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Using a 360° Camera to Record Natural Dyeing Craft Practice

ABSTRACT

In recent years, 360° video cameras have become increasingly accessible and are now being used as valuable research tools across a range of disciplines. Their wide and flexible field of vision can provide immersive and/or alternative perspectives compared to standard video. This paper will present emerging findings from using a 360° video camera to capture natural dye craft practice from an auto-ethnographic perspective and as an observer of other dyers' practice during fieldwork visits. The 360° video data forms part of my doctoral study, in which I explore the embodied interactions between people, plants and materials that connect practitioners to their surroundings, linking them to other species and ecologies. The varied nature of the actions and processes that form the craft practice (e.g. foraging, tending, harvesting, mordanting, dyeing), and the different places and spaces in which these actions occur, presented a practical and observational challenge when trying to record the practice in a video format. Using a 360° camera proved to be a flexible, data-rich and engaging method for recording the craft. The ability to 'move' around and explore different perspectives from within the video after it was recorded was especially valuable, allowing a shift in the focus of the recording and presenting the opportunity to actively centre or decentre plants, people and materials. In this paper, I will reflect on my experiences recording and working with 360° video data and discuss some of the limitations and possible benefits of using this equipment in a craft research setting.

Keywords:
Natural dyeing, 360° camera, craft, video, ethnography.

INTRODUCTION

Within ethnographic research, video-based methods are an increasingly common research tool, especially due to the development and proliferation of video-capable technologies in recent years (Vannini, 2020, p. 4). Video methods can be useful tools for representing and uncovering the elusive, tacit and embodied knowledges that other methodological approaches, such as observation or notation, can struggle to articulate (Toraldo, Islam, & Mangia, 2018). Within craft research, audio-visual methods can be particularly useful when articulating, documenting and disseminating the experiential knowledge that is central to craft practice (Groth, 2022).

Most often, standard rectangular-framed digital video recording options have been used by ethnographers to capture these recordings. However, in the past few years, technological advancements and the growing interest in virtual reality (VR) have meant that 360° cameras have become increasingly accessible (Westmoreland, 2020). The 360° cameras differ from standard video cameras due to their ability to capture an omnidirectional field of view, commonly referred to as a 'sphere' (Figure 1). This is possible due to the presence and positioning of multiple lenses on one camera. The sphere effect is created when the images from the lenses are stitched together seamlessly, creating the illusion of one composite image. They can also be viewed from an equirectangular perspective (Figure 2) or reframed into a standardised rectangular format (Figure 3). When compared to standard video, 360° cameras can provide a wider field of view and a more immersive viewing experience. The immersive feel is created through the ability to actively engage with the video recording by manually changing the field of view through functions such as zooming in/out and manipulating the perspective of the camera. The sense of immersion can be further heightened through viewing and/or engaging with the footage using a VR headset.

FIGURE 1. An example of the 'sphere' effect created in 360° footage. It displays a dyer harvesting Dyer's Coreopsis at an allotment. Author's image (2022).

FIGURE 2. An example of the equirectangular view: 360° footage of the same scene captured in Figure 1. Author's image (2022).

FIGURE 3. A still of a reframed video displayed in standard flat rectangular format of the same scene as depicted in Figures 1 & 2. Author's image (2022).

Related work

Researchers have increasingly been utilising 360° cameras within academic settings. The cameras' flexible field of vision makes them ideally suited for capturing sports and action, but they are now also

being applied in more diverse settings. When recording students conducting experiments in a laboratory, Ardisara and Fung (2018) found a 360° camera to be particularly beneficial when used in cluttered or confined spaces due to its compact design and wide field of view. Pretlove et al. (2020) gave 360° cameras to runners to reveal and observe how tacit, embodied and sensory information connects them to their immediate external environments, which may not have been possible to capture through traditional methods. Evaluating their use in ethnographic research settings is also an area of growing interest. Gómez Cruz (2017) offers a comprehensive overview of using 360° video in ethnographic fieldwork, drawing attention to how the researcher's embodied emplacement within the field is altered by the ability to revisit and reobserve the footage from a different perspective. Westmoreland (2020) notes that the spherical or distorted effect visible in certain framings of the footage isn't a typically human one, suggesting that 360° video might allow us an 'opportunity to radically open our perspective – epistemologically and ontologically – to other world views' (p. 265), implying that there could be value in further examining footage from these initially disorientating perspectives. When disseminating research, 360° cameras may also offer new capabilities to collaborate, share and engage others in ethnographic research, for example through sharing the footage with others and giving them the opportunity to manipulate the footage and view it from a framing of their choosing (Gómez Cruz, 2017; Westmoreland, 2020). Video journalists have already been using 360° video to provide immersive first-person perspectives of news events to allow their audience to 'experience' rather than 'watch' them, finding that it created an increased sense of presence and enjoyment for their audience (Van Damme et al., 2019). This suggests that there may be potential to increase positive engagement with ethnographic research through the use of this technology.

RESEARCH CONTEXT

The 360° video footage discussed here forms part of my doctoral research investigating the contemporary practice of natural dyeing in the UK. My research aims to uncover and reflect on the embodied interactions between people, plants and materials that connect natural dyeing practitioners to their surroundings, linking them to other species and ecologies. My study is formed of three distinct phases: phase one seeks to understand contemporary practice of the craft through a netnographic enquiry and an online survey; phase two comprises a series of semi-structured telephone or online interviews with natural dyers; and phase three is centred around three fieldwork visits to dyers. Auto-ethnography is used as a method alongside these three phases to prompt reflection and thinking through making (Mäkelä, 2007) as the project slowly unfolds and draws on my six years of experience in natural dyeing.

In this paper, I will reflect on and discuss my experiences of using a GoPro Max 360° camera to capture natural dyeing craft practice from two perspectives: firstly, from an auto-ethnographic perspective in which I record my own natural dyeing craft practice in my home, garden and allotment; and secondly, from three half-day fieldwork visits with natural dyers whilst they undertook some of their everyday dyeing activities, using a participatory observation method. The purpose of capturing these two perspectives through audio-visual means was to document and uncover some of the tacit knowledge (Polanyi, 1997) and the embodied interactions between people, plants and materials that are central to natural dyeing but which the prior two phases had not accomplished due to the limited scope of the methods used.

Motivation

The decision to use a 360° camera to record audio-visual data during the fieldwork visits stemmed from the practical and observational challenges that I encountered when I first attempted to record my own practice (for auto-ethnographic reflection).

The main challenge resulted from the complex and varied nature of craft practice. Natural dyeing is a process entailing numerous stages, most commonly including the following activities: foraging, growing or finding dyestuffs; scouring fibres; mordanting fibres; preparing the dye pot; dyeing the fibres; and finally rinsing and finishing. These actions and encounters can take place over a matter

of hours, days or sometimes months. The spaces and places in which dyers craft are similarly varied: often dyers will work across their local areas, gardens, allotments, homes and studios. When attempting to record my own practice using standard video, I quickly found that having to reposition the camera to include my actions in the frame and to decide what was or was not going to be in frame became distracting. I felt that it was creating a (sometimes literal) barrier between me and my encounters with the plants and materials.

Instead of aiming to capture the entire natural dyeing process from start to finish, I focussed on spending time with three dyers whilst they carried out their everyday dyeing activities. I was aiming to capture a participatory style film (Vannini, 2015), whereby I would be present in the recording, meaning that the full spectrum of view provided by the 360° camera would capture me, the other dyers and the surrounding environment. I would be reflecting on and filming the encounters between me, the dyer, materials, plants, the environment and the spaces in which we were working and talking. This added further difficulty to *how* I could do all these things through participative observations without losing focus or becoming a distracting presence in the dyer's personal space. Multiple cameras fixed in the working space and gardens would have captured multiple perspectives at once, but I felt that this would be too obtrusive in private and limited working spaces. Therefore, I saw the wide field of vision that a 360° camera could offer as an opportunity to reduce the focus on framing the camera view. I saw it as a vehicle to capture the visit from a wider and somewhat de-centred perspective.

METHOD

I used a GoPro Max camera and 1 m telescopic pole tripod to record the footage (Figures 4 & 5). In total, the three fieldwork visits amounted to approximately twelve hours of footage, alongside five hours of auto-ethnographic footage. GoPro software was used to view the 360° files (in .360 format) and displays a sphere of video which can be manually manipulated on-screen to change the view using either a cursor (Video 1), a touchscreen or a headset. I spent time exploring the data using a cursor and rewatching the same clips from different fields of view. I then reframed and exported sections of 360° video into standard 'flat' video to use for transcription and later thematic analysis.

FIGURE 4 AND 5. The GoPro Max Camera used (figure 4). The camera mounted to a telescopic tripod (figure 5). Author's Photos (2022).

VIDEO 1. A screen recording demonstrating how the field of view can be manipulated by 'moving' the camera view around and zooming in and out with the cursor; in the video, a dyer is harvesting Dyer's Coreopsis. **To watch the video, left-click the picture**

REFLECTION

In all, I found the camera to be an effective audio-visual data collection tool in the range of settings in which I applied it. There were unanticipated benefits to using this method and also some drawbacks; I briefly present some of the key points of reflection regarding this approach below.

Practicality

From a practical perspective, transporting and setting up the camera was very simple; it was lightweight and compact. Mounting the camera on a telescopic tripod pole ensured that the tripod was barely visible when the multiple lens perspectives were stitched together, giving the resultant video the appearance that the camera was floating.

Framing and focus

The core purpose of my decision to use a 360° camera to record the craft practice was to avoid spending time deciding on and moving the camera's focus and choosing how to frame the shot to capture the variations in action that occur. However, in practice, consideration of the vantage point and camera placement required some attention from me, so the frame remains a concern (Westmoreland, 2020). Although not limited to the rectangle of standard video, I had to decide what sphere of video I wanted to record and choose an appropriate placement accordingly. For example, placed too low to the ground, the subject can be lost from sight; when placed in a corner, the benefits of a full sphere of vision are negated. The camera was not always fixed either; when I was being shown around a garden or allotment, for instance, I carried it in one hand to follow the dyer through the space.

As I had anticipated, by setting the camera down and capturing everything happening during my visit, I succeeded in uncovering a broader view of the craft practice. Without a rectangular and singular lens of focus, I was privy to a different perspective of the practice. During phase one, I examined social media posts about natural dyeing, including images and video. Carefully curated and framed close-up images of textiles, tools and materials, alongside images of plants, dominated the dataset. None of the images I analysed in this phase showed the everyday aspects of dyeing, such as the messiness, the lifting and movement of equipment or the juggling of space and tools in the way that the

fieldwork data did. Had I tried to frame the shot of the dyer in a traditional way, I could have missed out on this perspective by focussing too closely on the dye pot, for example. Due to the ability to move around within the video using the GoPro software after the visits, I was able to see and 'follow' how either myself or the dyer moved through, inhabited and interacted with their wider working environment and the plants present.

In addition, the ability to switch the focus of the video frame after recording proved to be a useful tool. By revisiting and reframing short segments of footage from different angles, I had the opportunity to redirect my attention towards and follow the actions of plants and insects, allowing me to notice events and interactions I hadn't previously been aware of. For example, whilst a dyer and I were sheltering from the rain and working indoors in one framing, in another the plants exposed to the rain outside reacted too, by closing up their petals or bowing under the weight of the rain. I could move and zoom to focus on something specific with more ease and manoeuvrability than standard video could offer.

However, this capacity for manoeuvrability within the 360° video can sometimes be disorientating due to the way the field of vision can be obscured and the fisheye effect that is presented if you are not zoomed in fully (see Video 1). This takes some getting used to, and the distortion can feel unnatural. I found that with experience, you learn how to 'control' the field of vision more effectively to avoid the disorientation. Ardisara and Fung (2018) experienced a similar sense of disorientation, noting the potential for the video to cause simulation sickness; like them, I found that if the camera was stationary, this effect was slightly reduced.

Immersion

Originally, seeking an immersive viewing experience was not the intention of the recording: as mentioned earlier, I approached the camera as a practical tool for capturing the action and variation of dye practice across different environments in an unobtrusive manner. An unexpected outcome relates to the feeling of immersion or embodiment felt through footage when exploring, reframing and editing it. The ability to sit with the video and spend time 'moving' around it and controlling what is viewed on the screen lends an experiential feeling to the data editing and analysis; I had an active rather than passive role in footage I was exploring. Gómez Cruz (2017) describes this as a feeling of 'inhabiting' rather than 'seeing' the data. I related to this feeling when exploring my data; there was a sensory element to experiencing the visits again this way; looking around and noticing elements that I hadn't previously meant that it was more a process of discovery than reliving a visit.

Technical considerations

One of the main limitations to using the camera arose from a technical rather than a practical perspective. Capturing such extensive all-around footage produces vast quantities of data: around 1 GB per recorded minute (Westmoreland, 2020). This necessitates using a computer with adequate processing power and memory cards with large storage capabilities. Due to the data format differing from standard video file outputs (.360 files compared to MP4), knowledge of how to process, edit and reformat them is required. These factors combined can make the formatting, exportation and analysis process lengthy and complex. I spent several hours developing an effective workflow to handle and explore the data.

DISCUSSION

My use of the 360° video camera offers a variety of insights into using this type of technology in a craft research setting. First, the immersive experience created by the manipulable video data has particular value when considering the difficulties of disseminating and communicating experiential knowledge to a wider audience. Creating immersive video demonstrating craft practices can help to enliven and engage the senses in the practice more than a standard framing can: it can help give viewers more of a 'feel' for the craft that they are observing and allow viewers to participate in the footage by allowing them free control over what they focus on or choose to see. Related to this, some believe that feelings of immersion can prompt increased emotional responses to and empathy with what is being viewed

(Westmoreland, 2020). This might be potentially useful when communicating research with others and promote greater engagement with experiential aspects of craft, if so.

The ability to centre or decentre specific perspectives could be applied more broadly and viewed as a chance to enhance perspectives not otherwise valued, for example from nonhuman perspectives (Westmoreland, 2020). The wide view in my footage allowed me to focus on plants in a way that I couldn't when present, with the slow unfolding of the footage only bringing their actions to light in review. Exploring nonhuman worlds through audio-visual means is challenging (Abbott, 2020; Pitt, 2015), but 360° cameras have the potential to contribute to this.

With the use of these cameras growing and with the rise of VR, there is also a need for more critical engagement with the use of technology to record craft practice. Whilst unobtrusive and simple for the researcher to set up, a camera that sees all may feel more intrusive to research participants than a camera viewing a single frame. There is also a need to carefully consider whether everything must always be recorded and the feeling and politics of surveillance that this can be likened to (Gómez Cruz, 2017). For my participants, the camera was a talking point, and I checked that they were comfortable with its use, which they were; however, not all will feel this way. There is a need to balance the desire to capture detailed and extensive data with the intended purpose whilst being sensitive to participants' feelings and privacy.

CONCLUSION

The 360° camera was an effective tool for capturing natural dyeing craft practice from two perspectives: for my own auto-ethnographic reflection and during three fieldwork visits with other natural dyers. The key benefits of using the camera were the flexibility in how the footage could be framed (allowing changes in focus) and the immersive feel created in the editing and reviewing stage. Technical limitations, the sometimes-disorienting navigation and the skewed field of view were the key drawbacks. However, the use of the 360° camera potentially opens up new possibilities for recording, analysing and disseminating craft research, in particular due to the sense of immersion created and the opportunity to view data from multiple and alternative perspectives.

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