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Chapter Five

An Ethnography of Water: Introducing Water

Water is a substance that people use every day but give little direct thought to how it is co-productively shaping one's life. Moreover, numerous people around the world use it without stopping to think about what it is and how it has got to us. Water appears to be 'just some liquid' that pours into lives when a tap is turned on and as a result of its customary familiarity water is almost as invisible as it is seemingly colourless and transparent. Nevertheless, in recent years scholarship has seen a surge of interest in water's recurring role in everyday life (as detailed earlier, see pages 58-63). This increased attention comes at a time of concern for the sustainability of worldly resources (Fishman 2011), and has promoted water away from a simple daily requirement or useful resource towards being a key player in discussions associated with health, hygiene and also modernity (Swyngedouw 2015). Moreover, with access to water now established as a human right (UN water 2014), it also stands in the global public mind as a unifying principle for social justice.

This section explores what water is and how water can be known experientially. It aims to reveal the diversity and complexities of (what might be called) the different cultures of water by using knowledge of water's physical abilities alongside information accumulated by being-with water. This section highlights some of the concerns of conceiving of water as singular (despite the term) – as one thing - and suggests that water might be helpfully recognised as a collective noun, or an entity with multiple characters (just like people and in a way that the phrase *fu ha mwenga* expresses and provides). As water has the ability to shape-shift (just like people, see Heneise (2017) and High (2017)), become-with, and influence, whatever it seeps into (cf. Law and Lien 2013), this section queries the value of imagining water as one thing or one substance – despite its chemical makeup. It is also in this section that I demonstrate

water's overarching aspiration to keep moving. This is a key recurring theme that I note as a result of my experiences with water that have allowed me to feel water's urges to move on. Moreover, I contend, it is the different ways that ensure it can mobilise in various contexts that forces and ensures people shape their lives around its activities. Furthermore, as Schwenk (2014) illustrates, because water must move has also shaped many of the biological processes of our bodies (this is covered in more detail later in this chapter). In other words, the architecture of bodies is shaped by water's mobility. This is not simply a one-way street, as with all things 'material', this is relational. Human bodies – as much as the land, plants or air - are instrumental players or agents in impinging or impacting on water's ambition to circulate. Moreover, water's journey through a body does not only benefit the body it is moving through. Bodies transport and relocate water in ways that other methods cannot. Thus, bodies take water to places it might otherwise not reach. Equally, the different ways that water manages to move are instrumental in the different ways that people have devised to be human. Looked at this way, it is possible to problematise the artificial lines drawn between notions of nature and culture, between what is deemed to be a body and materials, and between the idea of a subject and an object (Descola 2013).

Ingold (2013b: 27) is troubled by what he calls 'two sides to materiality'. He questions the presentation of materials as either 'raw' (2013b: 27) physicality or as substances through which the projection of meaning can be fashioned into items by human agents. For Ingold (2013b: 27) this 'duplicity' creates the notion of a brute nature from which humans are distanced that troubles thinking and affects practice (also see Bennett 2010). Consequently, water is more often than not approached as a physical substance with properties for people to think about using. However, if we are to successfully replace people into the landscape, and further contest the nature/culture divide, then water (and other materials) and people must be approached as a combination: as relationships that produce sensate, intellectual and actionable responses through the phenomenological bond produced by experience - which is based on the properties and capabilities of the articulating materialities.

What follows attends to water but also attempts to illustrate how people and water are blended together. This is achieved by recognising that all interacting materials (bodies and water) produce each other when in relationship. This does not give primary

concern to meanings of water, it attends to the fundamental materiality and complexity or tangle of physical relationships that predicate what water and bodies *can be*. As a result, together, water and bodies have multiple manifestations as each material relies on another to manifest as it does in any given situation. Consequently, terminology signifies and in doing so dramatically simplifies and could be accused of objectifying. By attending to how materials act it becomes difficult to place definitive boundaries around them. Hence, this section whilst looking at water also blends people with water and vice versa. What emerges comes from a multiplicity of intersubjective perspectives. I am using information about the physics of water from the hard sciences alongside personal experiences to produce this hydrography. This, hopefully, does not privilege one viewpoint or knower but (again hopefully) works towards allowing water and other materials to be seen as relational (or as they become-together). The information in this section emerges in combination with the phenomenological experiences of water, of the first year students in the class '*Interactions with the Environment*', that I run. This cohered approach has allowed me to note correspondences about how water and bodies interact, and make suggestions about what water might be, and how to explore how water might be able to be known.

What is Water?

The word 'water' is an uncountable noun in many languages. An uncountable noun describes a thing that cannot be divided or counted. Uncountable nouns are words that recognise multiples or collectives but also acknowledge difficulties in splitting a thing into parts. The use of the term 'water' therefore, presents water as a single substance, while the materiality of water offers a different picture altogether. Water shifts from one manner of being to the next - often rapidly - and, certainly in terms of the physical laws that some people have ascribed to the world, unexpectedly. Thus, to conceive of water as one entity is materially inaccurate and therefore potentially problematic. Nevertheless, the word is used, and in using it a distinction between what is water and what is not water is made.

Water is as difficult to grasp hold of intellectually as it is empirically problematic to hold on to, because water's method of being is riddled with behaviours that can be considered ambiguities. In association, water is a vast ungraspable complexity that exists in many places in different ways simultaneously. Morton labels such entities 'hyperobjects' (2010); things which are both singular and plural – objects and subjects, individuals and communities - concurrently and, consequently, are problematic, even baffling to grasp fully when their enormity and irregularity is appreciated. The notion of a hyperobject (Morton 2010) can be helpful here because bodies or drops of water are not conceived of as independent water objects that are distinct in character from water generally. Like fire or air, bits of water are held to be aspects of a larger collective or community of water, and, consequently, significantly trouble orthodox conceptions of what a thing or an object is. Nevertheless, in accordance with the principles of science that dominates epistemologies in the global North, water is typically conceived of as a substance with numerous abilities, rather than a selection of different substances. In association, finding out what water *is* has been determined by measuring how water behaves under varying conditions.

Physical Behaviours: the Importance of Movement

'Water doesn't behave as it should. There are more than 30 physical constants of water that are 'wrong'...none of this can be understood by the common laws of physics...people will have to rethink their ideas about water.'
(Benveniste 2017)

As the opening quote of this section illustrates, water's properties are often presented as astounding by those who study and write about it. What water does, and is capable of doing, is considered confounding to the physical laws that science has established and that other substances prove to be restricted or held by (Ball 2002). Water can transform and renegotiate its methods of engagement in ways that are thought mystifying when compared with other worldly substances. Consequently, water appears to be one of the most versatile and active materials (Chen et al 2013). Or put another way, water is a material-maverick able to challenge many of the behavioural rules that people imagine they have discovered.

Most would agree that it is useful to be able to compare and contrast the properties of things to understand how they work, but, of course, the value of this way of organising the world can also be challenged. As Kohn (2013: 158) reminds us, 'difference is not the right starting point. In the case of water this method of understanding proves to be particularly misleading and problematic. For example, water has been classified as a liquid because it behaves similarly to other substances defined as liquids. It is easy to assume that one understands what that label 'liquid' describes, but on the other hand, it is possible that one may not be fully acquainted with what the term means. One might imagine that liquids are, well, *wet*. Unfortunately, liquids are not wet, and consequently, this means that water is not wet. Glass, for example, is a liquid, and it is not fluid in the way that water is. Water makes things wet; but, wet is not water, it is part of the experience one has when touching water. In other words, we get wet when we feel water but being a liquid is not about being able to wet things. In the case of water, it just happens to do so. Being liquid is about movement.

Being a liquid is about a particular type of movement. One could assert that material existence is more effectively characterised by attending to types of movement, because despite appearances to the contrary materials are never still; according to the findings of the discipline of physics, even rocks are jiggling on an atomic level.

'Matter is mobile, like a river; impalpable and elusive, like steam. It is...nomadic.'
(Consiglia 2008: 101)

This means that every material is in a constant state of flux and transformation and any sense of permanence, solidity or stability is a temporal illusion. Right from the wider movements of the universe and the planet spinning down to subatomic particles dancing together, materials are constantly shifting and rearranging, and consequently, through the lens of particle physics, everything is vibrating and repositioning at different rates. Therefore, even those items classified or perceived as solids are in fact molecularly mobile. Liquids – and their ability to move - lie on a spectrum between two other methods of being (or movement), that is: being solid or being gaseous. These different states of being have been determined by the behaviour and arrangement of a substance's particles. To be liquid the bonds between intermolecular particles must

be loose and flexible, whereas to be solid particles must hold together more firmly. Loose intermolecular bonds create that characteristic fluidity expected of substance defined as a liquid. More space and a lack of any particular arrangement creates a gas, and a tight, rigid structure forms solids. With water, the arrangement of particles is fixed but loosely bound thereby enabling it to flow as it does, and be categorised as a fluid. Water's liquidity is not only simply due to the hydrogen and oxygen particles forming adaptable or flexible bonds in a loose arrangement; the spatial properties, as well as the manner by which the particles relate to, or engage with, each other, is of equal significance, as is the recent finding that 'water can exist as two different liquids' (Nilsson 2017)¹. In addition, when hydrogen links with oxygen - when they both become water - they both bond faster than when in relationship with other molecules, and, perhaps more significantly, they are described as able to cooperate with each other when doing so (Finney 2004). Consequently, what Finney calls the 'molecular sociology of water' (Finney 2004: 1150) reveals that the atoms that assume the shape of the H₂O molecule that are characteristic of water, have organised or arranged themselves using quite different methods from those used by other substances. Therefore, when together, hydrogen and oxygen construct relational bonds with each other in ways that other substances do not (Ball 2002; Finney 2004). Moreover, according to the laws as established by the physical sciences, water behaves in unexpected ways and therefore should not perform like this. Indeed, using these parameters, water really should not be a liquid at all. Strictly speaking it should be a gas at ambient temperatures – but, obviously, and empirically, it is not. This physical rebelliousness, prompts Finney (2004: 1150) to describe water's molecularity as 'inherently disordered' and therefore, what one might think of as the key defining feature of water – that is: its liquidity - is described as being its 'anomalous liquid phase' (Finney 2004: 1150) and is held as a strange feature of this material.

¹ Scientists at Stockholm University have published on water's ability to exist in two different forms of liquid by using x-rays. Their work supports the notion that water at room temperature fluctuate between different densities "water can exist in two different forms and that the interplay between them could give rise to its strange properties" (Stockholm University Press Office 2017). According to Pettersson water is 'two simple liquids with a complicated relationship' (Stockholm University Press Office 2017).

Water: Solvents and Solutions

‘Water’s appearance does more than just trick us into believing it to be material purity. Still water reflects and excited water splashes and waves.’
(Wilkins et al 2005:14)

Most liquids can dissolve substances in them, but water is claimed to have the greatest dissolving powers of all liquids (Ball 2002). Indeed, water is hailed as the universal solvent as most (but not all – famously, oil) substances dissolve in it. Thus, water is the ideal material mechanism for reorganising substances and earthly matters on both a micro and macro level. Indeed, in its relationship with the topography of the planet, its capacity to hold dissolved items (as seen earlier in Giriama practice and mythology) means that water is persistently transporting multiple materials, and in so doing it recycles and redistributes materials from one location to another without prejudice. Water is as if ‘blind’ - it sees nothing and so judges or rejects nothing.

Furthermore, despite the appearances of adverts designed to sell bottled water, it is chemically inaccurate wrong to imagine that water is ever pure and it certainly is not empty. Water is full – teeming with microscopic particles and living beings (Helmreich 2009), unless it has been treated - and dangerous as Giriama restrictions on the use of stagnant water illustrate. Water’s fundamental lack of material purity has not restricted its identity as the archetypal cleanser and as a generic cleaning substance. Indeed, Parkin (1991) cites water as a cross-culturally recurring idiom for cleansing both spiritual and mundane realms. Water washes things away and, in so doing, takes and removes – that is: through its capabilities it reorganises by making other items move on again. The ability of water to cleanse and become dirty is recognised in basic hygiene activities around the world. Giriama restrictions on how to engage with water demonstrate this. Similarly, other social rituals used by the Giriama, such as *Mavingane* described earlier, express parallel themes where water is considered to be the mechanism of connection and release from invisibly active problems. A link between any non-material and material world is communicated by this method of approaching water, because water is considered to materialise the invisible. Using this perspective, how water can be known is first and foremost a process that blends its

material abilities with what it does to people and how people are physically able to engage it with, rather than what people think of it. That water can dissolve earth off vegetables (or legs) in the way that it does, for example, supports how people can know water. Vegetables can be cleaned of mud in other ways. Simply knocking or rubbing at them does something similar, yet water, following Parkin's (1991) claim above, is a recurring idiom of cleansing not knocking or rubbing. What water does, therefore, has taught (or communicated to) people about what we are now calling 'cleansing'.

As has been shown, left to its own devices, not only does water fill itself but also water moves into and fills spaces whenever it can. Wherever it flows, water dynamically interacts with whatever it meets using its ability to carry things in solution it remodels whatever it is liaising with including Giriama identity. That water is so ready to pick up and embrace what it comes in contact with means that it cannot be pure water without interference. However, with interference, water can be deemed 'ultra-pure', if it goes through multiple filtration stages to draw out anything that is not either a hydrogen or oxygen molecule. Ultra-pure water is a ferociously effective cleaner because it is empty. Void of the 'stuff' that it usually plays with means that it rapidly scours what it comes in contact with, hungrily drawing any particles into it and away from the item being cleansed. Drinking this kind of water is terribly dangerous and would not be recommended, as it would eventually kill you. This is because consumption of 'empty' water strips you of nutrients as the water attempts to fill itself up with the nutrients inside you. Ultra-pure water is used in the construction of microchips for phones and computers as it can thoroughly clean up these tiny areas without doing damage or harm to them (Fishman 2011).

The human preference for dry ground (Dillon et al 2012) may have encouraged the portrayal of oceans as spaces of separation that cause problematic distance between land masses. If we shift perspective to one that recognises water's materiality, it is possible to view water as the material that joins landmasses rather than separates them (Rainbird 2007). The ability of water to merge is evident at multiple scales, and as Wilkens et al (2005) reminds us with regards clay. 'Water holds particles together making them soft and pliable' (Wilkens et al 2005: 21, also see Dillon et al (2012)). The ability of water to move and dissolve planetary matter in solution is the mechanism

that not only forms connections but also through linking vastly different landmasses it enables items (microscopic and much larger – think: boats) from one location to be transported to another. In connection with the ability to blend itself with other entities, water problematises the distinctions made between empty and full, complete and incomplete, and space and place, and in so doing reminds us of the problems of the language borders that sit as if between ideas separating them. As seen above, water is still water despite being full or empty of other things, it remains water despite these changes to its composition and therefore when an area is labelled muddy it is difficult to determine whether the area is saturated soil or water full of earth. Furthermore, just as air invisibly occupies space it is also simultaneously conceived as not there or a space (or the gap) between things, water is both the space (distance between) and place between landmasses. Air is not thought of as a thing in a place (Edgeworth 2011). Moreover, it is held to be nothing everywhere. Rather like the amusing popular black and white drawings that play with perception to demonstrate that in the same picture people will be able to see different items - either the young or old lady - water can be determined as occupying space but also as being the space, as simultaneously being present but also one of the hybrid ingredients of an item.

In addition to water's abilities to simultaneously transport, transform and ambulate in the many ways mentioned already, water also soaks into other materials filling them up, as medicines illustrate. By flowing into other materials, water's transportation mechanisms are also utilised to bring items not just across distances but also *into* bodies. Therefore, its exceptional ability to incorporate dissolved substances makes it inordinately suited as a medium of communication, and connectivity between what appear to be disparate items. Water embodies a continuous process of give and take that exemplifies relationality in action on a grand and global scale. Water is literally materially ungraspable, but equally water itself retains nothing, instead, through eddies and swirls, it takes, circulates, communes and distributes what it can.

As we have already noted, water's liquidity is typically held to be its primary fundamental form. Thus, ice, steam, snow, sweat, blood and so on lie in a somewhat liminal space being both water and not-water simultaneously. Seen in this way, water can be depicted both as a series of different materials altogether and also as able to transform itself depending on conditions.

Without the ability to rise both through the air and through bodies² using the processes of transpiration, respiration and osmosis water would be stuck inhabiting the lower grounds. Without its ability to freeze, the planet would be too warm and any liquid water would evaporate causing the atmosphere to get denser and the world to get hotter. Water's ability to move up enables it to use gravity to flow down again, which means that the planet is coated with, soaked by and run through with circulating water. Therefore, it is not just that water can move that demonstrates its contrary nature, but *how and when it can move* that makes it exceptional and signatory. Of significance to us here, is that all of these rule-breaking behaviours are what make water vital and central to life as it currently manifests. In other words, these are not inconsequential behaviours but are the key characteristics that produce life as it is here on Earth. Indeed if hydrogen did not bond with oxygen *in the way that it does*, life (as we know it) would not exist today. The fact that ice floats, and that water freezes from the top down, are both key to enabling aquatic life to survive in low temperatures. This coupled with the warmer water at the depths of the oceans has allowed underwater life to thrive and be transported around the planet regardless of external temperatures (Helmreich 2009). Furthermore, water vapour in the air is considered to be the principal greenhouse gas on our planet and any reduction in evapo-transpiration rates through, for example, deforestation, can shift and alter weather patterns dramatically (Bartholomew 2012: 119). In short, the hydrological cycle illustrates how water rejects constriction or containment, and is permanently on the move – despite any appearances to the contrary.

Experiencing Water: Being With Water

The following section uses experiential evidence from a number of different periods of engaging with a small stream that runs through the University of Wales, Trinity Saint

² The term 'bodies' here describes collective cross species forms including all cellular life (human animal, non-human animal, plants and so on), but equally the bodies of materials such as wood, paint, shells, horn etc.

David's Faculty of Humanities campus in Lampeter, Wales. From a material perspective, any distinction between the condition of 'being' and 'being with water' is physically problematic. Being is always watery. However, representational concerns aside, the title of this section signposts an explanation of some of the processes that were used to get to know water experientially. Consequently, it uses the notion of 'being with water' as its methodology (i.e.: immersion and participant observation) and formulating focus, whilst recognising that being with water is not the same as doing as water does. Nevertheless, being with water meant that what water does could be appreciated.

The overarching aim: to get to know 'who' water is, took inspiration from Dillon et al's (2012) paper on wetlands. Dillon et al (2012) explored assumptions with regards how water and land mix by cohering a selection of disciplinary perspectives on a wetland in East Anglia. The paper, entitled 'Thinking like a Wetland', (Dillon et al 2012) aimed to destabilise certainties or assumptions about wet lands, and in so doing query why dry dominates our thinking. The 'wetland collective' they formed used poetry, myth, experiences of walking in a particular wetland and historical accounts to form a broad picture of how conceptions of wetlands form or take shape. Their work exposed a 'hydro-social world' (Dillon et al 2012: 205). Following their lead, and taking inspiration from Ingold's (2000, 2013b) 'dwelling' and ideas concerning 'making' I approached water as a subject to learn-with. In association, I (and others) spent periods of time immersed in water to get a sense of its culture, or 'who' it might be.

Historically, Anthropology has made various claims about how to study human life effectively and methodically. Its methods have been criticised for imposing Euro-American categories on to, and thereby shaping other people's lives into forms similar to those of the society of the anthropologist (e.g.: kinship debates, see Carsten 2008, 2013b; Feuchtwang 2013; Franklin 2002; Sahlin 2013, Schneider 1984; Stone 2001, 2005). Similarly, my initial understandings of water were steeped in the science-based teachings of my education whereby the substance 'water' was categorised and existed in a particular way³ for me. Consequently, there are reverberations or shadows similar

³ In keeping with my education, I held water to be an inert, passive material resource that people needed but that exerted negligible influence over my, or other people's, life on account of the infrastructure that organised it.

to the biology versus culture arguments associated with the 'kinship' debates that I have had to wrestle with to produce this thesis. Nevertheless, just as anthropologists imagine that participant observation methods will liberate robust information about culture, I too, allowed my experiences with water to learn about being human with water.

The following emerges from the experiences shared over 4 years through a series of different practices, some spontaneous, some organised with students. These included spending time sitting in a shallow stream in Wales during November, walking barefoot in the stream, attempting to fill up different containers with varying aperture sizes from the stream when it was rapidly moving, painting with muddy stream water, making giant bubbles using stream water, floating items down the stream, investigating the stream's banks, listening to the flowing water before and after bodies come in contact with it, and watching how water's ability to travel alters after adding detergent to it. Consequently, we participated-with and observed water and concentrated on how being-with water impacted on its methods of being water. We worked primarily with stream water, imagining it as a community of water one could get to know 'ethnographically'. Like people, it became clear after learning-with water, that while it can be known as one thing, water is multiple active subjects rather than an inert object, as might be assumed.

A recurring theme that emerged from being with water was its unpredictability or changeability. It acted unexpectedly and was constantly open to reconsideration and innovation in explanation. This both challenged our assumptions and reformed what water was for us. Other themes concerned value, boundaries and movement, all of which made us think about how water behaves and how it communicates with people.

We took the notion of immersion literally and got into the stream. On introduction the temperature of the water invariably caused consternation - even pain - because of the cold. Initial haptic contact, therefore, produced a phenomenological shock as our legs began to deal with the abrupt change in temperature. However, perseverance meant that after time the pain subsided and transformed making the experience re-describe the sense of where our limbs were. For some, the experience challenged their boundaries and sense of self; what was water and what was flesh came into question

as the body parts in contact with the water numbed and all but disappeared from perception. For others relating to water in this way altered their moods, enlivened them and even produced a sense of gratitude for the feelings. Leaving the water with numbed legs further affected walking and how we could feel any other materials that our legs came in contact with. Being in this cold water, therefore, troubled the perceptual intersections between people and other materials as the sensorial boundaries we held of our legs had been altered by our time with the water.

Being in the water also allowed us to focus on the other ways that water impacted on us as it moved around us. As obstacles placed into the water's flow, our bodies began engaging with the water in a number of ways other than with regards temperature. For example, it pushed against us, unsettled our footing, but also felt as if it was caressing our limbs as we placed them into the stream. Being in the water also altered the sound of water as it engaged with us. Before getting into a body of water the sound it emits is limited by and produced with what obstructs its passage. Consequently, if water hits a rock as it travels, the collision produces the sound of water's movement being impacted. As more bodies entered the water, the cacophony of noises overwhelmed as it splashed around and onto our bodies. The more bodies got into the stream the louder the water became until we had to shout to be heard over the noise it was making as it slammed against and bubbled around our flesh. Thus, the almost silent, dark sheen of water became animated, noisy and changed colour as soon as someone got into it.

Perhaps chiming with Dillon et al's (2012) questions around the valorisation of the dry, most people experienced a reticence about getting into the water when it was moving as a stream. Standing in a bucket of water in class was unproblematic; yet, even though the water is only about 18 inches deep, out in the 'wilds' it seemed dark, mysterious, forceful, alien (following Helmreich 2009), troublingly more 'wet', and therefore dangerous. Very few of the students over the years have been keen to get in the water initially. Concerns cited include: worries about being shoeless and the vulnerability or lack of protection it creates, losing their footing, slipping, falling, standing on something undesirable, the temperature or being contaminated by something unsavoury.

“No, I don’t want to. I feel scared... and stupid.”

(Jess, Nov 2014 pers. comm.)

“What if I slip? I will be wet all day”

(Susan, Nov 2016 pers. comm.)

“I’m not sure about this. I want to, but I also feel worried.”

(Kieran, Nov 2014 pers. comm.)

Not all students would attempt getting in and most of those who did only countenanced the experience after extensive discussion about risks and fears had taken place. Those keen for the experience were very much the exception. Nevertheless, without obligation to do so, most students eventually went in following the lead of the keen and their squeals of delight on entering. Sharing experiences afterwards produced interesting personal insights and illustrated the ambiguities people feel about going into water-y spaces.

Water’s ability to produce insights about who one is will not be covered here in much detail as the realisations were personal in nature and particular to certain individuals’ life-stories. However, recurring themes circulated around the consternation about being pushed around by the water. How the water’s movement made them feel insecure, a feeling they wanted to avoid, and how the difference between being dry and wet was miserable and wrong because it demanded a type of physical engagement that they were not prepared to embrace. For many making the transition from the bank into the water was a tentative, worrying affair with primary concerns circulating fears of slipping or falling in and getting certain items wet. For these people, going in to the water was a trial that provoked them to imagine the discomfort they might feel if they allowed that kind of physical intimacy with the stream water.



Figure 1: Entering the stream for the first time.

On the other hand, others responded differently saying that any initial discomfort or unease had gone after the event and as a result of the engagement. They expressed feeling of being re-energised by the experience, and therefore reconsidered their feelings about water after the event.

“I didn’t want to at first, but I am really pleased that I did because I feel great now. I did it.”
(Cameron, Nov 2017 pers. comm.)

“That really woke me up. I didn’t know what I was doing but now... I feel, ah, I don’t know... but water is so precious.”
(Emily, Nov 2014 pers. comm.)

“It feels somehow important that I did that. I really want to get to know water now.”
(Bori, Nov 2017 pers. comm.)

Equally, as the quotes above demonstrate, thinking about being immersed in this water destabilised and challenged our notions of what being human with water means. Human with tap water has a certain set of meanings associated with it, being with stream water produced a different set of meanings. In addition, rather poetically, and in a manner that echo some of the sentiments reportedly felt by numerous anthropological fieldworkers (including myself, who have fears about being anthropologists and have no idea what they are doing on arrival in the field), being immersed in water evoked a sense of the significance of the experience (see Bori’s

quote above) after the event (Robben and Sulka 2007). Other recurring terms used to describe experiences with the water in the stream included: powerful, dynamic, overwhelming, noisy, strong, cold, fun, bonding, cleansing, challenging. Being with the tap water was never described in a similar way.



In addition, our ideas of what water does, how it would flow and how it would behave were rarely correct; twigs thrown into the water would be bumped and jostled in unanticipated directions and if followed, adopted unexpected trajectories and effects. In addition, the bubbles we hoped to blow from the water mixed with detergent refused to allow our ideas to manifest as the cohering materials resisted our intentions.

Figure 2: Trying to make bubbles.

Chiming with Ingold's (2013b) criticism of the hylomorphic model in *Making: Anthropology, Archaeology, Art and Architecture*, we struggled to bring our ideas into reality before we paid careful attention to what the materials (water, detergent, string and the wind/air) were able to do together. Demonstrating the role materials play in shaping outcomes, we recognised that persuading materials into new relationships was only possible by working with their abilities, rather than our ideas.

Containing or separating water from its setting in the stream was equally challenging. Our attempts at enabling water to fill different containers successfully meant finding positions and angles where we could get it to flow in readily. This depended on a complex combination of factors that meant we had to try different areas along the bank, various sections of the stream and adopt multiple body postures to help the water and the container relate without losing our grip on the bottom of the stream and the container. Our perception of the containers as empty was materially contested as the ingoing water displaced the air in the form of glooping resistant bubbles belching

from the receptacle. As the materials jostled past each other the container buffeted and jumped around only to be still after the air was released and the water finally took full control of the space. Once contained the water not only took on a new weight and significance, but also changed its value. Indeed after collecting water, it seemed to be of higher worth than free flowing water. Some students had filled ostrich egg shells in a bid to understand how much water a San person from the Kalahari might have subsisted on per day. The aim was to measure the amount an ostrich egg shell could hold and make comparisons between water consumption patterns in different locations. Getting the water to fill the egg was an act of patience and once the water was inside the egg, people felt that its value had immediately changed. As a day's supply, the egg was significant but what was more obvious was its vulnerability and how it could be lost at any moment with a slip of the hand. Plus, each collector had to be with the water to then take some of it. One student said, "I feel like I have to be so careful with it. Almost cherish it. And it was so hard to get. If this is all I have, then I want to be careful with it." (James, Nov 2014 pers. comm.). In short, the process of collection and containment made the water feel valuable. Therefore, by separating some water away from the main body of the stream, our methods of understanding water shifted.



Figure 3: Measuring the stream water collected in an ostrich egg.

Figure 15: Painting with muddy water



Painting with the muddy water, however, produced a different set of responses and questions about boundaries. As the paper dried it became unclear where the water was – in the paper, the air or the mud? Similarly, as the paper dried and changed shape, the images transformed into those made by the water's ability to evaporate rather than people's abilities

to paint thereby provoking water's agency to again become a topic of discussion.

The activities offered us insight into how little we really knew about how to relate to water and what water does when we relate to it. We became aware that our knowledge of water stems from ideas absorbed from educational textbooks, the conceptions of water that are used in advertising and the limited, regularised experiences we have with it – including: drinking, bathing, cooking, flushing and rainfall. While we need water, it is kept away from direct contact with us most of the time. Moreover, from doing these activities, we recognised that how we could relate to, and what we wanted to do with, water was constantly mediated through what water allowed us to do with it. Any notion of the human as primary agent dissolved (cf. Ingold 2013b) as a result of these few activities. Clearly, it was not enough to have an idea of what could be done; we had to work in partnership with water to see what could be done together (cf. Ingold 2013b). In association, we experienced differences between 'who' water is when in the stream with the 'personality' of water when it flows from the taps. In addition, we noticed how the force that moving water exerts transforms when one drinks it or paints with it, and how regardless of any ideas to the contrary, water always takes an active role in how one can relate to it. The experiences of the physicality of water, therefore, reshaped our thinking and demanded we reconsider our assumptions.

In Ingold's (2013b) account of kite flying, he attempts to locate agency imagining that it would be found in the person intending to fly the kite. However, he found that

intention was insufficient. To produce, what he called, a 'dance of animacy' (Ingold 2013b: 101), all materials (in his case, kite, air, person) must work together. For the person flying the kite it was important to attend to the flows generated by the materials working in relationship. Once we gave our attention to what water was doing, rather than to any hopes or intentions, expectations or projected outcomes for water, we were able to get a sense of the 'dance' that Ingold (2013b) experienced with kite flying. This demonstrated how the materiality of water co-determines the relationships people produce with it, and illustrates the concerns Deleuze and Guattari (2004) (and later Ingold 2013b) raised about the hylomorphic model. Key to our understandings of water was that it refuses to settle or be still, it is dynamic, it pushes, makes noises, demands attention and changes in form and value because it insists on moving.

But, How Does Water Move? Circles, Cycles and Serpents

'Wherever water occurs it tends to take on a spherical form. It envelops the whole sphere of the earth, enclosing every object in a thin film. Falling as a drop, water oscillates about the form of a sphere; or as dew fallen on a clear and starry night it transforms an inconspicuous field into a starry heaven of sparkling drops.'
(Schwenk 2014: 13)

Despite the above quote water is not typically presented as a sphere, and this certainly was not our experience of it. Nevertheless, in molecular terms, it is constantly striving to be spherical. As a liquid, the weight of water, coupled with gravity and the movement of the planet are key forces that drive water to move. However it is the molecule's urge to be spherical working in relationship with the above that determines *how* it can move.

Watching water in space (where gravity has no influence) shows how water forms into amorphous blobs floating around in the air rather than the vertical flows available to human perception when gravity has influence. This arises as a result of the relationship between surface tension and how the water molecules urge to bond when there is no gravity. When water molecules bond it is as if the body of water produces something of a boundary to it. A skin or edge, if you like. This 'skin' is created by the molecules' intention to form the smallest possible area when joined together, thereby

creating a 'bit' or blob of water. This is what makes drops of water form and it is these characteristics – not in isolation, but in relationship – that account for the different ways that water is thought able to move by physics.

Water not only moves as a body within the river channel it is flowing through, it also spirals within itself as it does so. The material meandering of rivers evidences this.

'Rivers do not run straight for more than ten times their own width, which means that if you find one that does you are looking at evidence of human tinkering.'
(Gooley 2016: 80)

The internal 'spinning' of the water describes the motion it adopts as it moves through a water channel. It is this method (of being) that produces the characteristic serpentine shape that rivers gouge out of the landscape. The technique results from the internal revolving core of the water, and the revolving core is produced by water's incessant urge towards being spherical in relationship with the other physical forces already mentioned. Thus, rivers are able to snake through and dig down into the landscape not simply because of erosion and deposition but because the water within the riverbanks is constantly attempting to form a sphere that is being stretched out by gravity and its own weight. It is these relationships that create the 'sinuous, convoluting' (Bartholomew 2012: 142) circuitous configurations of rivers.

The inner working of the flow motion of water is mostly invisible but it can be seen at the edges of streams. When we gave attention to the water alongside objects, such as the rocks in the water or the edges of the riverbank, we could see the spiralling pattern that water adopts as it navigates around them. Any movement or turbulence in water causes the totality of the body to respond and flow in accordance, as people entering the water in the '*Interactions with the Environment*' class experienced. Thus, water moves as an interconnected unity and because of its constant internal spiralling it reacts to even 'linear stimuli with rhythmic... eddying motions' (Wilkens et al 2005:28). To understand how water moves we needed to appreciate not only the down river flows but also simultaneously had to account for the eddies which formed around objects in the water. Our bodies in the water, therefore, also generated longitudinal vortices within the body of the water around which the currents of water revolved around each other (Schwenk 2014). These vortices, like liquid drills, are responsible

for the deposition and erosion of a river, and are the process by which the path it forms bends, which, in turn, is responsible for the direction that the water takes as it drills its path into the landscape (Schwenk 2014). Putting our bodies in water's path reshaped its direction. Bartholomew (2012: 22) explains, meanders are 'the expression of the rhythmic flow of water' and enable us to physically visualise how water moves. These intertwining, inner spiral patterns of water can easily be seen in the steam rising up over your coffee cup or in the water going down the bath's plug hole. These spirals are stretched out or elongated urges to be spherical.

According to Schwenk (2014), adjustment to river ways, particularly those adjustments that attempt to straighten the course, and that fail to account for the essential vitality of the water will be unable to 'hold out indefinitely against the "will" of the water' (Schwenk 2014: 18). Indeed, Schwenk (2014) maintains that the health of water is determined by its ability to move and any process that fails to recognise its urge to be spherical and its resulting spiral behaviours (like the typical urban water system) could likely cause unintended adverse consequences. This position presents water as a material with parameters for sustainable relationships, and while the notion of a material being wilful might uncomfortably anthropomorphise water, the class undoubtedly experienced this. Water was stubborn, could not be forced successfully and had to be worked-with.

The above illustrates the inherent relational intimacies between water's behaviour and other aspects of the world-scape that it moves with and through. After spending time with water, it became evident that movement is instrumental to understanding what water is, what it does and what it must do. Consequently, containing, damming or restricting water's passage is a process that produces repercussions to water's drives. When moving as a river or stream, water simultaneously produces both a horizontal current of water and produces an inner spiral of water as it flows. This means that within a river of water there are multiple concurrent activities taking place shaping the material – firstly, the water moves downstream; secondly, it flows in waves that eddy up against obstacles in its path, and thirdly it produces a spiralling vortex that drills into and deepens the path along the riverbed. These simultaneously functioning mechanics of water are part of the set of processes that contour the materials that bodies of water engage with. Each body of water uses these same mechanisms to

move but presents with its own morphological character on account of the different environmental factors with which it is in relationship. Water, therefore, presents as an immensely complicated but tremendously flexible, even adaptable material presence.

Troubling Boundaries: Water, Earth, Air

The term used to label the interface between the land and water in rivers or streams is the riparian zone. The term typically focuses on the land that meets the water (not the other way around) and it is presented as a buffer between the two different types of materiality. The plants that grow in this wetter area are described as hydrophilic (water loving) and thought to stabilise the bank, stopping the water from disintegrating and collapsing the edges. The riparian zone can be extensive and increasingly these areas are protected to support conservation and biodiversity. The edges of the riparian zone form a muddy or blurry region where a relationship between water and earth occurs. As a consequence, the water or land's edges are both full of water and earth, making it difficult to accurately say which is which at this point. This could be used as a material example of Barad's notion of intra-action. Intra-action is a neologism coined by Barad (2003) that recognises how relationships produce those that are relating. In this case, not only are the boundaries between substances blurred but also how each material contributes to the making of the other through mutual engagement is made 'visible'.

Following the same logic, water's relationship with air is another illustration of how water's transformative qualities manage to enable it to both lie between and simultaneously blend with what is around it. Not only is water positioned physically (in broad terms) between the seemingly solid land and the gaseous air, but water also penetrates and is present in both concurrently. Water, therefore, manages to blend with items considered either solid or gaseous, which results in water managing to blend all three categories together, as this quote demonstrates:

'Every waterfall dissolves at its edges into an infinite number of the tiniest droplets, forming an inconceivable extent of surface at which the two elements meet and there water surrenders itself to the air. The opposite process may be

observed where water cascades and pours over stones into a pool. Air is then swept into the water, sparkling bubbles and creating great surfaces of contact at with the water can “breathe.”
(Schwenk 2014: 102)

Similarly, when painting, we found that as the water, paint, paper etc., came into relationship it became more difficult to locate each one as they reformed into ‘art’. When this is recognised, the boundaries that we intellectually construct around objects or materials become significantly choppy, muddled and troubled. Indeed, these physical places of contact problematise, and should make one question, the mental depiction of each aspect as distinct from the other because it is quite simply just too hard to successfully delineate where one starts and the other stops. Furthermore, this demonstrates that using a relational ontology to approach material relationships is a helpful method to draw out and understand the subtleties and characteristic porosity of the materiality that produces the forms and formation of the world.

From the above we can see that water is never *just* water and that from the many ‘waters’ available all water(s) are different. Consequently, while water is water it is also air and the earth. Moreover, as Bartholomew (2012) reminds us, the world of water is one of motion. Water does not remain still if left to its own devices. Water, without respite or enervation, continually urges to spread, shift and relocate. Consequently, it forms the bodies that root into and mobilise through the soil, air and liquid version of itself. Other than running through everywhere and getting its liquescent fingers into nearly every nook and cranny of the planet, it also joins everything together by producing a running or flowing network between lives. Liquid water bashes, drags at, shakes up and absorbs the materials around it so as to pick them up, transport them and later deposit them in other areas. Equally, frozen water cracks open and grinds off sharp edges, and atmospheric water accumulates and redistributes materials across landscapes. These materials can be either microscopic and of tremendous size, and as a result have the ability to alter lives utterly as both disease transmission and tsunamis effortlessly illustrate. It is this multiplicity of methods and manners that makes water the mistress of multitasking – and what makes water so difficult to grasp in totality (cf. Morton’s hyperobjects (2010)).

‘Existing things have no nature – [there is] only a mixing and separating of what has been mixed.’
(Empedocles cited in Leroi 2014: 80)

As the above illustrates, it is difficult to successfully find the physical boundaries of the substance we label ‘water’ – or in other words, to know where water stops or starts. Boundaries can be erected intellectually, and language manages to conceptually contain water, but when approached chemically or materially finding the beginning or end of water becomes much more problematic to ascertain. From a structuralist and constructivist perspective, the world is seen as created through language. Therefore, the ways that language functions has been put up for inspection regularly (e.g.: Chomsky 2007; Everett 2008; Hymes 1964; Lévi Strauss 1962; Pinker 1994; Sapir 1958; Whorf 1940). How utterances describe, signify and construct the world has been a significant part of these investigations. In considering how to engage with and understand materials, these debates might, in part, appear to be being rekindled. However, this is a phenomenological, inclusive and relational quest that aims to situate how water and bodies work together, rather than reconsider terminology exclusively. Therefore, the return to materials that the New Materialities perspective advocates, raises questions of the restrictions of certain lexicons and in correspondence, provides alternative insights about how being human is materially (rather than cognitively) generated.

However, the ideation of ‘water’ as a singular, distinct entity subsumes and almost contests its physicality and whilst it emerges as a useful, persuasive and utterly internalised concept in some ways, how this sign is used is troublingly divorced from the material character that is phenomenologically available to people. Consequently, just on the basis of brute chemistry, the description or classifications of water as a singular substance need to be challenged. Water, then, (as seen through this lens) is not *a thing, or even just a material*. Water is a process or a method of becoming and dissolution; it is simultaneously human and other lives, animate and inanimate, subject and object. In addition to these complications, just as with all other materials, water cannot and does not develop in isolation, but rather forms because of, and through, the intersecting relationships with surrounding influences and other substances, which means that one can say that you are as much a human as you are water.

Water: The Shape of Life, when Water is Human

‘...and we soon recognize ourselves as watery bodies among water bodies, all sloshing around in a watery world.’
(Neimanis 2012: 86)

Water’s ubiquity allows it to feel familiar to us, but as has been illustrated so far many of us are unfamiliar with some of its abilities. Moreover, if we are to think in terms of relationships, defining water as a material that acts on, and is a substance that is distinct from, other materials rather than one that *acts with* other materials becomes problematic and difficult to continue. Water, as has already been noted, when conceived of in these terms, is not a thing – but is simultaneously multiple utterly different things occupied together in concert – as blood and intercellular fluid, it is bodies; as clouds and fog it is air; and as juice it is fruit or vegetables or as mud it is the earth. As it is a fundamental material reality that our bodies are primarily water-y, it is valuable to ask, “Where does water stop being water and where does it become a body or a person?” (For further exploration of this see, Neimanis 2017). If embodiment (that is: materials being bodies) irrefutably relies on water being with people, then ‘a radical question about what we mean when we call ourselves “bodies”’ (Neimanis 2012: 83) needs to be asked. This is not just because water flows through us, or even that we need water to live but that there is no clear distinction between when water is people or something else. Water is flexibility personified, it is the epitome of versatility and transformation existing as one and many because it is ‘in a constant state of motion (Coats 2001: 113). But despite being the key component to life forms and to life forming, water is not typically characterised as being alive. Water lies somewhere between inanimate and animated.

‘Water does not have the characteristics of the living, but without water there is no life...water does not have the expressions of life, but these all only become possible through water...What is it that enables water to accomplish this? By renouncing every self-quality it becomes the creative substance for the generation of all forms. By renouncing every life of its own it becomes the primal substance for all life. By renouncing every fixed substance it becomes the carrier of all substance transformation. By renouncing every rhythm of its own it becomes the carrier of each and every rhythm.’

(Schwenk (1985) quoted from a lecture, cited in Wilkens et al 2005: 26)

For Schwenk (2014), it is not water's adaptability or transformational capacities that makes it extraordinary and powerful but rather it is its refusal to be entrenched or retain one position. Water renounces form, manner and method in favour of slipping into many forms, manners and methods. Other than as a molecule, water manifests with no essential shape prerequisite. Therefore, collectives of water molecules adopt the shape of the things that the fluid finds itself in association or relationship with. Thus, the items that make up the riverbanks (rocks, stones, roots, and so on) define the shape of the body of water coiling or drilling through the space as a river. Similarly, the shape of water in a cup mirrors the shape of the receptacle it is in, and the shape of a cell or the circulatory system confines the shape of the fluid in it. Thus, water adopts the shape of the thing it pours itself into, and in so doing can be understood of as filling the space. The example of water in a cup is one in which the cup's edges force the water to describe the shape of the cup when filling it. However, this is not the case with all other items. Water moving into items can also shape them. Fascinatingly, as every emerging life form passes through a liquid phase, many solidified biological forms reflect the swirling movement of water's spirals. For example, the architecture of bony objects, like shells and horns assume a spiral in design, as do microscopic entities such as: DNA, chromosomes and spermatozoa (Consiglia 2008:93) – just like the shape of moving water hardened into form. But equally, the fleshy materials that make up our corporeality follow similar patterns. For example, the human heart is essentially formed of an elongated tubular spiral twisted around itself, which not only mirrors water's method of movement but also supports the blood to move effectively (Schwenk 2014). Likewise, brains are correspondingly constructed. In addition, 'the spiralling form of muscles...bear witness to the living world of water' (Schwenk 2014: 24) and 'bone has raised a monument in "stone" to the flowing movement from which it originates' (Schwenk 2014: 25). Indeed, for Schwenk it appears as if 'the liquid has "expressed itself" in the bone' (2014: 25). Consequently, the movement described by water flows are evident in the very fabric of matter (Schwenk 2014). Therefore, not only does water take shape, but it also shapes or acts on other materials, meaning that bodies and their vessels reveal an echo of watery patterns in their composition.

As the above hydro-graphic information illustrates, water, just like humanity, is complex, perverse, surprising, magnificent and, most significantly, unrelenting in its intent on making its way around the world. Water's cycle is well established in our minds. We know that water moves from the oceans up into the clouds, which then allows it to rain down onto mountains, flow into rivers and back to the sea, only to start the process again. We are taught that this is what water does, and this cycle is offered as an explanation for how the water gets around the planet. However, the way the cycle is represented typically places its movement at a distance from your flesh. Left out of the picture is the fact that it runs into and through your body as well as the landscape and air. Finding various sized exit holes across the surface of your skin water uses your perambulating flesh to redeploy itself from one location to another. Indeed, if this perspective is pushed to its limit, one could assert that through the use of pipelines, channels, aqueducts, reservoirs and such, (constructed by people to bring water to their lives) water has managed to spread itself into areas it otherwise would not have been able to influence. Water, therefore, when in the form of a human body, has not only constantly re-engaged with water sources, but has actively constructed mechanisms that continually enable water to replenish its supply of itself. Water flows with and as people as much as it does as clouds