

## ***CHI 2002 Workshop Application: Technology for Families***

### **Family Video can be Social**

Henry B. Strub  
Independent Consultant  
*hbstrub@att.net*  
<http://home.att.net/~hbstrub/Index.htm>

This essay describes limitations for families of today's consumer camcorders, and describes motivations of a project from at Interval Research Corporation which explored reworking the camcorder from the ground up. This work has not yet been publicly presented, except to a couple of small audiences in the Chicago area.

#### **Background on camcorder use by families**

Consumer research at the former Interval Research Corporation found many clear trends related to consumer camcorders. Couples tend to buy their first camcorder surrounding the birth of their first child. Also, the use of the camcorder tends to get stratified within family roles. The camcorder was the father's domain (especially while the children were small), while the still camera was the mother's concern.

The camcorder is most commonly used by families to record significant events. At first, it is used every once in a while to capture things the baby does, so the tape can be sent to grandparents. Because multiple short clips are shot on the same linear tape<sup>1</sup>, parents start forgetting what they have shot (and where it is) early on in their camcorder experiences.

As children grow, the use of the camcorder evolves. Its use tends to be at family events like birthday parties, the trip to Disneyland, and the school play (in order to capture when your child is on). A more recent phenomenon is to capture soccer practice, to review what your child did so he or she can improve. Once children reach their teens, they may become the primary user of the camcorder.

Today's consumer camcorders must be consciously used, they are what we at Interval Research used to call a "high attention" activity. The person who is running the camcorder is usually providing most of their attention to the recording, so he (commonly dad, until children get well into their teens) is not participating in the event being recorded. The person running the camcorder often watches the event through a viewfinder or via an LCD screen, and is not directly watching the activity or able to make eye contact with the participants. Since camcorders are often handheld to capture activity, the camcorder user cannot be physically involved in the activity. Also, whether

---

<sup>1</sup> Camcorder tapes are relatively expensive. Tapes for the "cheap" new format, Digital-8, tend to cost three to five (U.S.) dollars per hour, while tapes for mini-DV camcorders tend to cost eight to ten dollars per hour. That is substantially more expensive than VHS tapes, for which tapes with six hours of storage can be purchased for a dollar.

a camcorder is held or on a tripod, it is a physical object between its user and what is being recorded, becoming a physical barrier to the activity in its own right. So dad is not playing with the baby, dad can only watch.

The high attention nature of camcorders is not lost on the subjects of recordings. At Interval and in personal observations, children commonly start reacting to (and changing their activity for) camcorders even before they turn a year old. Family activity often changes when the camcorder is out. Family recordings stereotypically have at least one family member saying “turn that thing off”, or actively hiding (or turning away) from the camcorder.

Another problem with consumer camcorders, partly due to their not being used often, is that their batteries are often not charged when it is time to head out for an event. Camcorders are not used often, and therefore the taking of the camcorder is not integrated into the activity. As a result, remembering to charge the camcorder battery becomes a special activity of its own and is often forgotten especially when a consumer has multiple batteries and must therefore plan out the charging of each battery. Camcorders work when they are plugged into a wall, but this makes their use even more limiting since the activity must come to (and be directed towards) where the camcorder is plugged in.

The combination of these factors results in families often not having camcorders out and turned on when truly special (unplanned) events occur. Singing happy birthday and blowing out the candles will get recorded. However, many moments at the same party, where the kids are just being cute, will not be recorded. As a father in Southern California eloquently said during an Interval field visit, “I cook breakfast with the kids every Saturday morning when my wife goes out to exercise. Those are our most special moments together, but I’m busy cooking and have no recordings of our breakfasts.”

For all these difficulties, much of the footage that is produced by consumer camcorders is not very good. Because using the camcorder is already a high attention activity, amateur videographers go out of their way to make it count. Since they are already not participating, they often feel obligated to roll tape even when nothing special is happening<sup>2</sup>. Their amateur users also go out of their way to frame the action, and will both zoom and move the camera so rapidly that the footage is hard to watch.

Consumers know that camcorder footage is usually raw and not especially compelling so they are not motivated to watch camcorder recordings. Also, many consumers have trouble figuring out how to connect (or actually doing the connecting of) the camcorder to their home video equipment, whether to watch tapes on television or to record footage onto a VCR. As a result, the footage that is shot is commonly not watched and enjoyed. Rather, it is saved for the future, as an artifact to have<sup>3</sup>. Video is harder to review than

---

<sup>2</sup> But since they are rolling tape with a high attention camcorder, their presence lessens the chance of something interesting happening on its own.

<sup>3</sup> As a side comment, most consumers are not aware that videotape breaks down over time. The industry recommends fast forwarding a tape at least every two years and replacing tapes every five to ten years. The tape that is set aside for the future may not be playable in that future.

photographs, since it must be watched (at a television set, not just anywhere) over a period of time. Although new technology is now allowing the creation of key frames from consumer video, key frames do not provide a clue into the action that occurs during that clip or what is said. Video can also be scanned, but scanned video cannot be heard.

Today's video footage is also hard to share. Mom can get double prints of photographs when the film is developed, and it is easy to use a modem connection to put digital still images onto a web site. Videotapes take time to copy, and one is copying all the bad footage that was likely recorded. Video editing is time consuming, even though home computers are now powerful enough to support simple editing. It is also time (as well as bandwidth and server disk space) consuming to put edited video onto the web as well as to view it on the web.

For a different angle on visual media for families, digital cameras have revolutionized the social nature of still photography at family events. Many of today's digital cameras have displays built in, so people can often show off photographs as they are captured. As a result, the shooting of digital photographs sometimes becomes part of the social nature of the event. Also, having a laptop computer nearby allows people to download the still photographs and queue up email for sharing them while the event is still occurring.

### ***The Vertov Project***

The Vertov team<sup>4</sup> took a multidisciplinary approach to rethinking the consumer camcorder in order to improve on the many issues we learned from consumer research and experienced on our own. Talents that were brought to the project included DSP development, documentary filmmaking, electrical hardware and power optimization, optics, fashion and outdoor gear, wireless technology, and social communities. Our method of work was to do multiple iterations of recording platforms, to try them in the field (in public) on what we called "recording events", and to view our recordings and explore ways to make the viewing of videos fun.

Our recording prototypes were intended to be wearable, to be integrated into bags or packs that someone might wear at a social event so as not to look like "cyborg" equipment. Most had displays and cameras that could be aimed (we planned to have cameras that could be zoomed), but our intention was to enable "low attention" recording. Our long term goal was systems that would record onto random access media, such as DVD or hard disks, so to transcend the limitations of linear tape. We intended for people to be able to run the recorder throughout an event, so no intervention was necessary unless something notable occurred<sup>5</sup>.

Our recording technologies produced footage that was quite different from that created by camcorders. People's bodies dart around much less than their eyes do, so the footage was

---

<sup>4</sup> Its core members were David Burgess, Kim Johnson, Lee Felsenstein, Roberto Aiello, and Greg Thomas; as well as interns Anind Dey and Bruno Vianna. Many other Interval colleagues contributed to the project, with special mention of Scott Walters. I was the project coordinator.

<sup>5</sup> During the Strub family Thanksgiving celebration in 1997, I recorded eight hours of video.

much more stable than we expected – especially at family events. People also tend to naturally point their head and trunk at what is important to them, so low attention recording usually looked good enough, especially when it was of something that had spontaneously started and would not have occurred for a camcorder. Those of us who became experienced using prototypes were often able to set up views we wanted to have recordings of without breaking the flow of our experience. We could subtly point our body at something that seemed interesting, and look at something different in the moment.

Our prototype recordings were often very personal, since the person using a system was often a participant in the event. You could see exactly how you moved and directed your body during the recording, which made the recordings feel like you were exposing your inner reactions during the event<sup>6</sup>. We put quite a bit of effort into the audio quality of our recordings. Audio tended to be the best when it was set up to record what was in the immediate vicinity of the person using the system. However, one oddity of such recordings was that the person using the system was never visible in recordings, although we discussed having cameras that could be switched to a wireless mode and handed to a friend.

Our ultimate prototype was called the SocialCam, as it was intended to make the recording of moving images to be even more social than today’s digital still cameras. We intended for more than one person to be using a SocialCam at family events. This would provide multiple visual and audio perspectives on an event. Location technologies (i.e., GPS, and a digital compass) were integral to the SocialCam. Not only do location technologies allow later mapping of recordings to one’s location and orientation, but GPS receivers have very accurate clocks. SocialCam prototypes could transmit and receive video and audio over short distances.

As a result, the technology could share recordings, and mix your visual recordings (looking at me) with my audio recordings (of what was going on near me). Also, immediately after something neat happened (junior scored a goal), the person who recorded it can share the event with all.

Having multiple recording of an event, that were closely synchronized for viewing, created the opportunity for really interesting social sharing of recordings. It was often fascinating to review our “recording events”, either by viewing multiple recordings on a split television screen or with multiple nearby television sets (we had a cart with five television sets, and an audio mixer to allow rapid mixing of and switching between different audio feeds)..

Personal privacy was a major concern of our research. All of our recording prototypes were designed to be very visible, yet not everyone realized they were the subject of video recordings. Also our local audio recording technology would sometimes pick up statements that were made behind the person doing the recording, which were not heard

---

<sup>6</sup> Recordings taken by others did not seem to be revealing as much as it seemed one’s own recordings revealed, although there were fun differences between how a five year old and an adult moves.

during an event since the person using the system was actively attending to what was happening in front of him/her. Privacy (and its converse, which we called “publicity”) are important issues for family technologies, though a thorough discussion is beyond the scope of this workshop essay.

Marking technologies were a key research area for Vertov. Some video recording equipment allows marking video so it can later be searched. However, simple marking in the moment will not occur when people are fully attending to what is happening in front of them. Simple marking in the moment can also be wrong, since someone visibly marking important events may feel obligated to mark something (or possibly to not mark something) so as not to offend the people around them.

We explored many other concepts for marking technologies. Prospective marking is done before a key event, such as when the candles for the birthday cake are being lit. Retrospective marking was especially useful, as one could realize that something special had occurred. GPS data could also aid in finding a special moment, since users can search for where something occurred. Physiological monitoring is another data source that can be useful for finding key moments in one’s recordings. We expected that integrating multiple technologies would be especially useful, since human memory is better at remembering approximations than exact details, and correlations between multiple marking indices have great promise for being substantially more useful than any single marking index.

### ***For the Workshop***

Assuming that workshop participants do read participants’ essays before CHI, this work can be briefly presented with photos of recording systems and sample video clips (that can be run from a computer).

As a small aside, I thank this workshop’s organizers for the opportunity to write this essay since it has helped me realize that I should fully write up the Vertov project’s work.