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Collapsing Scales: Entering Relations

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'research has been diminished by its assimilation to the protocols of positive science' (2019: 660) and that research should, instead, be aligned with art. Without offering a definition of art he does offer a new definition of research. Research, he states, is 'the pursuit of truth' and, as 'truth ever exceeds the given', then, 'what appear to us, in the first instance, as stoppages turn out, when we search again - that is, in our re-search - to be openings that let us in' (2019: 666), into 'relations and processes... following their evolution from the inside' (2019: 664). In providing this definition, Ingold can be seen to have re-searched research. With this in mind, it seems odd, then, for Ingold to limit and define ethnography as something fixed, a 'stoppage'. Expanding Ingold's call, might it not also be worth researching ethnography? To try and find ways for it to allow us to enter into relations and processes?

But how might we research ethnography? Ingold directs us to 'decontextualisation', 'an art not of extraction but of *unwrapping,* of peeling away the layers of interpretative context so as to restore the work to presence' (2019: 664). So, let's try. Building on the work of other anthropologists, ethnographers, scholars and artists, we can start by trying to 'decontextualise' this legacy of division. For ethnographic work undertaken from the perspective that the world is divided into determined and self-contained things, it can be seen to follow that relations are consequently located *external to* and *between* things. And, therefore, to find relations between things practices of scaling are required (Strathern, 1995, 1999). Scaling up, for example, from the local to the global, or scaling down, say, from kinship to individual person. Scaling from fieldwork to writing this work up. There are many different scaling practices. We can challenge this framework. Rather than dividing and positioning things as interrelated via scaling practices, ethnography can appreciate things as *intra-related*, which is to say, things 'only exist within phenomena (particular materialized/ materializing relations) in their ongoing iteratively intra-active reconfiguring' (Barad, 2012: 77). In other words, there are no longer relations between things, but rather relations between relations (Holbraad, Pederson, 2017: 115).

This 'research' has two significant consequences. Firstly, if things are intra-related then one could conclude, as Martin Holbraad and Morten Axel Pedersen note, that 'Everything is both more and less than itself. 'More' because what looks like a 'thing'... turns out... to be composed of further things –infinity inward; and 'less' because at the same time it too contributes to the composition of further things –infinity outward' (2017: 125). The image of the self-scaling fractal is useful in clarifying this point (Strathern, 1991. De la Cadena, 2015: 32). As James Gleick states, 'One simple but powerful consequence of the fractal geometry of surfaces is that surfaces in contact do not touch everywhere' (1988: 106), so that, as John Law summarises, 'The argument is that 'this' (whatever 'this' may be) is included in 'that', but 'this' cannot be reduced to 'that'' (2004: 64). Secondly, if there are only relations between relations, then the scaling practices previously required to find relations between 'things' collapse, we are already within them.

While this theoretical outlook might be compelling for a 'researched' conception of ethnography, can it be extended and explored with more practical applications? I propose that a useful first step in approaching this question is the development of new methods that are aligned with this outlook. Building on the second point above, I argue that the development of methods which collapse scaling practices can aid ethnographers to locate their work within relations and processes. As previously mentioned, there are many different scaling practices, however, as we are starting out, an obvious place to begin may be with a focus on collapsing those scales which contribute to the often taken-for-granted corporeal position of the ethnographer from

which they can be seen to have been dividing the world. In what follows, I will explore this argument with examples from my own project "•". "•" is an audio-visual work, usually experienced in cinemas but also in gallery installation formats. The project involves a dead octopus in a washing machine cycle with a 360º camera. The footage recorded with the 360º camera is subsequently manipulated by algorithms. The project is not directly an ethnography, for our purposes here, however, I will analyse the work for what it may contribute to the development of 'scale-collapsing methods'. I will focus on two processes central to the making of "•": the development of a 360° camera housing and the use of an image interpolation algorithm called 'Optical Flow'.

A New 360° Camera Housing

In 1975, Margaret Mead claimed objectivity for the yet to be developed 360° camera, stating that "the camera or tape recorder that stays in one spot, that is not tuned, wound, re-focussed, or visibly loaded, does become part of the background scene and what it records did happen" (2003 [1974]: 9). Today, 360° cameras have been available on consumer markets for almost a decade. These cameras usually feature a dedicated camera body with multiple lenses that all share a fixed focal length. The lenses point in different directions and record simultaneously. The recordings are then amalgamated using video 'stitching' software into a 360° spherical video. The cameras do not feature a viewfinder, although it is possible to monitor the video via applications on a cell phone or computer that connect through bluetooth or wifi to the camera. The cameras are relatively small, around the size of a tennis ball, and often marketed as 'action cameras', usually water resistant or waterproof they are designed to be attached to a wide range of apparatus such as surfboards, helmets and bikes. Some cameras have native image stablisation software, some do not, and some give you the option to apply it. Not only are these cameras now in the market for wide consumption, social media and online platforms such as Facebook and Youtube can support the publishing and viewing of 360° videos.

Despite Mead opening up a discourse around this technology over 40 years ago, there has since been little written work published or audio-visual work produced that examines and explores the uses of this technology for ethnographic work. Furthermore, that work which has been done, whilst acknowledging that Mead's claims of objectivity seem outdated, echo her rigid and fixed expectations concerning the structural qualities and potential ways of using this technology - "the camera or tape recorder that stays in one spot". In the early 1970s, before Mead announced her future vision for 360° cameras, artist Michael Snow was exploring beyond her scope. In his film project La Région Centrale (1971), Snow developed a camera rig that enabled a 16mm camera to move on multiple axes of rotation simultaneously. During La Région Centrale, which was shot in a remote area of northern Quebec and runs for 3 hours, the camera is in continuous motion, spinning vertically, horizontally, diagonally and upside down. Despite this expanded camera movement there were still limitations, namely that the camera rig was fixed to a secured monopod and the movements of the rig were programmed.

In the making of "•" a 360° camera housing was developed that allowed the camera to move beyond these restraints. In a rudimentary design, using a Christmas tree decoration, make-up pads and tape, a 360º camera was encased in a transparent sphere (see Fig. 1). This design afforded the camera not only the ability to spin in any direction, but provided for it to do so without being anchored to a fixed point, such as a monopod or tripod, and without the need for the movements to be programmed. Whilst without such programming the new camera design may stay still if placed, for instance, on a flat surface in a relatively quiet environment, its capacity to relate to more relatively active environments was expanded.

Taking this to an extreme, for example, when entered into a washing machine, the camera was now not only able to spin, but also roll, float, tumble and much more simultaneously. To ensure the full potential of this movement was recorded, the image stablisation options of the camera were not used.

With this expanded movement, the footage recorded by the camera can be seen to collapse scales that provide the possibility for body relative positioning, (also referred to as egocentric coordinates), such as left and right, forward and backward, and up and down. Consequently, when amidst this footage, challenged is the possibility of getting one's bearings, and, instead, what can be seen to be opened up and entered into is a more relational dynamic.

Figure 1: The 360° camera encased in the new housing.

Optical Flow

The footage recorded using this new camera housing was then processed using Optical Flow. Optical Flow is a video time remapping algorithm available as a feature of the Adobe video editing program, Premiere Pro. It allows users to slow their footage down while maintaining, via interpolation, the appearance of continuous motion. Slow motion is typically achieved when footage is recorded at a fast frame rate and played back at a regular frame rate. When wanting to slow footage down, and missing the additional frames provided by a faster recording frame rate, the footage may look stuttery. Optical Flow claims to smooth this out by building and inserting these missing frames into the footage (Adobe, 2015). But this interpolation has some limitations. As stated on the website, 'Optical Flow needs to calculate the motion of every pixel for each frame. It does not actually know the difference between the pixels that make up your subject and the pixels that are part of your background or other objects. So you may see some visual warping if visual elements that are the same color conflict with each other, or if

parts of an object get occluded from one frame to the next' (Adobe, 2015). The more complicated your footage is according to these standards and the further footage is slowed down from its original recorded speed, the more difficulty the algorithm has in performing its calculations and the chance of "warping" increases.

In "•", Optical Flow was used to reduce the speed of the raw footage shot with the camera by over 20000%. 3.5 seconds of footage was extended to over 12 minutes. In doing this the Optical Flow algorithm created over 20000 new frames to make up the missing footage. A lot of warping resulted, a warping characterised by the collapse of a visual sense of depth, more specifically, the collapse of the scale between background and foreground and the 'things' within and constituting this scale - in this instance, the dead octopus, water, the washing machine and the light shining through the glass door of the machine. As a result, it is unclear where the limit of one thing ends and another begins [see Fig. 2-4]. Additionally, with the collapse of the scale between background and foreground, it follows that temporalities can also be seen to collapse. As light travels, action which appears closest to us (foreground) reaches us sooner than action at a distance further away (background). It may look like both are occurring at the same time, however, what we see in the background occurred prior to what we see simultaneously occurring in the foreground. In this way, by collapsing background and foreground, so too collapses a sense of past and present.

Figure. 2: Still frames from "•".

Figure. 3: Still frames from "•".

Figure. 4: Still frames from "•".

Something More Like Swimming
The scale-collapsing methods in "•" can be seen to leave us without a defining sense of left and right, backward and forward or top and bottom, nor a clear sense of background and foreground or past and present. As such scales contribute to the often taken-for-granted corporeal and temporal position from which the ethnographer has for so long divided the world, then, with their collapse, this position can consequently be seen to diminish, and, subsequently, we find, to borrow Michael Taussig's phrase, 'some quite other position that is not really a position at all but something more like swimming' (2006: 31). 'Something more like swimming' seems like an apt movement resulting from having found a way into relations and processes. As Ingold defines entering relations and processes as the aim of research, in returning to the question posed at the start of this paper, it does look like ethnography is something we can research into something, yes, more like research. Ingold guides us to equate this way of researching with anthropology, and, so, if it is possible to liken ethnography to research, which can be equated with anthropology, and art, it can be seen not to matter so much whether we use the name *ethnography*, *research*, *anthropology* or *art*. Whatever the name, the concern appears to be quite the same.

Ultimately Ingold hopes that we enter into relations and processes 'for a sustainable world' (2019: 659). This paper and the work it describes does not attempt to go that far. Aligned with Ingold's call for research inspired by decontextualisation, I have, rather, tried to develop approaches and methods that may help us as far as entering relations and processes is concerned. There are contemporary lines in anthropology, ethnography, art, and other related fields that can be seen to take up a concern for a sustainable world. We can think of multi-species entanglement, posthumanism, science and technology studies and many more. I hope that the development and use of scale-collapsing methods may be of interest to the practitioners in these fields, that they may develop them further and explore their potential in their work.

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