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A good record? The use of video in practice-led design research.

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Over the last eight years, the duration of my ongoing practice-led design research project, video recording has developed from an expensive luxury to being ubiquitous. Whilst this opens up many opportunities for documenting and disseminating research projects, there are also potential drawbacks.

I am a multimedia designer who makes extensive use of video both as an observational tool and as a means of helping covey tacit / experiential knowledge in creative practices. In this paper I will discuss the use of video for such purposes, drawing on my own experiences and the research of others who use video in design research.

Figure 1. The author filming at a Gallery/workshop event with a video camera on a tripod and another hand-held on a monopod.

Background

My research brings a designerly approach to the problem of capturing and passing on the skilled knowledge of expert craft practitioners. It follows an eight year investigation into tacit learning and multimedia and has led to an understanding of how craft skills may be elicited and embodied in learning resources[1].

My practice engages simultaneously with the two problems of what is to be learned and how it will be learned. It brings together experienced practitioners, learners and designer in hybrid activities that provide an arena for generating understanding of skilled practice, embodied in learning materials rather than stated explicitly in formal conclusions.

A central feature of this practice-led research has been the use of video to record the practical knowledge of skilled craft practitioners and make it accessible to those wishing to learn the skill. To observe authentic activity I often work in locations that

[1] This research has been carried out in association with Professor Chris Rust at Sheffield Hallam University and funded by the Arts & Humanities Research Council.

are highly compromised by bad lighting, difficult sight lines and shifting objects of attention.

Figure 2. The author's camera during observation in a clog maker's workshop.

Video observation

The use of video for observation has the advantage that it can accurately capture very rich material, but there is a danger that the act of observation will change the situation being observed. On most occasions researchers are wishing to observe authentic activity rather than a performance for the camera. In my experience successful video observation depends on careful selection and use of equipment, along with good interpersonal skills to ensure that recording results in a useful record but does not intrude on the activity.

In my earlier research I limited the intrusion of the recording process by using a very small (and quite inexpensive) digital video camera; the footage was only for my own research purposes, so it did not need to be high quality. I also learned how to make best use of natural light so additional lighting was not necessary. Wherever possible I used a tripod so I could keep my distance from the camera and favoured a G-clamp mini tripod that could be discreetly attached to a shelf or door frame whenever possible (Wood 2006 p21).

Figure 3. The author's video camera and G-clamp tripod used in early research.

My later research was in very noisy workshops so I needed a more sophisticated camera that worked with external microphones to pick up voices above the sound of machinery. Again I attempted to minimise intrusion by using a cut-down professional camera designed for TV documentary makers[2] and discreet wireless lapel microphones (Wood & Horne 2008).

[2] Sony HVR-A1E miniDV camera

However, the behaviour of the researcher is easily as important as the equipment that is used. As Hutchinson *et al* comment in their workbook *Modern media and reflective practice* (1995 p15),

> "… you must be aware of the threat of the medium and seek to assure those you use the medium with. You must attempt to suppress your own ego and respect the individuals who participate with you in this project. Always be overt with your aims and intentions, let people get used to the camera, you are not directing you are observing, video in this project is assisting your observation. … the only way to achieve this is to use the camera with people rather than on them."

In his research, Hawson (2006 p106) sought to give his participants an understanding of the importance of video recording to the project, and suggested that using the equipment right from their first meeting "helped reduce camera and microphone shyness." Leon (2005) refers to his attempts at becoming invisible as he undertakes his research. Given a limited time span with those he is observing, he seeks to rapidly acclimatise them to his presence, relying on "interpersonal skills to gain intimate access and rapport to sustain the observation."

In my experience there are a few, simple, practical steps that can be taken to help put participants at ease. I find it worthwhile spending time in advance becoming familiar with the workings of my equipment so I can use it with confidence, and I aim to minimise interaction with it whilst I am recording. If I am hand-holding a camera, I try to keep it at waist level and use the external screen to frame the shot; this is far less intrusive than holding it in front of my face. I get everything ready and test it before I start, keeping a spare tape and battery in my pocket ready for a swift change-over. I find if I am calm, confident and relaxed with my recording equipment, my participants are more likely to be so too.

Processing video data

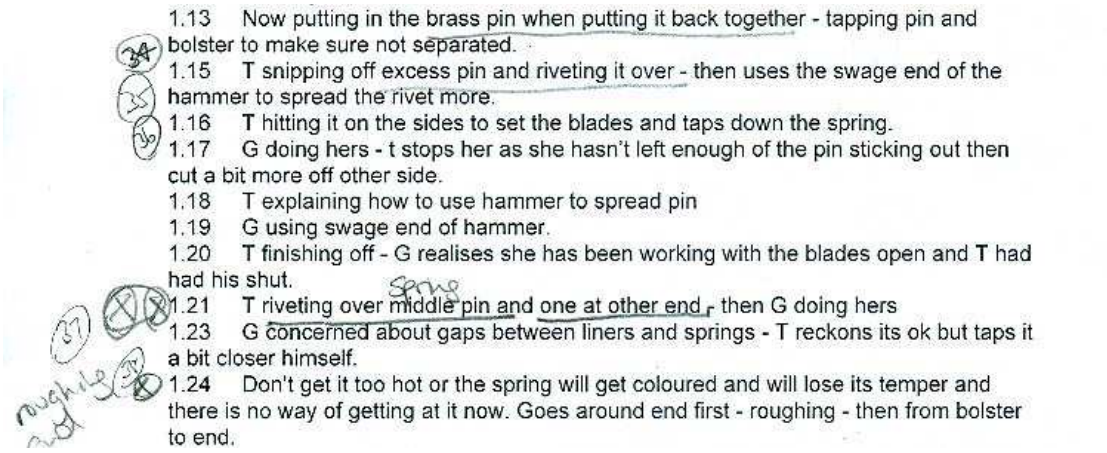
The large volume of both visual and auditory data captured during video observation can present a challenge both for the immediate processing of the data, and making it accessible longer term during ongoing research. The more video that is captured, the more difficult it is to effectively index it, to make it usable and allow subsequent review of the material.

The social science approach to processing video and audio recordings is to use qualitative data analysis software such as Atlas Ti, NVivo or Transana which enables the dialogue to be fully transcribed then coded, mapped and linked. However, this is very time consuming if a significant amount of material is involved, so often the initial process is undertaken by a professional transcription service. This results in the researcher mostly engaging with the transcripts rather than the raw video data.

In my experience, reviewing the video in full myself shortly after the event is very enlightening. It has enabled me to pick up on subtle occurrences that I had not seen the significance of when I had been filming and to reflect on my own role as a researcher (Wood 2006 p23, Wood & Horne 2008). Similarly Hawson (2006 p147), a furniture maker whose research involved a series short work placements with Icelandic craft practitioners, highlights the importance of reviewing his video record as a reflective tool when subsequently undertaking work in his own workshop.

As I watch the video I use an approach I call "event logging" which quickly produces a concise narrative that acts as a key to the video for later use (Wood 2006 p22). As Buur *et al* (2000) propose, "video recordings … are no longer hard data but rather the first attempts to create stories that frame the design problem and impose order on the complexity of everyday life." I produce my logs using a table in a Microsoft word

document[3] with one column for the video time code and one for a description of the event (see Figure 4). The digital versions are easily searchable and the paper versions soon become annotated with marginal notes and highlighter pen as I work to make sense of my observations.



1.13 Now putting in the brass pin when putting it back together - tapping pin and bolster to make sure not separated.
1.15 T snipping off excess pin and riveting it over - then uses the swage end of the hammer to spread the rivet more.
1.16 T hitting it on the sides to set the blades and taps down the spring.
1.17 G doing hers - t stops her as she hasn't left enough of the pin sticking out then cut a bit more off other side.
1.18 T explaining how to use hammer to spread pin
1.19 G using swage end of hammer.
1.20 T finishing off - G realises she has been working with the blades open and T had had his shut.
1.21 T riveting over middle pin and one at other end , then G doing hers
1.23 G concerned about gaps between liners and springs - T reckons its ok but taps it a bit closer himself.
1.24 Don't get it too hot or the spring will get coloured and will lose its temper and there is no way of getting at it now. Goes around end first - roughing - then from bolster to end.

Figure 4. Section from a video event log showing annotations highlighting key points in the procedure of the craftsman being observed.

In this instance I was using the video to examine a craft practitioner's procedure, so used the event logs as the basis for a flow chart summarising the key points observed. This flow chart was subsequently used by a more novice practitioner to test the procedure, with the event log providing a link back to the key points in the video which the learner watched when clarification was needed (Wood *et al* 2009 p5). The final outcome of this project was an online learning resource, a public version of which can be seen at http://foldingknives.designinquiry.wikispaces.net/.

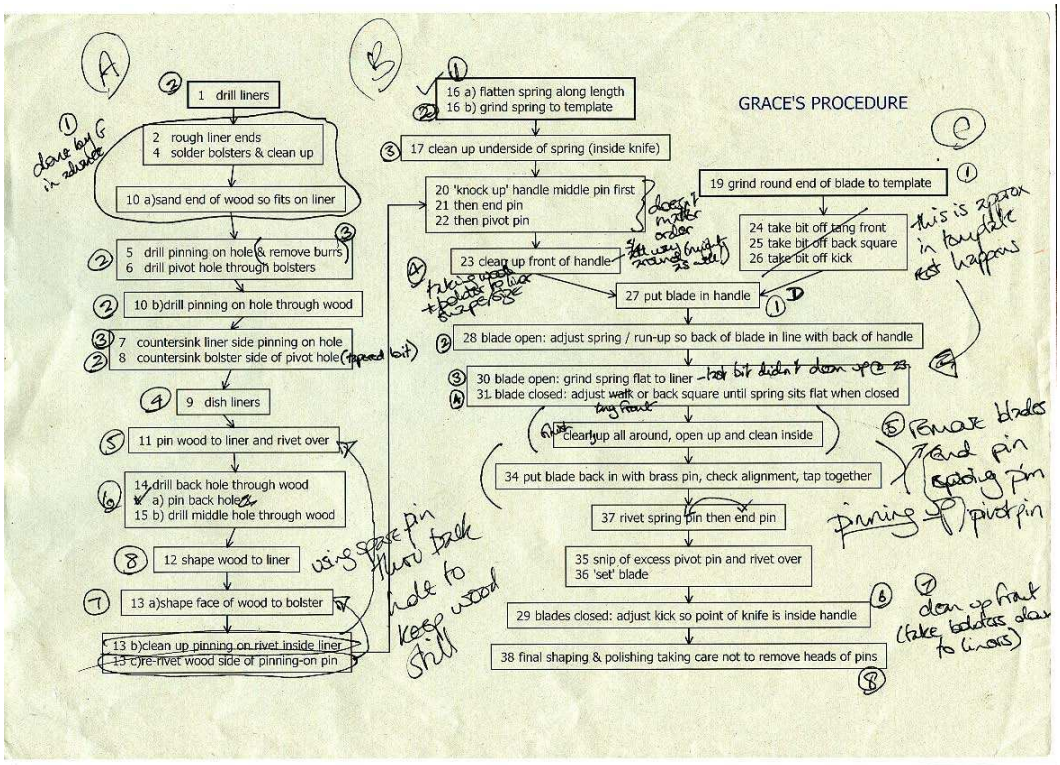


Figure 5. Flow chart developed from the key points highlighted by the event log.

[3] At the time I started, suitable specialist software for a Mac computer was not available. I still find Word fulfils my need so have not found it necessary to look for an alternative.

Whilst this example is specific to this particular aspect of my research, very commonly I use the logs for more general purposes such as locating key pieces of dialogue which might subsequently be transcribed in full, identifying discrepancies between what participants have told me at different times, or simply locating important pieces of footage for use in presentations.

In my experience, event logging is both an effective means of reviewing video for immediate reflection and also provides an efficient method of subsequently accessing video data.

Video as an output of research

Finally, there is the use of video recordings as an output from research which, from my perspective, falls into two areas. First is the use of video for instruction, which had been my initial intention when I started filming craft practitioners, although subsequent experience has revealed that it is only suitable in certain circumstances. Second is the use of video as a means of disseminating research, which I believe opens up some exciting opportunities in the context of creating online multimedia documents.

When I first started working with craft practitioners I had imagined video providing the key to recording and transmitting craft knowledge (Wood 2003) as it is commonly used for that purpose; the "How to" section on the video sharing site YouTube has many thousands of videos covering a wide variety of topics. The HandMade project by DistanceLab [online] claims "HandMade captures an immersive record of the way someone uses their hands. ... The point-of-view camera angle allows viewers to map hand movements more directly to their own bodies, enhancing the ability to learn these techniques in the absence of the subject."

HandMade provide no substantiation for that claim and my experience leads me to believe that such video is only useful for those already experienced in the skill. In my own research I have found that, for the beginner, video is a very difficult medium to learn from. In my work with wood turning learners I found they were keen to watch video of the expert demonstrating, but frequently struggled to relate what they had seen to their own work (Wood 2006 p126).

Figure 6. A learner watching video in the wood turner's workshop.

My interpretation of this is that, for complex skills, a large proportion of the knowledge of the expert performing the demonstration is tacit, so video has a tendency to conceal rather than reveal the practice. The expert practitioner makes the task look easy, tacitly responding to subtle cues that may be any combination of kinesthetic, visual, auditory or olfactory. Whilst they may be able to verbalise some of this, much will

remain unspoken. The observer has to interpret what they are seeing themselves and attempt to replicate it in their own activity, a difficult task for the novice.

In response to this I have developed a multi-layered approach to interpreting the skills I have been recording, using interpretation based on images and text as a starting point for novices, providing them with a bridge across the knowledge gap between themselves and the expert (Figure 7). Video remains an important medium but is used for contextualising each stage of the process and for more advanced learning where the learner has the ability to form their own interpretation (Wood *et al* 2009 p3).

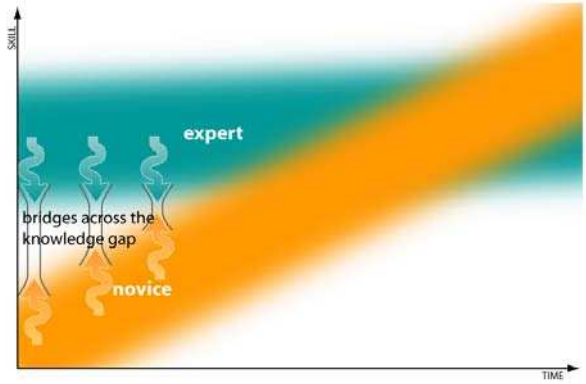


Figure 7. Interpretation offering bridges across the knowledge gap between expert and novice at an early stage of development.

Finally, there is the use of video in disseminating research and in particular creating multimedia rather than paper-based documents as an output of research projects. When I was working on my PhD I had a feeling I wanted to produce a multimedia outcome rather than a traditional thesis, but by the time I was writing up my urge to finish overcame my desire to be experimental!

However I had the opportunity to progress the idea two years later on completion of my post-doctoral research project. The *Transmitting Craft* project involved working with traditional Sheffield knife makers to record their skills and make them accessible to a new generation of creative metalworkers. This research saw a major shift in my working practices away from highly structured conventional multimedia materials to the use of online web 2.0 resources that invite participation and encourage collaboration. In this project I used a private wiki[4], initially to share with co-researchers the interpretive materials I was developing, and subsequently as a prototype learning resource to gain feedback from participant learners.

Working in this way presents a challenge to the designer who is used to having close control over what is produced. Firstly, the wiki software offers only fairly basic formatting options, and secondly content can be generated by other users over which the designer has limited influence. However, my experience was that the benefits of being able to quickly generate content and the ease of sharing and collaborative working far outweighed these drawbacks. I also soon learned to manipulate the layout tools that are provided to produce a more 'desgnerly' output.

[4] On-line software that allows users to collaboratively create, edit, link, and organise the content of a website.

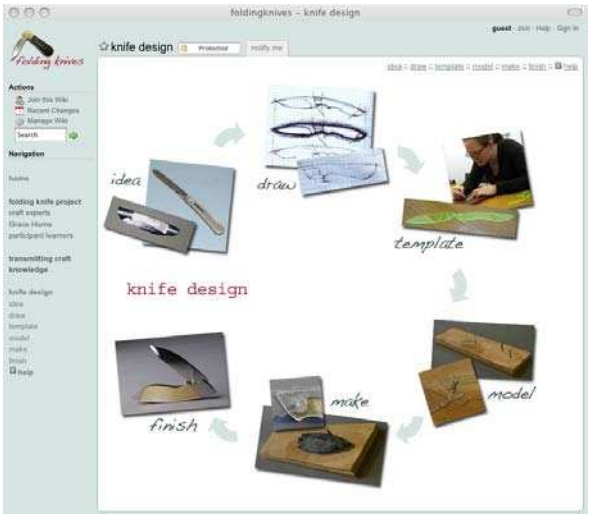


Figure 8. A screenshot from the knife making learning resource web site.

As a result, the two major outputs from this project were also produced using the wiki; a public version of the learning resource (Wood 2009a) and the final project report (Wood 2009b) which was primarily for the body who funded the project, but also made accessible to the wider research community by publishing in this way. Whilst in many ways this is a relatively modest achievement, it is significant because it enabled me to make accessible images and videos from the research alongside more conventional text and academic papers, and can continue to grow as we continue to write about the project.

I have recently been filming for two projects outside my own research, and for both my remit was to document the research methods rather than producing an observational record. The first, KeyPiece, was a combined public exhibition and research event that brought together ten leading practice-led researchers in metalwork and jewellery and the output from it will be an online interactive multimedia resource that should be a more important development. The aim is to create an engaging, accessible and durable documentation of the event that can be explored in a non-linear manner and will have an appeal beyond the professional research community (Keypiece 2009).

The second project is run jointly by Sheffield Hallam University and a local National Health Service (NHS) hospital, and is part of a large co-design project seeking to improve the hospital's service by bringing together medical staff, patients and designers. The NHS is a conservative institution and their anticipated outcome was a short video to be distributed on a DVD, however they have expressed an interest in other formats and I am currently encouraging them to consider also developing online multimedia documentation.

It is my intention that both of these project and future research I am involved in will have outputs that are more than standard web sites and will represent the research in ways that will make it widely accessible.

Conclusion

There is an increasing use of video in practice-led research because the equipment and consumables have become easily affordable. However, care needs to be taken if the resultant footage is to show authentic activity rather than a performance for the camera. Researchers need to be familiar with their recording equipment so they are relaxed and confident with it and develop their interpersonal skills to put those they are filming at ease.

Additionally the sheer volume of data generated by video can render it virtually unusable unless a strategy is developed in advance for how the footage will be processed. If this is contracted out to a third party a valuable opportunity to reflect on what has been recorded will be lost. Taking the time to review the material personally and also creating a concise log of the content enables immediate reflection and provides an index for future use of the footage.

Finally, video is an engaging medium that is useful as an output of practice-led research. For instructional purposes it needs using with care and often an interpretive layer is necessary as video of a skilled practitioner can conceal as much as it reveals for the novice. However, it offers much potential for conveying rich contextual information about the research undertaken and can form an important part of an online multimedia document that can make research outputs widely accessible.

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