Investigating scientific practice with ethnographic film

Paper for the EASA Media Anthropology Network E-Seminar Series
https://easaonline.org/networks/media/eseminars
June 21, 2022

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Abstract

In this article, we consider how ethnographic filmmaking can be used to investigate scientific practices, using a co-taught course on visual ethnographies of science as a means of exploring this. In 2021-2022 we collaborated to develop teaching that combined methods from visual anthropology with theories and concepts from science and technology studies (STS). The resulting course, titled "Visual Ethnographies of Science", supported students in using visual methods to investigate scientific practices. In this article we describe the course and our learning from it in order to show how the use of audio-visual methods can enable students and researchers to explore the nature of processes and practices, in particular those found within science. Our experience is that ethnographic filmmaking is generative for critical reflections on method, investigations of the mundane doing of science, and collaborative engagements with interlocutors.

Introduction

Since the earliest days of Science and Technology Studies (STS), scholars in the field have displayed a keen interest in practices. STS researchers have asked not only what science is or how it is perceived, but how it is *done*, and how knowledge, meanings, and techno-scientific orders are made, negotiated, and contested in its doing (Felt et al. 2017). To study scientific practices in concrete settings such as laboratories, libraries, and citizen networks, STS scholars have combined ethnographic methods of observation with reflexive engagement, in some cases combined with participatory engagement of different forms (Downey and Zuiderent-Jerak 2017).

In anthropology, interest in practices also has a long history (Haddon 1898). With the institutionalization of the subdiscipline of Visual Anthropology since the 1970s, filmmaking was developed into a method to strengthen ethnographic research into a variety of cultural

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practices, including dance performances, rituals, and social events (Hockings 2003). Filmmaking was deemed particularly useful in research on embodied aspects of social life, such as movement, clothing, skill, and various kinds of practical knowledge (Banks and Ruby 2011). The integration of filmmaking in ethnographic research helped anthropologists to be attentive not only to human bodies but also to aesthetic arrangements of their material, spatial, and social environments (MacDougall 2005; 2006). Out of the multiple strands of ethnographic cinema that have been developed over the years, one well-established genre - the process film – has been particularly focused on the representation of practices (Grimshaw and Ravetz 2015).

There are important parallels between the focus on practices within STS and in Visual Anthropology. Yet the question "what practices are" is addressed somewhat differently in these two domains. In anthropology, "practices" have historically been understood as "what people do", in contrast to "what people say they are doing" or what they say should be done - a contrast that provoked reflection on the discrepancies between people's actions and their normative prescriptions (Jacobson 1991, 11-13). In contrast to this focus on human behavior, STS scholars have insisted that practices involve both human and non-human actors. Scientists – or other human actors – are not the only agents within practices; rather, practices are assembled from heterogeneous sets of materials and entities. This means that practices can't be limited to "what people do" but rather involve a network of human and non-human actors, whose interactions are distinctively patterned and routinized (Law 2004). While it is only recently that anthropologists have developed a theoretical interest in assemblages and non-human agencies (Ong and Collier 2008), a re-viewing of early examples of process films reveals that these films did already contain prospects for such an analysis.

In this article we build on the resonances and tensions between STS and anthropological ideas of practice to further consider how filmmaking might relate to studies of scientific practice. We do this by describing and discussing our experiences of designing, teaching, and reflecting on the course "Visual ethnographies of science: Investigating knowledge production through media practice" at the University of Vienna. This was not a project of research-based teaching, in which a preconceived research project is bought to the classroom, but rather one of teaching-based research: the classroom as a site of interdisciplinary exploration with unknowable outcomes. It therefore offered a key opportunity to investigate the meanings and affordances of 'practices' in STS and

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anthropology. A second aim of the article is pedagogical. What happens to students' theoretical and observational sensitivities, and to their interest in reflexivity and co-production, if we implement cameras and sound recording technologies in graduate teaching? Despite the emphasis on reflexivity in both Visual Anthropology and STS, reflexive discussions about pedagogies are rare; the article thus seeks to start a conversation about teaching STS in conversation with filmmaking, and what we and our students might learn from doing this.

The rest of the article unfolds as follows: we begin by further outlining how practices are conceptualised and understood in STS and VA, before describing the features, structure, and goals of the 'Visual Ethnographies of Science' course. We then dive into three aspects of the course in more detail in order to demonstrate the learning that resulted from our collective engagement with it, and the ways that this relates to broader STS and VA literatures.

Practices in Science and Technology Studies

What does STS have to say about the nature of scientific practice? The field's explorations of practice are part of a wider practice turn that has shaped much social research over the last years, and in which, as Schatzki (2001) writes, the language of "'structures,' 'systems,' 'meaning,' 'life world,' 'events,' and 'actions' when naming the primary generic social thing" (p.10) has been replaced or supplemented by talk of 'practices'. Practices - minimally, "arrays of activity" (ibid, 11) - have thus become a central means of investigating the social world, the meanings it is imbued with, and the ways in which it is ordered. They are collective (transcending the individual), embodied and material, and persistent: for Shove, for instance, practices are "recognisable entities that exist across time and space, that depend on inherently provisional integrations of elements, and that are enacted by cohorts of more and less consistent or faithful carriers" (2012, 418). What STS brings to this work is a particular emphasis on practices as transcending human actors and activities and, of course, a special interest in *scientific* practices. Both concerns can be traced to the field's history of 'laboratory studies': participant observation in laboratories that sought to render "strange … aspects of scientific activity which are readily taken for granted" (Latour & Woolgar 1986 [1979], 29).

Laboratory studies research has been fruitful in STS and beyond. Its emphasis on the *stuff* of science - the innumerable ways that non-human objects, entities, devices, and bodies

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are present in and shape the findings of science - has prompted broad interest in the liveliness of the material world, and in the ways in which non-humans act as (collaborative) agents within so-called actor-networks (see Michael 2014). Practices, in this line of scholarship, are therefore not simply human activities. They are heterogeneous, spread across diverse elements, any of which can be active participants in their emergence, realisation, or transformation. Alongside this new materialist slant, however, STS work has also argued for the reality-generating nature of practices. In a striking phrase in Latour and Woolgar's laboratory ethnography, they describe how the array of equipment, routines, texts, and other materials present in the lab do not describe reality, but 'secrete it' (Latour & Woolgar 1986 [1979], 242). In John Law's words, "[r]eality … is not independent of the apparatuses that produce reports of reality" (2004, 31). This means that practices are implicated in the making of reality, (what comes to be understood as) the 'real world', bodies, the nature of entities. Practices enact ontologies (Mol 2002).

The notion of ontological multiplicity - and ontological politics - has clear implications for social as well as natural science research. The realities produced by (scientific) practices are not inevitable; indeed, they often remain multiple (Mol 2002). This brings us to a world in which research practices of different kinds are shaping or promoting particular realities, and where there may be different realities (perhaps in the shape of particular objects) vying for stability (ibid; Law 2009). As researchers interested in scientific practices, we might observe how reality is being 'secreted' through particular processes within laboratories and other research spaces - but we might also consider what our own research is enacting. This, indeed, has been a key theme within recent work in STS, where an interest in 'method assemblages' has been tied to a concern with how these are intervening in the world (Law 2004; 2009; Michael 2021; Papadopoulos 2018).

To summarise, STS has argued that scientific practices are heterogeneous (comprising different kinds of entities and relations, and thereby not limited to or guided by human activities; routinised (repeated, and built on an established 'hinterland' of earlier scientific work: Law 2004); reality-generating rather than reality-discovering; and, importantly, diverse. This latter point emphasises the non-universal nature of scientific practices: they are constituted in different ways, through different elements, within different disciplines, research cultures, or even laboratories. To use Knorr-Cetina's language, the sciences have different "machineries of knowing" (1999, 10).

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Process films in Visual Anthropology

In the history of Visual Anthropology, a wide variety of visual methods and cinematographic approaches have been developed (Pink 2006; 2013; Willim 2020). For this course, we chose a well-established genre of ethnographic filmmaking that focuses specifically on the representation of practices: the "process film" (Grimshaw and Ravetz 2015, 261-265).

Process films show what people were doing and saying in a concrete situation in a particular place and time; and they are edited in a chronological way, (re)constructing an event from beginning to end. Process films, sometimes also referred to as "event films" or "sequence films" (de Brigard and Marshall 1995) or described as a category of "observational cinema" (Grimshaw and Ravetz 2009), have a long history in anthropology. The first attempt at process filmmaking is accredited to the British anthropologist Alfred Cort Haddon, who brought a camera and sound recording equipment to the Torres Straits islands in 1898 during a scientific exhibition and asked residents to re-enact their rituals and dances in front of the camera (Grimshaw and Ravetz 2015, 261). The four minutes of surviving footage display performers acting and improvising in front of the (static) camera, using cardboard cut-outs in replacement of ceremonial dress. The performances are shown in an uninterrupted way from beginning to end, displaying Haddon's interest in the internal logic, rhythm, and movement of these cultural practices (Griffiths 2002).

In the decades thereafter, anthropologists' interest in filming cultural practices developed into two different ways. One operated within a positivist epistemology of science, aimed at observation, documentation, and cross-cultural comparison of processes in an objective way. This first type has been heavily critiqued as naïve, colonial, and objectifying rather than objective (Banks and Ruby 2011). The style is associated with the American anthropologists Mead and Bateson (1988), who used film to record and compare behavioural themes across regions. From the 1950s to the 1990s, German, Austrian, and Dutch anthropologists similarly developed a keen interest in the possibilities of using film as evidence within positivist models of science to record handicraft, arts, music, dances, rituals, and religious practices[i].

A second type of process film in the history of anthropology abandoned the belief in objectivity. This second type operated within a constructivist epistemology and sought to align cinematographic practices of representation with the anthropological notion of

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participant observation. It gives space both to the subjective positionality and reflexivity of the researcher, and to the improvisational creativity of the protagonists to co-create the practices to be recorded. This style of pricess filming developed since the 1970s and 1980s in response to technological developments that enabled a more mobile embodied style of filmmaking, which enabled anthropologists to develop cinematographic approaches that centralized the relationships between filmmaker, filmed, and the world (Grimshaw and Ravetz 261-265). Abandoning the notion of film as a transparent window onto reality, the filmmakers use their cameras as an extension of their own bodies as they move through the unfolding events they record, revealing their partial, situated position alongside those with whom they were working, and offering a look at a practice not from the outside (as a "fly on the wall" or a surveillance camera) but as a participant observer. In our course, we used this second category of process filmmaking as role model.

An important point of consideration when making process films is the relation between the filmmakers and the filmed. In contemporary discussions about multimodal anthropology (Collins et al. 2021), visual and digital media tools are regarded as offering potential for conducting anthropological research in a collaborative way to enhance democratic and non-hierarchical research relations (Collins et al. 2017). The most widely discussed approach to visually mediated collaboration is participatory filmmaking, a type of filmmaking in which interlocutors shape their own representation in conversation with the anthropologist, for example by themselves controlling the camera and editing (Gubrium et al. 2015). Process films are not normally understood as participatory filmmaking, because in most classic examples of this genre it is the anthropologist holding the camera and doing the editing rather than the interlocutors. Still, process films can be embedded in a participatory research design, when the anthropologist ensures that filming takes place under conditions set by the protagonists and when the protagonists are consulted from beginning to end about their desired representation, as well as the desired audiences and distribution of the film. In the course, we discussed Jean Rouch's films as an example of inviting protagonists as co-directors of their own performance (Meyknecht et al. 1998) and watched the process film *Jero on Jero* (Asch et al. 1981) as an example of a possible strategy to involve the protagonist in the interpretation of a filmed practice (Banks 2001, 87-99; Sweetman 2009).

To summarize, Visual Anthropology has moved from an objectifying to a constructivist epistemology and has, in the process, repositioned the classic genre of the

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process film in ways that align with core anthropological notions of participant observation, reflexivity, and collaboration. The process film has been summarized as "concerned with small, manageable events" of which the participants recognize the structure and boundaries (Marshall and de Brigard 1995, 141). If filmmaking is conceptualized as a mode of ethnographic research, it becomes a mode of exploring these mutually understood structures, and within them, offering the participants opportunities to record messages - if they wish to participate. These messages are sent to the camera in the form of words, embodied practices, and various kinds of material and spatial arrangements.

The course: Visual ethnographies of science

These literatures and ideas were our starting point for teaching. In this section we describe how these were mobilised to create the course "Visual ethnographies of science: Investigating knowledge production through media practice".

The course was taught as an interdisciplinary module between two departments of the University of Vienna, Science and Technology Studies and the Department of Social and Cultural Anthropology.[ii] A total of 23 students were enrolled, primarily Masters students in STS and anthropology, but also including a few students from other disciplines in the social sciences. The course took place in the winter semester of 2021-2022, starting in September 2021 and ending in February 2022. Students' film projects were facilitated at the Vienna Visual Anthropology Lab with tutoring by the VVAL's coordinator Viktoria Paar. To pass the seminar, students needed to participate in class activities (10%); submit a mid-term research proposal (30%) and create a film (30%) as part of a three person group, and write an individual reflection paper at the end (30%). A public screening of the resulting films was organised at the Vienna Museum of Science and Technology on March 24, 2022.

The course focused on the use of visual ethnographic practices in the context of knowledge production. Students were introduced to media practices that have been used in anthropological and ethnographic research, focusing on film, sound recording, and montage. Simultaneously, they learnt to think about the diverse spaces and practices through which scientific knowledge is produced, negotiated, and contested, and the ways in which scientific knowledge has been represented. The learning aims were to understand how film/photography, sound recording, and montage can be used in ethnographic research; to understand key ideas concerning public and scholarly representations of scientific knowledge

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production; and to gain experience with conducting research into scientific knowledge production through a small-scale media project. The course was oriented to developing skills in communication and visual media, with the long-term aim to make students equipped to implement such media practices in future research. Finally, course content also covered ideas and theories concerning how science is represented in public, and how visual ethnography methods can contribute to this.

The course was divided in three blocks. The first block was theory focussed, introducing key ideas from both STS and Visual Anthropology. In the STS-focussed sessions, students learnt how science and technology studies scholars think about knowledge practices. In the Visual Anthropology sessions, they studied examples of ethnographic films and discussed visual anthropology literature to consider how audio-visual methods might support STS research. In the workshops of the second block, students obtained hands-on experience with practical skills required to create ethnographic films themselves (camera, sound recording, montage, and co-creation). The assignments focussed on obtaining skills needed to create observational films about scientific processes and practices, using assignments and technical directions in Visual Anthropology handbooks (Barbash and Taylor 1997; Lawrence 2020).

In the final block, students implemented what they had learnt. They composed groups of three, in most cases involving both STS and anthropology students. In these interdisciplinary groups, students carried out a fieldwork assignment involving camera-based research to investigate an aspect of science at a site of their choosing. In feedback seminars, students presented and analysed their initial footage and discussed their experiences with other students and the lecturers. In the end, they edited their footage into a short film. The resulting eight films offer insights into the working procedures of different science institutions in Vienna, including laboratories, museums, and a university library; and one in a setting of activism.

Throughout the course, students engaged with filmmaking, from Visual Anthropology and beyond, that could help elucidate notions of practice. We watched *The Wasp Nest* (Marshall 1972), scenes from *Doon School Chronicles* (MacDougall 2000), and fragments of the film *Hopeful Monsters* by STS-oriented documentarian Robert Sternberg (Sternberg and Williamson 2010). These films, each in their own way, are products of a long-term engagement of a researcher with an interlocutor or a group of interlocutors. Each include

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closely observed scenes that show various kinds of routinised-yet-improvised practices: the smoking out of a wasp nest by a group of women and children gathering food in the Kalahari desert; the routines of a chemistry class or a boys' dormitory in an elite boarding school in India; and a scientist displaying his relation with starfish maintained for the purpose of scientific experiments in a marine biology station in the north of England. These films focus on people, yet also prominently highlight the non-human agencies of objects, animals, spaces, and substances – such as fluids in the chemistry class, or fire to chase the wasps from their nests. This network of actors also involves the filmmaker, a participant in the action and an audience for whom the participants perform alongside other audiences in the scene - such as the teacher of the chemistry class.

Bringing ideas from STS and Visual Anthropology together in this way exposed differences as well as resonances between the intellectual traditions in our two disciplines – as reflected, for example, in classroom discussions about the notion of practices, which played out some of the themes and ideas discussed above. In the sections that follow we take a deeper dive into some emergent learning from these discussions, and from the course as a whole.

Process filmmaking to see and hear scientific practices

Implementing the classic genre of process filmmaking in the field of STS is an innovation. In the field of science representation, the dominant form remains the 'classic' science documentary, still visible on television channels like BBC or Discovery. Since scientific documentaries tend to reproduce notions of the objectivity of science and often include a (male) scientist explaining the world-as-it-is in an authoritative voice-of-God manner (Hacking 1981; Silverstone 1985; 1986), STS scholarship is critical of their dominance. In the PhD dissertation accompanying the film *Hopeful Monsters*, filmmaker Robert Sternberg (2010, 1) critiques the classic scientific documentary as an out-dated view of the nature of science and calls for the development of alternative modes of science representation, more in line with current views of science as articulated in STS. Since then, some STS scholars and anthropologists have made valuable steps in this direction (Bleumink et al. 2021; Karel 2010; Plájás 2021). Implementing a constructivist style of process filmmaking in the field of science is a further step towards achieving the aim of re-designing

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science representations. In what follows, we discuss the implication of the endeavor through our observations during the course.

Studying scientific practices, carrying out scientific practices

Film foregrounds the constructedness of knowledge production: the cameras and sound equipment require skill to use, while the editing process highlights that results do not just 'emerge' from observation but are carefully selected. During the camera workshops, students used specific practical assignments alongside camera manuals to gain experience with basic techniques of ethnographic filmmaking. Assignments were set up in groups of three with one camera person, one sound person, and one interlocutor, with students shifting roles to learn what it means to film and be filmed in a fieldwork situation. In this way, they also needed to find constructive modes of communication and collaboration to start up their teams for the research project. Working with the Sony PXW Z-90/70 and a shoulder rig, students practiced the skills of embodied-mobile yet attentive and steady camera work, practiced positions of proximity and distance to the interlocutors, and tested different modes of interaction and eye contact. We advised students to use stylistic devices of observational cinema, following the "ten commandments of observational cinema" summarised in the handbook *Filming for Fieldwork* (Lawrence 2020, page), but in practice not all followed these.

Skills to be trained during the sound workshop included listening, listening while recording, listening back to the recordings, montage of the recorded audio, and listening to the montage with others.[iii] Additionally, students taking up the role of sound persons needed to find ways to collaborate with a camera person and an interlocutor. For editing, Sanderien gave a short introduction of principles of continuity editing as conventional in process films and other observational films (Suhr and Willerslev 2012) and, for the practicalities, created instruction online videos students could access while working on their films.

With this methodological toolbox in hand, students visited their fieldsites several times to conduct observations with and without camera, record original sounds, and consult with the participants about their desired representation. For some groups three fieldwork visits were enough, others visited four or five times to develop their recordings or consult with the participants, and in one case because recorded footage was lost.

All of this work – which was new to most students, and at times confusing or frustrating for them – drew out interesting parallels between the practices the student groups

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were studying, and their own activities as forms of knowledge production. Part of the aim of the course was to open up (natural) scientific research, and to explore the ways in which knowledge is not discovered but made. The practices of filmmaking in turn emphasised that this was also the case for the representations produced as part of the course. Process films were also not merely 'records', but sophisticated accounts of particular practices that relied on numerous editorial decisions.

Asking 'how' and asking 'why'

In the initial months of the course, students were expected to conduct a first orientation visit to their selected fieldsites to build familiarity with the space and its protagonists, to establish collaborative relations, and to obtain necessary permissions. Based on this orientation, students developed a research question and submitted a research proposal. Following the adage 'show not tell', we advised them to focus on 'how' questions in the film, and to reserve 'why' questions for the final paper.

While some students immediately succeeded in finding good 'how' questions for their film projects, several groups initially articulated rather abstract research questions referring to topics that were hard to film - about the nature of social organization, the ideologies or rationale behind a process, or their funding structure. In this phase we met with the groups separately to ask if and how their questions could be answered in film, and if not, we challenged them to re-focus on processes and practices that were filmable. As an example, one group, focusing on a site of civic action ('Wüste', an occupied construction site where young activists were trying to prevent the construction of a planned highway in Vienna), initially asked: "how does a [wooden] structure […] emerge from decentralized social organization?" While the building of the wooden structure could in principle be filmed, it was harder for us to imagine how the decentralised structure of a social organisation would be communicated in a film – except when explained in verbal statements. After reflection, the research question shifted to 'how is knowledge exchanged during the building of a structure" and then further simplified to 'how is a wooden structure built?' (Hähnlein et al. 2022, film visible *here)*.

Our efforts to redirect the students to concrete questions for their films led to a fundamental discussion, in which some students honestly wondered: is it "enough" to just film how something is done? Is the mere filming of a practice not insignificant? These

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questions, we realized, were informed by preconceived genre expectations of what a scientific film should look like – the documentary film or the journalistic report. It took concentrated effort to move away from these genre expectations. Sanderien responded by saying that those mundane aspects that seem insignificant do deserve our attention: "perhaps film teaches us that something else is significant". She tried to encourage students seeing this significance in their own footage by pointing at meaningful aspects in scenes where at first sight nothing was happening: movements, pauses, sounds, clothing, objects, the handling of technologies, spatial arrangements. Sarah in turn reiterated the reasons why STS scholars are interested in precisely these seemingly insignificant mundane aspects of science: these are taken-for-granted, often invisible within spoken accounts, and yet vital in shaping the outcomes of research. Together, we tried to reinforce the idea that their process films are not science communication products: "You are representing practices over and above facts and knowledge." In the end, the challenge of filming the 'how' of science was taken up by all the students.

Collaborating with scientists

Discussions about collaboration in anthropology have engaged with colonial histories of North-South inequality (De Groof 2013) and male heteronormativity (Gill 2021) as important contexts in which films have been made and valued. The traditional assumptions of hierarchy that run as a theme through discussions on collaboration in Visual Anthropology – the filmmaker perceived as the powerful one, the filmed as in need of empowerment – is fundamentally shifted when making films in the context of scientific institutions.

To illustrate: when our (mostly young female) students entered their research sites, they were sometimes confronted with press-savvy and imago-concerned (mostly but not exclusively senior male) scientists. In one lab, the director started the conversation with the visiting students by demanding exclusive rights to the to-be-recorded material - having consulted a lawyer prior to meeting the students to organize the conditions of the filming and distribution in his favor. These access negotiations caused quite a stir in the group of students. In their subsequential negotiations with the lab's director and his lawyer, we referred them to the *EASA's Statement on Data Governance in Ethnographic Projects,* which clearly states that "ethnographic materials are coproduced by researchers and research participants" and "cannot be fully owned or controlled by researchers, research participants

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or third parties". Eventually they were able to establish a better deal, in which both the scientist and the students would have ownership over the footage. What this example illustrates is that the visiting students were gaining access to otherwise restricted sites, with influential gatekeepers. (Indeed, many of the final films depict the complicated process of accessing scientific sites, showing entry through anonymous corridors, keycard access, or multiple doors.) Most groups agreed in advance that their films would not be shown online – only behind a password.

Inspired by STS and anthropology discussions about collaboration and positionality, we encouraged students to treat such experiences not merely as problems to be overcome but as learning opportunities. The students were themselves determined to shape their collaboration in a non-hierarchical way, and organized feedback loops to include interlocutors in the interpretation and to give them influence over the filming and editing. In one case, where students worked with animal caretakers, the students showed various drafts of the film and incorporated comments – a process they found helpful learn about the practices and the concerns in the fieldsite, including ethical concerns (Stabentheiner et al. 2022 – a still with a description of the film is visible *here*). In a nanophysics lab, the collaborating PhD student (Manuel) and was keen on explaining every step in the experiment in detail during the filming process. In response, the students were challenged to think about the role of words in process films: using an observational film style as an alternative for the explanatory science documentary, they edited the film to include Manuel's narrations as an indispensable aspect of the encounter (Heisse et al. 2022, film not yet visible). These experiences thus opened up interesting insights into the meaning of participation and collaboration in process filmmaking in the context of science, relevant to both Visual Anthropology and STS discussions of the nature of participatory research.

Conclusion

The preceding text has sketched out how a particular experimental course, "Visual ethnographies of science", was grounded and implemented, and offered some observations from this implementation. While our analysis of these experiences continues (with a particular focus on exploring what new insights into the nature of scientific practices can be provided by visual methods) the aim of this text has been to demonstrate both the practicalities of such interdisciplinary teaching and early learning from it. Process

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filmmaking, we propose, can be introduced as an additional method to broaden the scope of visual methods in STS research, and has at least three significant affordances. First, the act of learning how to film and record sound turns out to be generative for critical reflection on method. The necessary foregrounding of technical skills and editorial choices highlights the constructedness of STS and VA knowledge (something that is perhaps easier to ignore in the context of other methods), and raises interesting parallels between our own practices and those of interlocutors in other academic fields. Second, the act of filming challenges students to observe closely the everyday and seemingly insignificant aspects of scientific practices – a challenge taken up by our students to varying extents. Drawing on the tradition of process filmmaking enables student researchers to move away from typical public representations of science – where knowledge production is complete and scientists heroic – to explore seemingly mundane 'how' questions. Third, relationships with interlocutors are foregrounded in ways that mirror calls in both STS and VA for equitable engagements with research participants. While science offers an unusual case in that informants are often elites who may feel particularly comfortable insisting on particular terms for the research, the filmmaking process opens up questions about what collaboration and participation do and should mean in different settings, and whose priorities should shape research.

Note

Some of the resulting films of this course are visible in the online exhibition "Visual Ethnographies of Science", hosted on the Vimeo channel of the Vienna Visual Anthropology Lab.

Acknowledgements

We thank all students, and the course tutor Viktoria Paar, for sharing their thoughts and experiences during the course.

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[i] Examples of such films are stored in the Encyclopedia Cinematographica (EC), a collection of 1.300 16 mm films recorded in Africa, Oceania, and South East Asia. Topics include, for example, the handling of material objects, religious and cultural practices, and medical practices. Most of the films are short, often only a few minutes. They have little or no commentary but were often published and stored together with accompanying texts to provide information and interpretations (reference). Our senior colleagues still remember how the 16 mm films were used in teaching when they were students at the University of Vienna.

[ii] Its 10 ECTS course points were divided 50-50, with 50% ECTS obtained at each department.

[iii] These learning goals were inspired by a lecture given at the University of Vienna by anthropologist Ernst Karel (2021): *Toward sonic ethnography?*, in the Master Class series "New Media Practices for Social Research, organized by the Vienna Visual Anthropology Lab (VVAL) of the University of Vienna and the Visual Studies Platform (VSP) of the Central European University, 16 March 2021, 17.30-19.00 hrs.