particular parts. There are just too many ways to ask that question and that question can even make more sense to me.

KEVIN MILLER: But I mean they're making questions like (inaudible) whether you learn best with exemplary practice or from a, you know, a range.

SHARON DERRY: Yes.

KEVIN MILLER: You know, those sorts of things I think
are fundamentally empirical questions. Any more time? Carla?

   CARLA: Well, (inaudible) a little bit of problem in our video. Sorry about that. We do have some coffee and doughnuts outside if you'd like to break.

   FEMALE SPEAKER: We'll keep going in here, but if you do go outside, will you be back at 3:15 so we can move on to the next presenter?

   KEVIN MILLER: It is 3:15.

   FEMALE SPEAKER: Okay.

   AUDIENCE MEMBER: I did want to call attention on the empirical side, there's a study in progress right now by our colleague at Michigan, Patricio Herbst in math education where they are developing animated videos of classroom scenes in which they show things that are both typical and atypical in specific ways. And the purpose of this is to catalyze discussions by practicing teachers and to give them an opportunity in some sense to see differently. And they are finally going -- I don't think they've done this in a straight off, experimental comparison that the use of the animated figures is somewhat more effective in doing this than the realistic video is. So we may want to enlarge our sense of the video family to go beyond simply documentary video.
KEVIN MILLER: Yeah. I mean that's like research that schematics are better than pictures in a lot of learning.

AUDIENCE MEMBER: Right.

KEVIN MILLER: You know, diagrams are better than pictures.

AUDIENCE MEMBER: Right.