BRIGID BARRON: The people on this panel with the exception of myself have a really incredible array of experience doing video analysis and from many different perspectives. And the way that we're going to organize this is each of us, including myself, is going to give a talk for 15 minutes. And what we want to do is really save a lot of time for conversation, but at the same time we want to get people's initial thoughts or questions directly after the talk. But we're not going to answer the questions. We're just going to let people raise the questions and we're going to actually record them. And I thought, Roy, maybe you'd be willing to help record those questions after the talks. So I'm going to start off and then we'll go just in order. We'll hear from Rogers Hall, Timothy Cushman, Fred Erickson and Chuck Goodwin today. And the focus of our panel is really using video to study peer, family and informal learning.

What I'm going to do in my 15 minutes this morning is three things. I'm going to try to talk a little bit about why video is such a powerful tool for studies of learning with peers and family and out of school. And I'm going to share an example from my own work. Second, I'm going to raise some of the challenges that people who use video as a data source face, and we've talked a little bit
about them this morning in terms of collection and analysis. And third, drawing on the section of the book that I edited very heavily, I want to talk a little bit about insights from people who have been doing video analysis for many years that I think will lead to high standards but not standardization by any means. And so I'm going to draw heavily. Some of the book authors are actually in the audience and hopefully, they can contribute to the conversation as well. So video, and before video, film has been a natural partner for researchers interested in questions of how interaction between people or between people and their environments connects to learning. Film or video helps capture and slow down and even hold still the complex stance that occurs when children play or solve problems together or when parents engage with their children or with their infants who don't even speak yet. And it's not surprising in some ways that one of the first researchers to turn a camera on the world to better reflect on child development and to communicate child development was Kurt Lewin. Kurt Lewin was an experimental and applied social psychologist who was interested in the interdependencies between children and their social and material environments. And in the late 1920s he began collecting footage of children in their every day
environments using a handheld camera, a 16 millimeter handheld camera that was designed for the nonprofessional. And he showed these clips to professional audiences to illustrate aspects of his developing theory of the life space. He was really an early proponent of ecological approaches to psychology and tried to articulate the strong interdependencies between behavior and environment. What's interesting about how he used video, in addition to using it to communicate with professional audiences in trying to communicate about interdependency, he also used it in conjunction with experiments that were done on studies of leadership and how different leadership styles affected peer engagement and interaction. And he didn't actually use the video as the data source but more used it to communicate to audiences about the findings and to confirm really patterns of quantitative data that were gathered through the good old fashioned methods of observational developmental psychology that really required very predetermined coding schemes in order to be able to reliably make judgments. And so things were quantified but yet he also had these films that he could show that would highlight the patterns. And this is a quote that I won't read because I'm going to run out of time, but he talked about how the observations and the quantitative data were
confirmed by the moving pictures which told the same story.

At around the same time in the 1930s there was a whole bunch of work going on in anthropology, and I think my panel probably knows a lot more about this than I do, but I just thought it was interesting, the timing that people interested in these complex kinds of interactions started using the camera basically as soon as it was available. So Boas looking at native peoples, and I understand he was actually in his seventies when he started realizing the power of video for his science. And his student, David Efron was doing camera work on street corners looking at different groups and gesture. Margaret Mead and Bateson very early on were using cameras to document their field work in comparative studies. People like Birdwhistle and Bateson and others joined together to look at family interactions in therapy. And apparently there's a very, very long book that was never published called the natural history of the interview that apparently is 1,200 pages or something. And I tried to find it, but it's on microfiche somewhere. And there's a little bit of mystery why it was never published, and one account is that it was too long because they wanted to keep everything in there of this one interview. And another account is that they didn't have permission in the appropriate way. So I
don't know what the true answer is. Maybe somebody else does.

So moving on. So video is also being used as a tool for hypothesis testing and much more traditional kinds of studies of development whether it's testing hypotheses about babies' ability to imitate or about language acquisition, it's very heavily used. And so I think many of us in the field of developmental psychology see video as a form of a microscope. This is a metaphor that's been used. You can magnify subtle interactions. You can, you know, time can be sped up or slowed down or brought to a stop completely. You can look at multilayered signals like tone, gaze, gesture, attention in ways that you would not be able to if you were just doing live observation. You can look at temporal relationships between them. And revisiting the video allows for conceptual development on the part of researchers in ways that I think is pretty incredible and fantastic that we haven't really fully become aware of. And I'm just going to give a very quick example from my own work looking at collaborative problem solving. And I don't have time to go into all the details, but just to say that it was originally an experimental design but I did videotape things. And I was looking at children collaborating to solve problems. Oh-oh. I'm
saying oh-oh because my -- let's see. That's okay. If none of my pictures show up, then I'll be making a much shorter presentation. So cause instead of video, I actually wanted to use pictures. But anyway, so children were solving a problem together. They were in sixth grade. And what was interesting is really the quantitative data. And I had videotaped the groups, but I was surprised to see that because I had so carefully controlled for things like prior knowledge bimodal distribution and performance with some groups basically doing perfectly and other groups really falling apart and not doing very well. And so I wanted to understand more about this process by which groups either manage to solve a problem or not. And so I started doing things like comparing their written work to their conversations, transcribing the videotape. And I quickly saw that there were many more ideas expressed in the conversation than were documented on the paper that I had scored. And so I began coding things like proposals. And the more and less successful groups actually did not differ in their correct proposals in the conversation which was really quite interesting. So I started looking at their responses. And it turned out that more successful groups differed from less successful groups in their responsiveness to ideas. That was the primary difference.
And so I wanted to start looking at how this was occurring, and I developed the approach of looking at each case as a unique ensemble following the tradition of other people. Herb Clark talks about ensembles. So really trying to understand each group individual but at the same time trying to contextualize the proposals and the reaction sequences and trying to capture the unfolding of interaction and to conceptualize different constructs than I was coming in with. And so, yes, all my pictures are going to be gone. Oh, well, that's too bad.

MALE SPEAKER: Screwed by standards once again.

BRIGID BARRON: Yeah, no. I know. Well, I could plug in my Mac but that's going to take a little while I think to actually do it.

MALE SPEAKER: Go ahead.

BRIGID BARRON: Just keep talking?

MALE SPEAKER: Right.

FEMALE SPEAKER: Just a collaborative standard.

BRIGID BARRON: Yeah, a collaborative standard. Okay. Whoever's timing me, stop the clock.

(Working on presentation)

BRIGID BARRON: So one of the things that became apparent is that in the more successful groups, joint attention was more continuous. When I started looking at
these videos in the groups as individual ensembles, it was apparent that there were group level differences, but I really didn't know exactly what they were until I had looked a lot in my cave staring at the video. And so I'm just going to use photographs rather than the video to share some of this. So the workbook was often a center of coordination where students would use it to focus their attention. Writers would often broadcast their work making available to their partners their thinking and what was getting documented. But at the same time in many groups, individual and joint thinking were going on at the same time. And you can see this here where someone's letting a diad work on something while he goes off into another part of the problem space. And many took advantage of the capacity to distribute their attention to further their work. So what was interesting though is that for some of these groups their problems with attention led the group to fall apart. And for others, they were able to use strategies that would recruit the joint attention at the time that they needed to. So the conversational metrics reflected these issues of joint attention, but the video analysis really revealed group level differences and revealed that all groups had this kind of fluctuating joint attention. And so this led to another question then. How
were groups managing attention and why was it a fatal problem for some?

And so looking at how groups manage joint attention, you saw things, simple things like pointing, peering around to share a point of view where there's a lot of body movement and real effort, commands, meta communicative comments like, hey, listen to me emphasized with a pencil. More extreme interventions involved physical contact, trying to shake somebody literally out of their self absorbed thinking. And the strategies seemed to work best when there was a mutual intent to maintain this kind of coordinated state together. Obtaining the floor was particularly difficult if partners were occupied and the bid was mild. So it was even more complicated than just looking at these strategies. You really had to try to understand what was going on with both partners. So the second insight was that the speakers and listeners really have consequential roles to play and that groups used a wide range of strategies to manage and provide for joint attention. And it's a pretty sophisticated I think kind of communicative skill. But the success of the strategies depended on both the initiator and his or her partners. And the bids for joint attention really varied in strength, but that still didn't explain all the problems. So by
looking at each group, I still couldn't account for why some groups failed to manage to listen to one another's ideas. And to illustrate what seemed to be going on, I'm going to just focus on one group which was very extreme in highlighting this, but relational issues seemed to come up a lot that were expressed in many different ways through the problem solving activity that made it even more difficult for things like joint attention to happen. So in this particular group there was issues that came up like who's going to be the one to solve this problem and competition. And so in the conversation and the use of resources, you can see these more kinds of personal or interpersonal intentions revealed like not sharing for other people to see or withdrawing from the effort altogether. It's expressed in overlapping talk, completing claims and counterclaims. I know what I'm doing. No, I know what I'm doing. But also it was interesting that when you look at the video in this way how dynamic a group is in terms of the way that it evolves. So in this group there were increasingly explicit strategies to achieve coordination by one partner, and it occurred over and over and it still didn't work. And as you see in this photograph, the attempt really wasn't successful and there was not really a welcoming of this push for trying to get
co-regulation to happen. And it was not successful. And one of the patterns that I saw was when this kind of co-regulation was resisted, children will withdraw from the problem solving. Anyway, in this particular case, persistence did pay off and finally they came to a place where they understood one another, but it was really too late. So the video analysis I thought was particularly rich for getting into a deeper understanding of the interrelationships between the cognitive aspect of collaborative problem solving and the interpersonal relational social aspect showing the intertwining, that you can't really separate these two things out when you're thinking about something like joint work.

And I'm going to just summarize by saying in my experience, the video really allowed new phenomena to be discovered and labeled. You can have cycles of inquiry that really capitalize on the emergence of new questions. So the three kind of insights that I shared really came one after another. It was really quite a cycle that you can really integrate a lot of phenomena and that there's opportunities now. And I'm going to skip this just because of time for using these kinds of insights as well as other people's on this particular topic of collaboration to do more collective work. And so we are starting a small group
of us, of people who have tapes on collaboration to start looking with the particular goal of trying to understand what is the capacity to collaborate and what kinds of environmental supports are important. And so we'll be taking video from three different data sets trying to find examples across the data sets of similar kind of phenomena.

So I'm going to move now quickly to the challenges of data collection and analysis and then on to the insights. I'm not going to spend a lot of time with these cause I think we're going to get to them over the day. But when you're trying to capture people interacting over time and context, it's obviously extremely challenging to follow them around with cameras. Audio is a huge problem in classrooms. I have seen still, even in this day and age, we have not perfected that problem. You can spend lots of time collecting the data and not be able to hear anything. You know, how do you capture when participants move? Early on, people like Birdwhistle, you know, really argued you have to always have full body insight or you're not going to get the data that you really want. So we still have these issues of where do you place the camera, how do you get everything. A single point of view always limits what you see. And then IRB and informed consent I think is a huge problem because people don't really even
know what's happening with their video and how people are analyzing it, and yet we're talking a lot about sharing video. And I think that's still a big problem. For analysts, volume of data is a huge problem. It's really easy to collect data now. The result may be bookshelves filled with tape. I have this problem. How do you reduce the data? It's complex and it's rich. And I've got a quote from Randi here. The problem is not generally finding something to say but choosing among the things that you're going to say and trying to fashion a coherent account. So there's usually lots and lots and lots of things to talk about, and it's very difficult sometimes to know what to choose. Examples can be extremely vivid that we get drawn to and that we spent a lot of time with. And this also just reading back early when video was first used or film was used, people recognized that you could spend huge amounts of time on very small amount of data. And you can also focus on particular examples that then always raise questions of representativeness or generalizability. It's hard to reduce the data and again choose episodes. So I think that there's ideas that could be shared about, you know, how one does that. And then challenges of annotation and re-representation. You know, transcription is incredibly expensive and incredibly hard to do when you
have more than a couple people talking. And so the other challenge is how do we develop ways of looking, describing and reporting. And so some of the insights I thought were really good from the authors. The authors from this section are working in museum settings, in homes, in communities, in different cultures, and in peer based learning groups in classrooms. And so one of the things that comes out across the chapters is the importance of these theory inquiry cycles, really focusing on theory driven questions and plans for collection of video records. Randi in her chapter talks about progressive refinement of hypotheses basically starting with an orienting question and a good plan. Not that you know everything that you're going to pursue, not that you're going to start with specific hypotheses but that you have a pretty good plan and those hypotheses are going to get developed more specifically as you look at the video.

Really highlighting from groups like Barbara Rogof's group that has worked together for many years the importance of good questions that will help you maintain a perspective that prevents you from getting lost in detail. And, of course, it seems like, yes, you know, Research Methods 101, but on the other hand I think when we have a tendency to collect a lot of really interesting data we
sometimes lose that because we're collecting the data first, we worry about it later. But if you really look at the wisdom of practice of people who have been doing this a lot, if you really try to force yourself to articulate the questions that the video might be able to help advance, you're going to be in a much better position for not getting lost in some of the detail. At the same time, you know, people say expect the emergence of questions. And I think that this is one of the powerful things about video is that, you know, you're looking at phenomena in new ways and so you should expect new, interesting questions to come up that you can be articulate about and that you could look at other parts of your data set to answer. So this kind of cycling between hypothesis generation, evaluation multiple times.

A second insight I think that's really important is the power of intermediate representations of video. So across the chapters, people have different kinds of approaches like diagraming of participant involvement looking at the patterns of attention that Barbara Rogof's group has been really working hard to do that. Doris Ash has developed a method for her work which is really looking at families across time, going to museums multiple times. She tries to look at flowcharts, obsessions. Then she
picks out significant events, and then she goes to microanalysis, and she has different kinds of timelines and things that she uses to help her take that complex video and make it into something that can help with pattern finding. Conversation maps, this particular diagram actually comes out of an article from Lauren Reznick and her colleagues looking at just one conversation. So each column is one speaker. This is something I've used in my work a lot, too, that really helped identify patterns. And transcriptions, like the art of different kinds of transcriptions with different levels of detail. And these are all things I think that could be boundary objects to be shared that are very, very useful when you are trying to start out and figure out how to analyze data.

The third general kind of insight was that interpretation and question generation really benefit from explicit social processes. So group viewing sessions, this is something that Jordan and Henderson talked about as a very important practice. But also bringing in the views of participants is something people who were actually filmed in the video. Sharing with other theorists who have a unique perspective. So really trying to diversify the conversation that your group is having by bringing somebody in who may not share your disciplinary background whether
it's psychology or anthropology or linguistics. And getting people who aren't in the research team even more generally. So if you're working in a school, getting teachers' perspectives on the classroom could be really powerful. And then fourth, just, you know, the whole -- there's a lot of insights when you read these chapters about coding and transforming data. And again, how do you cycle between looking at individual cases and coming up with coding schemes that will go cross case. Barbara Rogof's work, they talk a lot about the importance of not being blind, being able to really know something about your participants, being able to read them by knowing their backgrounds. Also in her chapter it talks a lot about future orientation. So think ahead to that publication. Think ahead to what the end product is going to be. And I found this myself, too. You can spend hours and hours and hours and weeks and years literally working with this data, and it takes a really long time. And it's just useful to try to think about how you want to report it. And forms of reporting, I think there's lots of great examples in the literature, and we should be collecting them so that we have things to look at.

And the other point is that over the course of several research projects you're in a much better position.
So we as a field I think need to be looking at this. So now, when I look at collaboration, I look at it with new eyes. Right? I have all these conceptual frameworks that are helping me see things. So I'm not going to be going down the same exact paths. I will hopefully be building on the kinds of insights that I've already gained through the first research projects. And this is something that Barbara Rogof talks a lot about, too, that you're going to be building and to realize that. And that's another kind of boundary object I think is collecting insights around similar kinds of topics.

So in conclusion, I think all of us agree video is a rich tool. It's getting easier to capture and represent. And my sense is the major work is conceptual rather than technical. We need to develop share ways of looking and describing in the context of central questions. I think that this is another key piece. If we can come up with those questions that are really compelling whether it's, you know, how does a cognitive and a social interaction system work to create differences in outcomes and quality of joint work or are there questions that people have that are really ones that are suitable to be answered by video will help us I think move along. And new tools that are being developed can really help, and
examples can really help. So I think the more that NSF or other people can do to find examples, not just of video but really of the analysis and then of the final product. Where are these articles showing up? In journals? Can we collect them so that we have examples for students and other people to follow? Okay. Thanks. So we're going to transition now to our next speaker. And if anybody has a comment or a question, we can go ahead and just raise it. We're not going to spend time answering cause we want to have lots of time at the end for conversation.

BARBARA SCHNEIDER: Yes?

AUDIENCE MEMBER: While you're transitioning. I think, I may be wrong, but the first video, video use is from many (inaudible) tradition. That was, you know, it's a remarkable story about how it was almost all lost and then the people, you know, a little bit was (inaudible) and the people now use that video to reenact some of their almost lost traditions. It could go at least to 1904 cause there's Flanagan and some others.

BRIGID BARRON: Yeah.

AUDIENCE MEMBER: Don't want to go thirties. You want to go a little further back.

BRIGID BARRON: Yeah. No, sure. And I hope that I didn't try to represent that I know all the history. This
is really just my own --

AUDIENCE MEMBER: No, just while we're transitioning here.

BRIGID BARRON: Yes.