This is the version of **"Wearable cameras, in-visible breasts: intimate spatialities of feminist research with wearable camcorders"** that has been accepted for publication in **Gender, Place and Culture.**

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Wearable cameras, in-visible breasts: intimate spatialities of feminist research with wearable camcorders

Abstract

Video-based wearable technology such as actioncams and optical head mount devices lead to various kinds of visualities and interrelations between camera vision, bodily visibility, immersive viewing and public visibility of the body-wearing-the-camera. These interrelations are not neutral and in order to claim wearable visual technology's potential for critical, feminist research, it is essential to problematise the contexts and frictions that precede and/or surface during and after the bodily experience of shooting with a wearable device in a research context. In this article, I problematise the common approaches to video-based wearable research technology by engaging participants' particular ethical, emotional, political positions and embodiment of camera's prosthetic vision during mobile visual research in Istanbul. This work was realised as part of the ongoing study on memories of violence and wellbeing in Istanbul and the specific questions that guide my discussion are: what wearable camcorders as mobile research tool do to bodies; how they co-constitute the norms of visibility, movement and gender of particular bodies and what practices and emotional responses emerge from these intersections. A major aim, therefore, is to situate the camera experience as in physical and social relations of moving, seeing and be seen as gendered bodies in specific (research) settings. Drawing on 'the embodied nature of all vision' (Haraway 1991), the article provides a close-up, chest-specific analysis of the implications of doing wearable visual research and presents breast-space as an emergent research site in my Istanbul study.

Keywords: embodied methods; feminist objectivity; Istanbul; situated knowledges; visual research ethics; wearable technology

Introduction

This article presents findings from an ongoing study on the utility of visual methods to explore emotional geographies of violence in Istanbul, Turkey. Featuring a mix of wearable visual, mobile and narrative methods and instruments, the study invited participants to identify the place-related memories and experiences of violence as well as

places and activities which they regarded as supportive of their mental and physical wellbeing. In this article, I deliberately digress from the core research themes of fear, violence and place experience in order to explore the use of the wearable camera as a feminist research instrument. Visual literature on the research use of wearable technology is scarce and interprets their potential mainly in terms of technical function to capture rich sensory audio-visual data. The major shortcoming of a tendency to prioritise function without sufficient engagement with its socio-material contexts of emergence and interpretations is the limited recognition of the questions and processes that result from the interaction between participants, researchers, and research technology in everyday research contexts. Based on findings from one aspect of data gathering, namely participants' preference and concerns for having a chest mounted wearable camera during the walk along, the analysis aims to further the functionalist understanding of wearable technology mainly as a solution for gathering robust, audio-visual, personal data (Pauwels 2016). Hence, the study presents a close and situated, feminist objectivist analysis of participants' perception and interaction with the camera in order to discuss how patriarchal norms of feminine visibility are mediated through GoPro's embodiment.

Despite its still limited research use, existing literature on visual wearable devices commonly describe the wearable camera as a reliable source of rich videographic data. Such perspectives often discuss its research potential based on evaluations of its technical capacity, design and functions. Sensory immersion of the viewer combined with the physical ease of wearing the camera are central to the discussions on wearable visual tech's utility in knowledge production. Without sufficient emphasis on wearable camera's implications in terms of the intimate, bodily geographies of research technology, current formulations on wearables in research, prioritise capturing power and viewer

experience. A major implication of this from a feminist research perspective is that the current emphasis on wearable visual technology as a non-obtrusive, affordable and sensory research solution re-corperealises vision (Kwan 2006) in a way that leaves under-recognised the social, personal, emotional links between the sites of vision's placement and the relations of its embodiment. Looked closely, the immersive viewing experience of wearable footage is the objectified gaze in video form from a subjective angle on body-space.

Wearing the camera for research is a visual practice that leads to various kinds of visualities and interrelations between camera vision, bodily visibility, video immersion and viewing the body-wearing-the-camera. These interrelations are not neutral and in order to claim wearable visual technology's potential for critical knowledge, it is essential to problematise the contexts and frictions that precede and/or surface during and after the bodily experience of shooting with a wearable camera. This argument draws primarily on Haraway's (1991, 188) critique of patriarchal vision as 'unregulated gluttony' with the present advance of digital technologies and imaging tools in all facets of everyday life (Rose 2015). Such gluttony also applies to research as a systematised form of everyday activity that involves visualising practices and encounters. Wearable visual research practices create a position where bodies become accessible through the boundaries that are set by the material design, technical capacity and commodity status of the camera (Garcia and Cifor 2017). The link between the pre-image and image in wearable camera imaging is a causative relation that becomes emplaced as meaning, time and geo-coded in the high definition video file. Under-recognising the materiality and social, embodied experience of wearing the camera, and the site-specific configuration of the body-tech assemblage in a research situation result in a gluttonous relationship with

the wearable as a research tool. The fixation with excess and ease of access in user-generated visual data operates from a problematic 'breakdown' approach that reduces complexity to the device-specific limits of recording, storing, reproducing visual representations of the lived experience and agency of participants. Assuming a direct relationship between the wearable camera's tech/commodity affordances (e.g., size, capacity, affordability) and fidelity of outputs (Hainge 2008) positions the research camera as a witnessing partner, 'predatory' in principle, when shooting prefigured bodies (Haraway 1991, 169) as a conceived base layer against which meaning is consolidated.

Assumed causality, fidelity, and efficiency as the elements of visual gluttony in relation to embodied research tools also limit the perspectives on the affordances of these technologies in order to design and conduct research that deploys an alternative strategy of resisting meaning as fixed (Tagg 1988) in order to explore the relational experience of the normative environments in which bodies individually and systematically become in/visible. My focus on for whom, where, and how the GoPro is a wearable and non-wearable device of hard and soft (digital, commodified) materiality aims to mobilise its place-specific embodiment in order to disrupt its mainstream marketing and intellectual configuration as a high fidelity and efficient representation tool.

My second inspiration is Hayles' (1999) emphasis on body and embodiment as intertwined yet distinct categories. The body as a universal abstraction has been instrumental in normalising human and wider meanings of bodies and the boundaries of corporeal experience. The unproblematised notion of the body sustains the binaries of material-immaterial, bodily-rational, and leads to visualisation of some bodies as irrational, weak, backward, and inferior. Embodiment addresses this colonial and patriarchal objectified conception of the body and re-embeds corporeal matter in its contexts of mater-

ial, social, experiential existence. Embodiment in relation to the wearable camera is a conceptual gateway to examine what wearable camcorders as mobile research tool do to bodies; how they co-constitute the norms of visibility, movement and gender of particular bodies and what practices and emotional responses emerge from these intersections. A major aim, therefore, is to situate the camera experience as recorporealisation of visual technology in physical and social relations of moving, seeing and be seen as gendered bodies in a specific research setting. Taking these ideas as departure, I apply 'feminist objectivity' as an embodied, location-specific, accountable method to critically examine the use of wearable camera as a research instrument by engaging participants' particular positions and embodiment of its prosthetic vision during mobile visual research.

Haraway (1991, 191) argues that feminist objectivity 'privileges contestation, deconstruction, passionate construction, webbed connections' for the pursuit of best context-specific explanation derived by integrating the partial accounts, silences and confusions of those involved in research including the researcher. The practice of feminist objectivity, in this case, involves scrutinising the wearable camera as 'an instrument of vision' and analysing the specific sites, visibilities and generally 'politics of positioning' that it mediates when attached to diverse bodies (ibid.). Practicing objectivity by multiplying perspectives around the use of wearables in this research revealed key connections between visual regimes of being/moving in (body) space and the project's wider questions around women's fears and strategies for safety and visibility in the city. This tension was most explicitly in the experience of female participants in the study and was exclusively triggered by participants' concerns on the visibility and geography of their upper body, breast-space.

This article focuses on participants' interaction with the chest mount camera as an embodied research tool and elaborates on the chest as a gendered research site. Breast-space is critically embedded in social regimes of body vision, bodies and space. Following the introduction, I continue with a review of the literature on wearables as an evolving research technology and particularly engage the views on immersion and (un)intrusion as key to my argument on the embodied relations of visibility and movement wearing the camera. Then, I present in detail the research process by explaining the procedures, ethical implications and important aspects of the pilot and field research phases that together constitute the empirical context of the analysis. Next section expands on the main question of who owns the vision when interacting with the wearable camera and tries to answer it by multiplying the perspectives based on participant narratives and field notes (anonymised using numbers to denote individual speakers). Ownership of vision, here, refers both to the point of view in camera footage and the freedom of visibility and movement of the body who wears the camera. Inevitably, ownership is at the same time a question of researcher subjectivity as the person who originally envisioned the overall process. Drawing on 'the embodied nature of all vision' (Haraway, 1991), this empirical section provides a close-up, chest-specific analysis of the implications of doing wearable camera research in my Istanbul study. The conclusion is a summary of findings and reflections on GoPro's potential as a critical, feminist research instrument in cultural research.

Wearable visual research, invisible bodies

Wearable technology refers to a broad category of lightweight body-mount or prosthetic devices and accessories from trackers to action cameras and computers; that can moni-

tor, record, store, and/or transfer embodied or external data often when fulfilling a daily function such as taking pictures, activity tracking, geotagging, and measuring health indicators. Within this wide category and along with my argument on the embodied relationship between research technology and bodies, my interest lies in engaging the literature on wearable camcorders and their integration in visual research methods. Of particular importance to my interest is first the emphasis on the simulated feeling of presence and immersion when viewing raw action camera footage often in data processing and interpretation phases. Second and relatedly, the conception of camcorders as 'unobtrusive' (Pauwels 2016, 1326; Nilsen 2017; Gemming et al. 2015) has important implications in terms of my argument on embodiment and the research assemblage of human and machine bodies, places, practices and relations (Ringrose and Renold 2014; Fox and Alldred 2015). After sketching the popular and research use of wearable visual technology, I focus on immersion and (un)intrusiveness as two key dimensions characterising the interdisciplinary responses to the methodological, ethical and technical questions that arise when doing wearable camera research.

Use of wearable cameras in social, cultural research is expanding but is still much behind their recreational popularity primarily in tourist travel, extreme sports, surveillance and health-monitoring. In popular culture, the action camera is most widely used to record first-hand footage of professional and amateur, sponsored or individual, extreme sports performance. These recordings are then shared on social media or other online platforms. Although 'first-hand' refers to the person as both the performer and recorder of the action, it is equally an impression shared by the networked screen viewer because of the immersive footage by the almost generic intimate angles and positioning of the hand-held, body- or drone-mounted camera.

GoPro, which is the wearable camera used in this study, has become the leading brand of small and relatively affordable camcorders both within research and wider community of recreational users. GoPro is mostly a life-logger and personal tracker of daily physical activity including lightweight sports, fitness and outdoors recreation (Omodei and Mclennan 1994; Brown, Dilley, and Marshall 2008). Popularity and legislations of use vary around the world as to when or where drivers, motorists and police, for example, are allowed to own or use a dash-cam, helmet-cam or other integrated or special mount action camera or similar audio-visual device. Another popular use of body integrated camera systems is, again, in professional sports as an evaluation tool to monitor individual player performance. Journalism, tourism and travel are other areas of wide action camera use due to their light weight, long battery life and ease of mount on the body (Chalfen 2014; Vannini and Stewart 2017).

From a research perspective, the category of visual wearables is part of video-based mobile methods in which the smartphone, for example, also qualifies as a hand-held or body-mount visual device (Gurrin et al. 2012; Boone 2015). In research, camcorders are mostly used as data capturing, field recording and film-making devices. Depending on design, the device functions in the production and processing of meta level and final research data and outputs. The uses of video-based wearable technology include policing (Adams and Mastracci 2017; Heen, Lieberman, and Miethe 2018; Koskela 2000; Sandhu 2017; Wood 2016), health (Unsworth 2001; Doherty et al. 2013), education (Marcu, Dey, and Kiesler 2012) and ethnographic studies of diet and nutrition (Gemming, Doherty et al. 2015; O'Loughlin et al. 2014), mobility and movement (Brown and Spinney 2010; Kinsley, Schoonover, and Spitler 2016; Spinney 2011; Larsen 2014; 2017), memory enhancement (Matthews et al. 2015), participatory video-

based projects (Boone 2015; Mills et al. 2014) and film-making (Vannini and Stewart 2017; "Leviathan" 2012; Unger 2017). Within this diversity, a common understanding is that having camcorders in the visual toolbox results in data that is ‘situated, naturalistic, spatial-temporal, social and visceral’ (Cumbo and Leong 2015, 618).

In his review of scholarly and other uses of GoPro and Glass as two specific wearable devices, Chalfen (2014) suggests showcasing bodily presence and witnessing raw life material ‘in the process of participating in some special or unusual event or activity’ (302) as the key dimensions in recreational use of the camcorder. Bodily presence and point-of-view coverage transfer into research as the main aspects of wearable visual tech's potential for activities such as studying facial interaction, life-storying, ethnographic film, field documentation and training. In specific terms of GoPro's research use, Chalfen raises the critical question ‘what happens when means, methods and modes of observation change?’ and in response, underlines the complexity of negotiating privacy, security, and ownership for ethical wearable methods research. The review also emphasises contextual specificity of each research project (307) but primarily addresses this in terms of the operational pitfalls in research design, participant recruitment, fieldwork, and later, in terms of visual data management. These interconnections offer a useful, open-ended frame of reference in terms of the ethical principles that have to be contextualised and translated into each visual research scenario. Yet, the discussion does not extend into recognising and offering ways to incorporate the embodied frictions between the camera and the bodies to which they are attached.

Wearable camcorders enable a closer, personalised, first-hand data gathering process. Based on mobile video ethnographic work on biking in London as an everyday activity, Spinney (2011, 161) specifies the important dimensions of feeling of presence

and identifies video ‘as a way of “feeling there” when you can’t be there’ and ‘as a way of apprehending fleeting moments of mobile experience’ when neither the researcher nor the participant cannot reproduce the senses and affects that had existed in the original setting of the action. In further videographic analyses of biking experience, Larsen (2017) notes that the camera enabled unintended, complementary sensory information such as the fact that the wearer had been singing during the ride which further grounded his interpretation of the biking experience as a joyful one. In both examples, the focus is on engaging the ‘fleeting, ephemeral and often embodied and sensory aspects of movement’ (Spinney 2011, 161). Both perspectives situate wearable videography as a means to overcome the temporal, textual and sensory limits to the ethnographic explorations of affective everyday phenomena. Although Spinney highlights some of the textual and temporal limitations of video form itself, both approaches are driven by access as the major drawback which the wearable camera (although partially) counteracts by providing high definition footage of the affective and sensory aspects of biking mobility. The focus on video enabling better access to the affective and fleeting aspects of bodily movement (Spinney 2011; Brown and Spinney 2010) leave unproblematised what new forms of representations (of bodies, machines, places) emerge through the embodiment of wearable visual technology, and how these experiences and interpretations can further our understanding of the everyday as it is made (by research as well). Using head cameras to explore social worlds through outdoor recreation practices, Brown et al. (2008, n.p.) highlight this gap and emphasise the need for ‘an awareness of how headcam technology, and the sounds and images produced, become interwoven into the relationship between researcher and subject, as well as the range of academic and non-academic visual cultures through which knowledges are constructed.’ Such an awareness

requires taking into account the unique videographic, design, and symbolic features of a particular visual technology in the face of other, (pre)existing technologies while at the same time addressing the social contexts of their commodified circulation and embodiment (Paterson and Glass 2015; Wilson 2017).

Having a wearable camera may intervene in behaviour in intended and unintended ways and one example is from a study on introducing wearable cameras to police officers as a means to regulate relations with the public, namely to reduce police misconduct and illegitimate complaints from citizens in California, US (Stross 2013). In this example, conduct was controlled not merely by actual footage but by mutual self-awareness of both officers and residents that they are being sound and video recorded. Wilson et al. (2016), in their health behaviour analysis further examine the specific ways bodies-wearing-cameras intervene in the process. They identify ‘intrusiveness, importance of others, remembering the wearable camera’, and ‘ease of use’ as the factors influencing individuals' subjective response and interaction with the camcorder. Their analysis also draws attention to the tension between the camcorder as commodity and research instrument and highlights its normative, masculine and ableist design and explorer, achiever ethos which implicate a visual order between bodies according to gender performance, ability, and age.

Empirical studies on body-worn cameras' influence on policing are mainly in criminology and surveillance studies. Findings are primarily based on the US context and point to the need for further research in order to assess police use of wearable technology in dedicated programs (Lum et al. 2015). So far, existing findings suggest no significant impact that a body-worn camera improves officer and civilian safety and exercise of rights by eliminating misconduct and unprofessional behaviour (Yokum, Rav-

ishankar, and Coppock, n.d.). In fact, CCTV and other visual technology such as citizen recording devices and phones are mentioned as one possible reason why the (self)surveillance effect of the body-worn camera both for officers and the public appears neutral (ibid.). These assessments provide important information on the expected and actual meanings of visual tech in promoting desired outcomes in this case on accountability and transparency via tech monitoring of law enforcement settings and actors. Yet, more in-depth assessment of embodied visual technology namely in terms of the lived experience of both carrying and in/voluntarily exposure to the police-worn camera, is needed in order to evaluate the relational contexts of tech-enhanced police surveillance.

Individuals participating in research on everyday life often find it difficult to make sense of overall knowledge objectives and procedures of a study and how these connect to their actions and perception. This is so because they often do not consider their experience as a relevant and legitimate source of academic knowledge production. This limitation also reflects the need for adequate reflection on what intrusion means and how it interferes with knowledge exchange by building up in subjects' intimate, emotional, social encounters and experience with research technology. The embodied relations of power through the wearable as a research instrument, then, have important ethical implications and should be part of contextual evaluation of wearable visual ethics (Chalfen 2014; Mok, Cornish, and Tarr, 2015; Kelly et al. 2013). An important departure in such evaluations can be the remark by Brown, Dilley, and Marshall (2008) on the ‘seductiveness of visual technologies, to both researcher and participant’ which underlines the wearer's non-straightforward relationship to the camera. In fact, situating the bodily experience of research technology, namely by examining the sites and practices of its embodiment to assess research-related risks, is itself a responsible visual re-

search strategy and a critical means of engaging the universalising effects and discourses of visual technology (and bodies who carry them).

Research contexts, with or without wearables, vary in terms of physical and emotional impact on participants. The level and mode of intrusion in relation to any research tool is contextual and needs to be fully addressed in terms of the specific research setting and actors. This particularly applies to wearable technology which is equally popular and highly debated for its utility in surveillance and control of conduct in non-research contexts. Focussing on Glass and the surrounding debates on facial recognition and involuntary exposure, Noble and Roberts (2016, 7) discuss the 'panoptic invasions of privacy through documentation (photographic and audio) of people in what might have been previously considered private experiences conducted in public spaces'. Emphasising the gender and race iterations of class in Glass marketing and ownership, their analysis brings to focus the hierarchy of viewers and involuntary subjects and draws attention to the anonymous gaze of wearables as an evolving surveillance dynamic 'facilitated by internet-based reproduction and dissemination'(ibid). The assumption that the wearable is ignorable is one implication that the wearable camcorder remains under-theorised in terms of the researcher-participant, participant-research relations they give way to through the embodied relations of research (Pink 2007a).

How wearable research tools interact with bodies, namely in terms of regulating conduct and visibility is part of their utility in both accessing and co-constructing the sensory, affective realities and relations that research intends to uncover (Law 2009). The particular camcorder visuality, specifically the illusion of co-presence in the viewing experience, assumes particular kinds of bodies and universalises the situated experi-

ence of vision and visibility. This is a key contradiction when the potential in wearable and any other video-based research tool is seen as better understanding the socio-material contexts of producing, exchanging, transforming bodies and ways of being, that is, who gets to be visible, in which angle, body position and rhythm, where and when, in research and beyond. In the remaining parts of the article, I will present my experience with the chest mount camera to demonstrate a case for working with and thinking through the camcorder as an embodied research instrument; its hard, soft and social materiality, its interaction with the bodies exposing and exposed by it; by focusing on gender as a system extending power and regimes of visibility through embodiment, memories, movement, space and time.

Research design and fieldwork

I arrived in Istanbul in July 2017 to carry out series of walk along and visual elicitation meetings in a coastal, residential part of the city which would not rank high in a list of places to avoid for risk of violence. It had taken a while to locate and relocate the research site and evaluate the risk factors and ethical implications of doing a study on violence, memories and place in a city that had been through various terrorist attacks and an attempted coup followed by a prolonged state of emergency in the 1,5 years between fieldwork and formulating the initial research questions. The period involved phases of adjusting my questions in order to maintain the original focus of the study on the utility of wearable video and smartphone photography as methods to examine ordinary violence through the past, present, factual, subjective, bodily, emotional, collective and individual dimensions of memory-place relationship. As such I also limited the research site to the coastal walk/driveway to better fit the physical and emotional safety of poten-

tial participants who collectively and individually experienced distress in periods of socio-political uncertainty and violence. Still, research later showed, recreation and well-being are also a strong discourse intertwined with the study setting's convergent meanings of past and present violence and related feelings of fear and distress.

Given my non-targeted recruitment strategy and interest in a mundane activity such as taking pictures in the area, I anticipated that people who would show interest in the call would most probably have never participated in academic research before. This was neither an advantage nor a disadvantage as my aim was to get as close as possible to what people normally do when they hang out or take a walk by the sea. This meant identifying tasks and encounters that were familiar and simple enough to explore what violence means; where it happens, gets amplified and creates norms of conduct in everyday life. Relying on mobile photography and video as methods to examine the everyday rhythm and experience of negative emotions of violence in the coastal walkway had two major reasons. First, smartphone photography and video are an important feature of the networked digital culture in Turkey and this resonates with my practice-based research approach which aims to tap into what people actually do (and don't) with their movement and visual practices to mediate their emotions and interact with others. The second reason for the visual design of the study has a stronger emphasis on the permeating links between visibility and validity and aims to problematise this objectivist heritage by visualising and rendering in movement the invisible, partial, fragmented, extended, personal and inter-personal memories of violence. The walk along photography tour and elicitation meetings as well as the later research-creation outputs (i.e. video) explore the knowledge derived from visually engaging invisible, fragmented yet life-changing important phenomena in an ethical, accountable and situated research con-

text. As such the first phase of data gathering included walk along photography tours where participants took pictures on memories and feelings related to violence with the option of having a chest mount action camera on their body during the walk. The second phase involved visual elicitation meetings where we met again to discuss and contextualise digital and print visual data. In the photo tour, my role was limited to technical support and logistics of the walk. I also participated in the activity by taking photos myself. In the second phase of elicitation meetings, my researcher position was more generic in terms of introducing the workflow and loosely facilitating a discussion on each image and GoPro clip besides logistics and technical support.

When recruiting participants, close familiarity with the research location as a resident or visitor and willingness to carry out the walking part of the procedure were the two main criteria. I was prepared to provide help for those who wanted to participate but did not know how to use the camera feature or did not own a cameraphone. The walk-along meeting was designed as a photography tour and inspired by the activities in a recreational photography workshop where workshop participants typically pair up to go around in a given area to take photographs on their interpretation of an assigned theme. In the photo tour, participants were reminded to bring a camera that they normally used when taking pictures and felt comfortable with. Not surprisingly the camera was almost exclusively a smartphone with the exception of one participant who preferred a more professional DSLR. Participants were also asked to wear a chest mount GoPro to produce audio-visual data to analyse movement, rhythm, interaction when taking a picture.

I conducted visual tours and elicitation meetings with 15 participants, 9 women and 6 men with diverse self-associated gender, age, education, family and ability back-

grounds. I contacted potential participants through Facebook, email and WhatsApp by circulating an introductory note describing the project and the visual, walking methods in particular. As I informally met, emailed and texted interested potential participants, I introduced the written and verbal informed consent process of the project by making clear that the project had a staged approach which meant continued interaction and consent seeking with participants on the existing and future use of data and participant's right to withdraw from the project in any stage of the research process. I also explained the conflicting information that given the intended digital outputs and networked dissemination of results, there may be situations where neither I nor they would have the ability to withdraw data once it became available online. Explaining lack of control and other implications of digital dissemination may at first seem as a turndown factor for participants. However, in this case it enriched the staged consent process and turned out as an opportunity to discuss the implications of their contribution in relation to a range of topics from science communication to authorship and self-censorship in everyday online activity and for research tasks. Our conversation almost naturally extended into an individualised evaluation of participant and bystander privacy and autonomy, and how these would be achieved in practice in our specific visual research context and encounter (Mok, Cornish, and Tarr 2015).

Specifically, participants were informed about bystander anonymity and general principles of ethical conduct in visual research practice. Each person tested the camera to walk in ways and angles to minimise capturing bystanders. This was also partially managed by the open walking area and timing of the walks that I selected after the pilot testing of potential area. Chest-level placement of the camera and pre-informing participants about bystander anonymity achieved both participants' visual anonymity and

minimised the number of bystander images while also giving me the opportunity to access the necessary information on body orientation. Still, when unintended subjects were in a frame, these shots were eliminated on site at the end of the walk when the participant and I previewed the images for print in further discussion. As a result, no visual data was collected that allowed either the creator or any persons pictured to be identified.

The project depended on ongoing, iterative, developmental informed consent as a measure to protect participant and bystander safety and rights. Time for an informational session was integrated in the work plan to discuss with each participant the measures and techniques for participant and bystander anonymity before any images were produced. Participants' knowledge and reflection on research processes are a valuable resource to widen the researcher perspectives on potential harm and on measures to avoid it. In some cases during the walks, participants were more capable technically and/or more knowledgeable than myself about identifiable aspects of the context they were describing. These examples emphasise the developmental nature of ethical issues in a specific project and the importance of emergent dimensions of consent and having continued participant interaction beyond acquiring initial informed consent. Integrating participant feedback in research design, dissemination, and the ongoing dynamic management of informed consent are therefore the means by which participant privacy and data anonymity are secured. This practice-based, mutual (participant-researcher) approach to ethical conduct is especially important in visual/digital research where universal measures and guidelines do not exist to both control the safe networked use and circulation of data without infringing in/voluntary participants' right to control their data.

Opening up space for discussion on participant strategies for achieving self and third party anonymity and privacy may be considered leading and reducing other possibilities for analysis. However, given the volatility (political and emotional) of the context of our collaboration as well as autonomy as a guiding principle of my ethical research conduct, encouraging participants to experiment with equipment to maximise privacy for optimal visual output helped with building trust. This was expressed by some participants that they could feel that their interests and wellbeing mattered and were accounted for. While participants were mostly knowledgeable about and had strategies to use their phone camera privately, the wearable component of the task was new for everyone involved. As a result, 3 participants, all women, rejected wearing the camera.

Individual consultation and preparation on ethical use of the smartphone and the GoPro were a productive way of channelling people's skills and creativity into the process. The extensive and dynamic ethical reflection both before and during fieldwork and specifically in the preparation meetings on customising equipment proved a productive process of searching analytical ways of working through the embodied materiality and social context of wearable research media. Explicitly addressing participants' concerns and emotions on the anticipated and experienced exposure with a chest-mount camera became the means of tapping into the site-specific, individual intrusions that the medium involved in the context of existing social norms of visibility, vision and movement. As such negotiating the embodied geography of GoPro emerged as a research site by itself and constituted a framework to analyse diverse bodies' visibility and movement in place and embodied experience of vision, security and autonomy.

Placing the camera: chests, straps, breasts!

‘Chest’ is defined as ‘the front surface of a person's or animal's body between the neck and the stomach’ (Oxford Dictionaries, n.d.) and is more often used to describe the chest of a man, woman or child when specifically not referring to the breasts of a female body. Among the various (head, arm etc.) mounts of the GoPro, I opted to use the chest mount, with the brand name ‘Chesty’ in order to accomplish face-level anonymity and hands-free movement. Chesty was also useful in terms of avoiding extra gear such as a helmet, hat, stick or a bag on which the camera can be mounted. I read online reviews, watched videos and decided that the chest strap was the most suitable among the available options even though I myself was aware of and had concerns on the bodily implications of having a camera placed on or near breasts which both participants and bystanders/viewers might be overly conscious about. When I searched online forums and action-cam tutorials to understand if the chest mount was an appropriate gear for the walking photography tours, I saw that it was a shared concern among women who were interested in the device but needed user/producer feedback from female users whether having the camera mounted on, below or above the breasts looked awkward, felt comfortable, resulted in a good angle or caused too much vibration. One particular tutorial video was especially of interest as it featured a woman modelling to test the chest mount in a dedicated cam-tech channel. The video was by far the most popular one among other tutorials in the channel and the comments section predominantly featured mildly sarcastic to sexist dialogues on the placement of the camera. Comments also included questions on visibility, comfort level and user/buyer discussions on GoPro as a product designed primarily for men. Based on these reviews, I decided to test the device myself in a local shop. Physically, it felt more comfortable than I had expected but I could see

that how to place it visually comfortably was a personal issue and had to be re-adjusted on site according to each participant's preference for bodily comfort, visibility and mobility. I took some selfies with the camera mount on my chest for later on-screen review and in the end decided to use it for research primarily because of its unbeaten optimisation to maintain anonymity, freedom of movement and use.

During the pilot in Istanbul, I tested the camera for sound, vision and bodily experience by walking around in the streets and getting on/off public transport in various parts of the city and in the context of the ongoing emergency law and heightened security practices in Turkey. These were places and situations where camera recording was typically expected (such as the ferry ride) and not so much (e.g. local bus stop). The planned walking photography tours included a much more focussed use of the camera in a specific area but by testing it in a range of places I personally registered the variations in the bodily experience of walking with a camera placed on my chest. As a result, it was generally a safe experiment with minor catcalling that specifically alluded to the camera and its placement. In other occasions, I was approached friendly and respectfully to ask why I was recording in that particular place. To my surprise, despite the heightened security checks getting on and off public transport, I wasn't inquired about recording during the two weeks of piloting the study. This was a relief and the elimination of a major ethical setback since police surveillance and general political volatility were emphasised as the major risks in accomplishing the visual design of the study. Walking with a camera was also the biggest concern for potential participants who otherwise had an interest in visually exploring violence and fear through memories and emotions in the city.

Following these preliminary participant, researcher and ethical perspectives and experience of action camera research, the actual field research period went smoothly in operational terms. However both the prelude and data gathering directed me to a deeper analysis of the visual, embodied, gender contestations in sites of wearing, moving and working with the wearable camera. The opening reflections guided the further steps in analysis on how vision and visibility transfer, become embodied and disembodied by strategising around wearing and not wearing the camera. One of the most important findings in this sense was the gendered variety of the ways location of the camera intertwined with the feelings of fear and insecurity of moving in the city. In order to examine the relations between the materiality and bodily geography of the camera and fear, I first focussed on participants' narratives of choosing to wear and not wear the camera, and realised that male participants had expressed nothing beyond a sense of awkwardness, physical discomfort (mostly due to the heat) and curiosity. Women, on the other hand, expressed complex feelings and concerns regardless of their final decision to give it a try or not. It is also important to note here that all participants were much more enthusiastic about the smartphone photography aspect of the design as it felt more natural, practical and useful to understand ordinary violence in the city. A major underlying reason for the consensus on digital photography relates to participants' existing habits and perception of smartphone photography as an everyday visual practice. It also has to do with a sense of autonomy that participants described when performing a research task using their own device and practicing something that they already feel familiar and in control with.

Despite the presumed advantages of hands-free, unobtrusive, automated functioning of a wearable camera, the GoPro distributed autonomy between participant's

body, camera vision, and its status as commodity and research equipment which meant and felt like a more complex power relation for participants compared to taking camera-phone snaps. In the specific case of the chest mount, participants had no control over the visual field as the viewing screen was facing their body. The only way they could participate in the recording activity was by controlling their body movement whereas in handheld smartphones they were more able to negotiate length, depth and angle.

Women's complex decision making process and feelings on walking with the wearable camera enabled a close interrogation of the visual power relations structuring and reiterating gender hierarchies in the production of everyday violence. In contrast with male participants, all women in the study described the GoPro task as ‘a challenge’ and among them, 3 women declined to perform the task. As we talked about their decision during the walk and later in the elicitation meetings, a common concern was that it was dangerous. The perception of danger was most directly with the ongoing emergency law in the country. It was explained further in more personalised terms of a sense of ‘marginalisation’(1), lack of rule of law’ (2) and a mental state of ‘anything can happen, you never know’(3). When I asked further if these feelings had anything to do with the placement or the camera itself; one participant replied ‘an arm or wrist mount would make more sense in a country like this’(3). Another participant suggested the chest mount was fine but the area we walked in, ‘even though, was mostly safe and pleasant, one can never know what happens the next minute’ (4). In all occasions, participants watched intently my demonstration on myself of how the straps worked/looked and the camera felt when recording. In the case of refusals to wear it, two women tried it on but eventually decided not to opt for it. One of them was in early pregnancy and made fun of the GoPro as one more addition to her ‘growing body’ (7). These participants also did

not express their fear in specific terms of breast-visibility but conveyed their views through body language (i.e. showing their upper body) and in general terms of body-awareness using phrases like ‘looks awkward’(8), ‘draws too much attention’(9) without any verbal reference to the breasts. One woman who did not wear the camera stated that it ‘was not the best time to go around with a lethal looking something on your tits in the middle of the day’ (9).

Favero (2013) suggests that, using the camera as a research tool is a process of singling out perspectives, designating the field setting and producing its material. The wearable camera as a material object is embedded in social relations of production, use and communication and it enables a research process that involves series of relations and reflection on diversifying perspectives, emerging research sites and produced data. The variation in perspectives, and emergence of research sites becomes clearer when non-wearer experiences are thought together with perception, strategies and feelings of women who chose to walk with the chest-mount camera. All six women in this group found the task dangerous and called it a challenge; one woman specifying the challenge as a ‘“are they looking at me?” feeling’ (6). Her response to this feeling was hiding the camera and straps by layering herself with an extra loose-fit shirt and leaving the front unbuttoned. A senior participant also hid the camera under her scarf which she had brought along exclusively for that purpose and used her cameraphone as a mirror to check if ‘it looked OK’ several times during the walk. Another participant who was nursing at the time explained that she was struggling with being very conscious with her postnatal body and specifically engorged breasts. She stated that it was a conflict that she felt that way as for her nursing in public itself was not a problem and actually felt good and liberating from her struggles with her body (5). We talked about this when I

was demoing the camera first on me and later on her following her request. Finally she said ‘I can nurse in public, I can do this’ and decided to give it a try and completed the walk with the camera on only pausing it for nursing breaks along the way.

The wearable camera walks resulted in rich accounts on camera materiality that presented it as a case to reflect on the masculine construction of public touch and vision not only through its gaze but more broadly through the symbolic and material relations facilitated by design cultures and commodity chains. Specifically, none of the participants in the study found the device ugly or difficult to handle. The only negative comments were related to better function, namely battery life and screen reception. In fact, participants actually commented positively on its soft touch, compact, handful feel and the design and functionality of the chest straps. Two participant women found the experience of wearing a camera sexy and further refined their views by explaining that ‘wearing tech looks sexy on women’(3), ‘the straps looked like bondage or holding a weapon’ and that the camera made her feel like a ‘woman on a mission’ (2). Thinking these comments together with female participants' general reflection on the process as a challenge, associating the GoPro with looking/feeling sexy also involves a sense of pride and accomplishment for these women. Given everyone's heightened self-awareness due to the political distress and violence in the country, the feeling of accomplishment also relates to a sense of activism and ‘going against the tide with a machine on your breasts’ (2).

Feeling dangerous and powerful demonstrates the constitution of the research process as a context where women sexualise and negotiate the visibility and movement of their body as a means to create spaces and situations of counter visuality in the instantaneous level of rhythm, performance and object interactions. For one participant,

this particular image of herself with the chest-mount camera in the process of sexualised power was ‘selfie-worthy’ (taken by her smartphone, directly looking into the camera and a bottom-up exposure of her upper body taking up much of the visual field). The empowering effect of wearing the camera and the sexualising process point to the material/functional and visual constitution of masculinity in two related ways. As a device, GoPro (and equipment) is built and promoted using masculinist idea(l)s of professionalism, expertise, nature, landscape, achievement, endurance and adventure. Although the current official motto ‘capture and share your world’ applies to virtually any networked video-based device, its capacity as a sensorial camera promises a deeper intimacy and admiration for the viewer. It is mostly targeted at the active, able-bodied masculine bodies of various genders and the action in the ‘action camera’ almost exclusively involves places, movements, rhythms and objects that are achievement-based, masculine, heroic and broadly, deserving admiration.

The masculinity of the camera was also raised as an issue in some of the online forums and comments on the chest mount ‘Chesty’ where users criticised that, with the name ‘Go pro’ and the specific model series name ‘Hero’, the product was apparently not designed for women, or integrated breasts as a design parameter. Tech extensions are widely promoted and recognised as more appropriate for men. This is obviously related to the long history of visualising masculinity and technology predominantly in military and other contexts of expert power. For the women in the study, embodying the camera meant practicing masculine power (i.e. recording) and taking control of a powerful object and, eventually, a momentary blurring of patriarchal norms of sexuality. By placing the camera on their breasts, an optic device of enhanced visual field, recording capacity and sturdiness was decontextualised for slow-use in research by walking

and hanging around. The selfie with the camera taken by the smartphone visually documented the feeling of achievement and 'being there' when facing a challenging situation. While these illustrate a momentary reversal of multiple gender norms of vision, visibility and movement; the terms of power emerging from sexualising the interaction with the camera incorporate patriarchal terms and sites of seeing and being seen.

From fear and distress to power, the perspectives of women participating in the study present the embodied geographies and patriarchal power relations within which the particular visuality of the wearable camera is embedded in a specific Istanbul context. The feminist method of practicing objectivity in its limited locations and partial accounts identified a key research site by mapping out a specific geography of embodied vision, namely, by texturising a narrative around women's fear and strategies around the visibility of their body and breasts in particular.

Conclusion

Wearable technology mediates new ways of seeing (Berger 1972). This refers to both research visibility and vision but also situating the technologies, practices and sites co-producing and validating the abstract category of knowledge. What wearable camera methods do to the bodies and practices they engage is a fundamental question in order to assess the 'collateral realities' that come into being as part of knowledge production (Law 2011; Law, Ruppert, and Savage 2011). The oft-repeated claims around the wearable as immersive, accurate and ignorable leave unproblematised the universalised, abstract notion of pre-existing bodies which in turn limit its potential as a research tool in unlocking the ways of engaging the embodied, material and social complexity co-produced during and by the research process. The perspectives presented in the empirical

part of the analysis reveal that both the visuality and research implications of the wearable camera as part of the research toolkit are much more complex than usually acknowledged in the current literature. Place-specific, embodied camcorder interactivity within the research assemblage in principle co-produced the existing gender norms of vision, visibility, and movement within the wider context of participants' fear of violence and concerns for safety and freedom of (visual) expression (to see and be seen). Still, layering the specific implications of using a wearable visual method as part of the process of negotiating the terms of ethical conduct and later of interpretation, enabled grounding the research practice within its context (which, ironically, inspired the project in the first place).

Ethical reflection for integrating visual wearable technology in research also meant extensive, individualised evaluation of risks based on each participant's social, physical considerations for movement and visibility. While this turned out as a productive phase of preparation and processual consent, and trust building in the study, a major potential implication for future research design would be scale and feasibility of such preparation.

The wearable camera as an object framed by specific discourses intervenes in the process in site-specific, unexpected, unintended ways, in this case by expanding and rescaling the spatial field by bringing into focus female participants' self-awareness and concerns over upper body movement and visibility. The wearable camera is constituted discursively and materially in complex ways that cannot be reduced to enhanced functionality and objective vision. The relationship between the camera and the body it mounts to or captures does not pre-exist and need to be situated in the socio-material sites of their co-production. GoPro's masculine visibility as a commodity and immersive

visuality simulating a gaze into the shaky, misplaced everyday reality of the body that carries it are all factors complicating the claims over vision and knowledge production when used as a research instrument. While such complexity pose the difficulty of designing visual research to effectively and affectively deal with everyday phenomena, it shifts the focus away from representation or accessibility of out-there bodies, technologies and senses. Problematising the technological mediation of research relations instead opens up a space to re-work and refine the vocabulary and tools we use to visually articulate embodied relations of power, place and difference.

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