The Role of Water in Shaping Futures in Rural Kenya:
Using a New Materialities Approach to Understand the Co-productive Correspondences Between Bodies, Culture and Water.
One Volume

Submitted by Lucienne Attala
to the University of Exeter
as a thesis for the degree of
Doctor of Philosophy in Anthropology,
November 2018.

I certify that all material in this thesis which is not my own work has been identified and that any material that has previously been submitted and approved for the award of a degree by this or any other University has been acknowledged.

Signed: Lucienne Attala

Abstract

Using mixed methods and multiple sites, this thesis reflects on how water acts as a connective material through which socio-cultural, ritual, economic, and ecological relationships are formed and played out. By adopting a New Materialities approach the brute physicality of relationships is drawn into the foreground to illustrate the agency of materials and people as they co-produce each other together. By focusing on water's behaviours, this thesis demonstrates that distinctions typically placed between people and other materials are problematic and consequently require reconsideration. Therefore, in rejection of a human exceptionalist focus, this thesis attempts to level the representational 'playing field' between bodies and water so as to bring water into discourse as multi-species ethnographies have done for other entities.

My research is geographically situated in both rural Wales and an outlying location in the Eastern Coastal Province of Kenya where creeping desertification is increasingly troubling subsistence for a group of Giriama horticultural-pastoralists. It examines the socio-economic, cultural and material consequences of regular piped water flowing into a community that until 2015 relied exclusively on a climatically governed water supply, alongside a series of phenomenological experiences had with water in Wales. I establish the role water plays in co-constructing Giriama authenticity and social life whilst simultaneously producing what can be loosely called an 'ethnography' of water. In combination, this thesis demonstrates how the material behaviours of water reveal it to be an active agent that co-produces the materiality, and the behaviours, of being human.

The Wenner Gren Foundation supported the fieldwork for this research, under the title *The Role of 'New' Water in Shaping and Regulating Futures in Rural Kenya*.

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Giriama Vocabulary

Digo – the sound that the pot carrying the original *fingo* made when it broke

Fingo – a medicine, potion or concoction

Fisi - hyena, name used for the most powerful kinds of oaths

Fu ha mwenga – we are together (or one, *mwenga* is 'one')

Githeri – maize and beans boiled together

Harambee – term to describe community work; pulling together

Hambra – deep fried sweet dough balls; 'doughnut'

Jiko – Stove; '*umpata jiko'* phrase used to describe marriage (trans: you have found a stove)

Kaha – coconut container

Kambi – political group of male elders

Kaya/Makaya – sacred forest site/s

Kibanda – roadside 'hotel'/ cafe

Kikoshoa – one of many foraged leaves eaten as relish with *ugali (*also see*: Logatzi* and

Mutsunga)

Kinolo – banana bread

Kiraho – container or bottle for a water charm/oath, always buried

Kiza/Viza – sacred prayer spot/s; direct translation: darkness

Koma – wooden ancestor figure and shade

Logatzi – one of many foraged leaves eaten as relish with *ugali (*also see*: Kikoshoa* and *Mutsunga)*

Mbono – castor oil seed (used in rain rituals)

Mijikenda or *Midzichenda* – collective term for 9 Bantu tribes in Kenya (*kenda* = 9)

Mitsara – water hole

Mizimu - shrine

Moromi – circle of shade cast by central tree in *kaya*

Mpesa – mobile money system

Mtsai – wizard/thief

Muganga – healer

Mulungu - God

Mutsunga– one of many foraged leaves eaten as relish with *ugali* (maize dish) *(*also see*: Logatzi* and *Kikoshoa)*

Nyari – depression (direct translation: where the land is broken)

Nyungu – clay pot

Pepo/m'pepo – spirit/spirits

Pepo ya muhama – small pox

Piki piki – motorbike; also, *bajaj*

Rafiki - friend

Singwaya/Shungwaya – mythical location of origin for the *Mijkenda*

Shamba – horticultural land plot

Ugali – maize flour cooked into a sticky pat

Unga - flour

Vigango/Kigango – wooden sculpture/s

Viza – see *Kiza*

Acronyms and Abbreviations

AGWA – Alliance for Global Waters

ANT – Actor Network Theory

ASA – Association of Social Anthropologists of the UK and Commonwealth

ASA – American Society of Anthropologists

ASAL – Arid, semi arid land

BGU – Bore Green Umbrella

CCL – Community Carbon Link

ECM – Extra Cellular Matrix

FEWS NET – Famine Early Warning System Network

KNAOR –Kenya National Assembly Official Record

KNBS – Kenya National Bureau of Statistics

Ksh – Kenyan Shillings

MAWASCO – Malindi Water and Sewerage Company

MDG – Millennium Development Goals

MIT – Massachusetts Institute of Technology

NGO – Non-Governmental Organisation

NM – New Materialities

SDG – Sustainable Development Goals

SET – Serial Endosymbiosis Theory

STEM – Science, Technology, Engineering, Mathematics

UNESCO – United Nations Educational, Scientific and Cultural Organisation

UNDP – United Nations Development Programme

UN.org – United Nations Organisation

UN water – United Nations Water

WAG – Welsh Assembly Government

WFP.org – World Food Programme

WWAP – World Water Assessment Programme

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Chapter One

Introduction

> ‘What language do the things of the world speak; how can we come to some understanding with them… In fact, the Earth speaks to us in terms of force, bonds, and interactions, and that suffices to make a contract. In symbiosis, each one of the partners, by law, owes his life to the other under penalty of death.’ (Serres 1992: 12)
>
> ‘There is no such thing as either man [*sic*] or nature… only a process that produces one within the other.’ (Deleuze and Guattari 1980: 2)

Overview

The overarching aim of the thesis is to illustrate the role water plays in shaping human lives. This aim is achieved by focusing on the different relationships a group of Giriama horticultural pastoralists of Boré in rural Kenya have with water. Until 2015, this community have relied exclusively on climatically governed water for their subsistence needs. As a result of the recent installation of a water pipeline, they are now navigating a new kind of water – tap water. This research explores how this ‘new’ water is co-productively reorganising Giriama lives in this region.

This introduction briefly outlines the framework and direction of the thesis. It provides information about the structure of the document and thereby introduces the reader to the direction of travel the discussion will be taking. It also briefly summarises the main topics, the ethnographic examples and contexts alongside the perspective and theoretical approach I am using.

The thesis is the product of mixed method ethnographic fieldwork conducted in the rural district of Boré, Kenya and in Wales over a series of periods varying from three weeks to three months between 2009 and 2018. Participant observation, informal conversations and interviews, brief surveys, activities, photography and video were

used to collect information. In 2009 I established a working relationship with the community in Boré as a result of the series of monitor and evaluation reports commissioned by the Welsh Government as a consequence of funding awarded to the CCL to support this group of farmers (the Community Carbon Link, a UK reforestation NGO based in Wales). Since that initial meeting, regular (almost) annual returns have resulted in the formation of relationships with various members of the community, including a family that I reside with during my stays in the field. My familiarity with this group and fieldsite meant that participants in Boré were initially drawn from the households with which I was already acquainted but expanded using a snowball method. The data collected in Wales emerged from the experiences collected from an undergraduate class entitled '*Interactions with the Environment'* that aimed to explore how bodies and materials engage. The class was first delivered in 2013, but only in 2014 did we turn our collective attentions to water specifically. Each year the class had approximately 20 students who engaged in a number of water activities together in an attempt to listen to water. This does not mean that I have created a compare and contrast thesis that illustrates how water in Wales is understood differently from in Kenya. Engaging with water in Wales resulted from my attempt to explore how one can know water. Being in Wales was not strictly relevant to this, but arose simply due to being employed in Wales. In Kenya I was shown how conceptions of water are shifting together with infrastructural developments. This thesis, therefore, coheres a number of perspectives to provide a multi-sited, materially-focused ethnography of water.

Situating Water in Rural Wales

Wales has the reputation of being a wet country. According to the Met office the Welsh climate provides over 3000mm of rain annually (Metoffice.gov.uk 2018). Compared to other parts of the British Isles this amount is not in fact exceptional. For example, Scotland and parts of the north of England have similar levels of rainfall. However,

Welsh geographical features and the westerly location of the country both support its reputation as a wet country with considerable rain.

Situated on the west coast of the British Isles and surrounded on three sides by seas, Wales is described as having a temperate maritime climate. Temperate maritime climates do not fluctuate between extreme seasonal changes. Thus, climates of this kind are typically mild, cool most of the year, without much variation, and, certainly, in the case of Wales, have a tendency to experience regular rain. The Welsh climate is topographically influenced by the significant amount of upland areas it possesses (Macdonald et al 2010). This is evident in the ancient spine of mountains that run up and down the length of the country. The spine includes three ranges: Snowdonia in the North, the Cambrian Mountains that run north to south close to the coast, and the Brecon Beacons situated towards the border with England in the East. The likelihood of precipitation is raised along with the height of the land above sea level. The chance of rain is higher in Wales on account of the coastal air being forced to rise from sea level into the hills rapidly and abruptly (Macdonald et al 2010). Air rising cools quickly as it ascends, which encourages the moisture in the air to drop as rain.

Figure 1: The Afon Dulas in Lambedr pont Steffan (Lampeter), Ceredigion, Wales (OS 2018)

As with most Welsh locations, Llambedr pont Steffan (Lampeter) has a number of small streams that link to the many rivers that run through the landscape. Most of the research in this document that is concerned with how one might know water involves interactions with the small stream of water that runs through a University of Wales, Trinity Saint David, Lampeter campus. The stream, locally known as the Afon Dulas (River Dulas), emerges from the hills to the north of Lampeter near the small town of Llangybi, and after leaving Lampeter runs into the Afon Teifi, a tidal river that flows out into Saint George's Channel near Cardigan Bay at St Dogmaels. The stream is approximately four metres across at its widest but can slim down to only a metre in places. Despite the amount of water in Wales, the water in this stream rarely increases over a metre in depth.

Situating Water in Rural Kenya

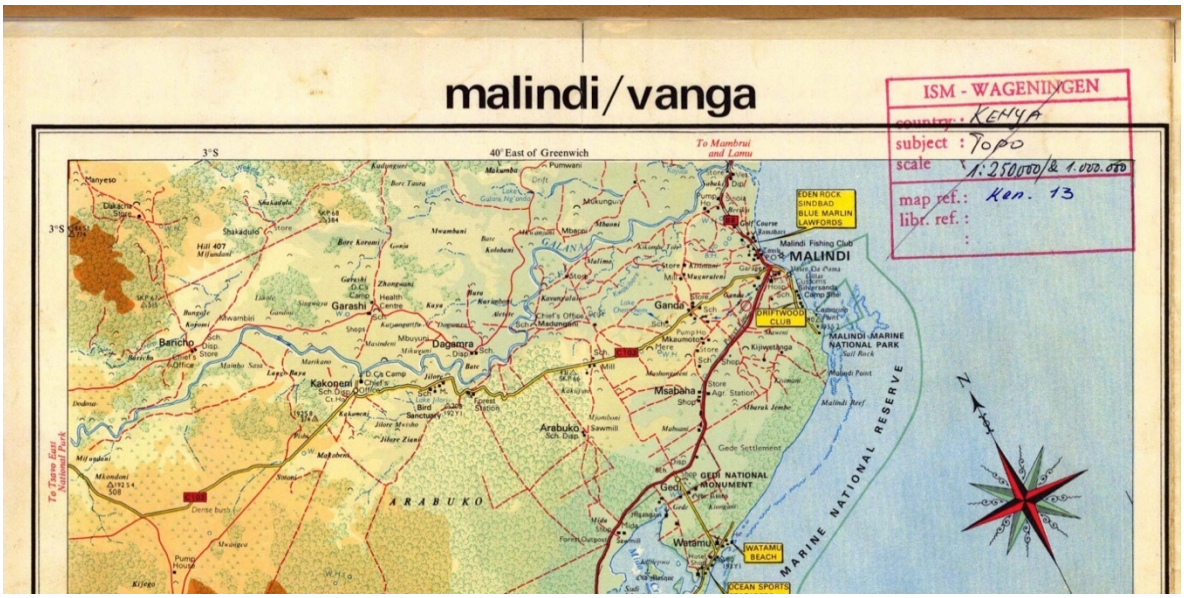

Figure 2: Map of the Kenyan coast, Malindi/Vanga, National Soil Maps (1973)

The scattered village of Boré geographically borders some of the last patches of the tropical forest remaining in this area and straddles a small seasonal river (the Koromi) that feeds into the Sabaki (aka the Galana, see map above) River between Malindi and Mambrui on the coast. My research focused on three of the neighbouring and tribally connected districts of Boré called Gonja, Koromi and Singwaya. Each area carries its own distinct economic flavour based on the environmental and ecological

conditions of the region. For example, the soil in Singwaya is able to support pineapples, Koromi relies heavily on maize and cashews, while the population in Gonja rely predominantly on herding because of the poor soil. For countless years, thousands of Giriama horticultural pastoralists have survived without access to regular piped water with varying levels of success. However, as recent water insecurities deepened, the implementation of piped water directed from a borehole in Baricho approximately 25 km away has been triggered. The piped water arrived as a result of multiple agencies (including World Vision and Action Aid) responding to UN recommendations (UN.org 2015a; and see Afriwater.org 2015 and section: Global Solutions for Local Water Insecurity). In areas where water is periodically – or regularly – scarce, adaptation strategies compel individuals to make every effort to draw sufficient supplies of water into their lives, and, concomitantly, relationships with water have a tendency to preoccupy imaginations and thereby, unsurprisingly, shape lived experience (Derman et al. 2007; Moran 2008). A reliance on earth systems to provide water situates provision as dependent on other-than-human agencies (Descola 2013). When provision mechanisms shift, so too must ontologies about what water is and who controls it (see Fontein 2006 for discussions on the intersections between local and government ideas on development, and 2008 on water specifically, and Descola 2013; Kohn 2015 for wider discussions on ontologies and other-than-human agencies). Consequently, this research attempts, in part, to convey and comment on these realities. Adopting, what I am calling a New Materialities perspective, this thesis also explores water's material role in shaping how people can understand and use it.

Living Without Water in Kenya

The Kenyan farmers this research documents, like others in east Africa, are not strangers to drought (Cassidy 2012; Cooley 2006; Derman et al. 2007); on the contrary, as they inhabit a designated ASAL (arid and semi arid landscape) region where sustained periods with very little water have to be regularly negotiated. As a result, finding water, understanding how water behaves, where it collects, how to accumulate it, how to draw it into one's life and what is necessary to attract it occupies much of Giriama time. Consequently, as with other groups that live in ASAL regions

around the world, water – and, particularly, the practices that produce relationships with water - organizes much of daily life (Moran 2008; Derman et al 2007).

Despite the inherent scarcity of water in this area, the current shifting weather patterns are further challenging the effectiveness of traditional methods of engaging with water for the Giriama in the Coastal Province today. The present deepening periods of drought, possibly produced by the warming of the Indian Ocean as a result of climate change (Funk et al 2014), mean that harvests are poor and subsistence troubled. The fragility of the water system in this area is well recognized (Jacobsen et al 2012; Sadoff et al 2018) but contemporary fluctuations are predicted to impact on subsistence dramatically as the following quotes from global humanitarian organisations illustrate.

> 'Parts of the …coastal marginal agricultural livelihood zones have recently moved to Stressed (IPC Phase 2). Due to poor rains over the last two seasons, and in some instances total crop failure, coupled with reduced labor opportunities, poor households have had to rely on markets for food purchase for most of the year with significantly lower incomes. Only through increased coping mechanisms are households able to meet their minimum food needs.'
> (reliefweb 2016: 2)

> 'According to FEWSNET, dry conditions prevailed over the pastoral areas in January 2018, and only some of the southernmost marginal agricultural areas received scattered rainfall. Overall, Stressed (IPC Phase 2) food security outcomes persist across the majority of pastoral and marginal agricultural areas. … According to the National Drought Management Authority (NDMA), the October to December 2017 short rains were poorly distributed with below normal rainfall in some areas. Consequently, early recovery has been less than anticipated, and not sufficient to sustain households through the hot dry months starting January to end of March 2018. A total of 13 of the 23 ASAL Counties (56%) are experiencing normal drought status, while six counties (Isiolo, Kajiado, Tana River, Garissa, Kilifi and Wajir) are in Alarm drought status showing a worsening trend and are reporting increasing water stress'
> (reliefweb 2018)

Much of Coastal Province is designated ASAL. For an area to be labeled ASAL it is necessary for annual rainfall levels and overall air temperatures to be calculated. Typically, in ASAL regions, air temperatures remain high throughout the year, which encourages the evaporation and transpiration rates of the ground water in the area concerned. This combination of material factors creates very dry, sandy soils with poor water retention capacity, which means the soil is limited in its ability to hold water for any length of time. Soil's ability to hold water is regulated by particle size (Ball 2001).

Larger particles, due to their larger surface area, can retain more water (Ball 2001). Sand has small particles.

89% of Kenya is considered ASAL and 36% of the Kenyan population lives in an ASAL designated region (Ministry of Devolution and Planning 2015). Needless to say, then, the people who live in Boré and the surrounding hinterland have extensive experience of negotiating drought conditions and water insecurity. As a result, they have developed practical and cultural mechanisms to subsist through dry times. Historical documents going back approximately 200 years illustrate that the Giriama have been utterly preoccupied with sourcing water (New 1873; Waaijenberg 1994). Brantley (1981) sees echoes of a Giriama character of resistance in their ability to subsist in this type of terrain. Speaking specifically of their move to Marafa district (10 k from Boré) in the 1830s, she states that the population have consistently suffered from drought and have been resourceful in digging *mitsara* (water holes) and negotiating water consumption during times of stress since then (Brantley 1981). This is further evidenced across the landscape by the many different (now abandoned) water projects - public and private - that offered the architects limited success in their search for water. These include the various derelict bore holes, salinated wells and empty water pans dotted around the fields, all of which functioned temporarily until the water table below ground altered causing the sources to dry up or worse, turn saline. In this regard, these local water projects demonstrate resourcefulness, resilience, adaptability and an abundance of local knowledge with regards to water usage, locating water sources and drawing water to people in times of scarcity.

Living with Water in Kenya

I was told repeatedly that water regularly ‘hides’ and needs to be coaxed out of its hiding places while I was living with the Giriama. This, alongside living in Wales where water is abundantly and seemingly effortlessly available for human consumption, brought relationships with water to the forefront of my thinking. Consequently, what water was doing piqued my interest. Using my knowledge of these two locations prompted me to consider the role water plays in shaping the ways people *can* think

about it.

However, the subject of water as a co-generative material partner arose after some time in Kenya. It emerged in association with (i) the regularly repeated phrase '*fu ha mwenga'* that the group use to organise their social lives and (ii) the manners by which water is daily, ritually and cosmologically used to affirm Giriama authencity. *Fu ha mwenga* is a cultural idiom that articulates notions of community, collectivity and reciprocity. Moreover, its meaning and how water behaves are directly associated. Initially my aim was to simply determine the role a new pipeline of water played in people's lives. However, once I attended to the manners by which water collaborated in producing cultural and individual bodies I became aware of how water regulates people as much as the other way around. In contrast to other perspectives that circulate around human needs for water, I began to realise that not only are water and people physically bound together, but that they become what they are whilst in relationship - by influencing, shaping and reshaping each other. This realisation inspired an unapologetically material methodology to develop – one that focused on the physics of relating substances (attention to how they behave, can be engineered and responded to, and how materials influence and contest the systems designed by people to organise them (for example, dams)) – as a key component to how people can organise themselves. This inter-disciplinary method demonstrates that the ways by which water can be engaged with are predicated as much on what water is and does, as what people imagine they need it for. Thus, relationships with water are not exclusively shaped by human demand, knowledge and intention, but rather result from the complicated set of materio-physical behaviours that play out together when in relationship. Consequently, water's materiality co-productively or co-generatively creates people (and other animals), and therefore is significantly responsible for how lives take their shape. (Similarly, what happens to water results from the impact people have on it – from boreholes to pollution to Climate Change.) This is not simply a situation driven by bodies' physiological needs for water, but instead emerges as a result of how materials *are able* to engage physically with each other. This encouraged me to think further about the assumptions that different methods of engaging with water are rooted in, and provoked me to propose an alternative perspective to approach environmental or material engagements, a brief outline of which follows later.

Consequently, analysis that includes the role water has played in making the Giriama who they are offers a picture of water as an agential partner that moulds the shape of existence in relationship, rather than as a resource for human use. In this case, the fluidity and insecurities of Giriama identity are reflected in the materiality of water (Fontein 2015a and b), and the many ways that water is altering its behaviour reflects the broader set of changes occurring to planetary drivers in the Age of the Anthropocene.

Watery People in Dry Lands

The Giriama are said to have migrated into the eastern strip of Kenyan coastal province (now Kilifi county) approximately 400 years ago due to recurring neighbouring conflicts (Parkin 1991). Their land of origin is still unknown and to some extent remains shrouded in mystery (Brantley 1981; Champion 1967; New 1873; Parkin 1991). A key theme that describes their travels and ability to retain authentic Giriama identities concerns water's ability to dissolve and secrete other substances within it. This point will be explained in more detail later, but, in short, Giriama ritual practitioners used a watery potion that contained their cultural identity to ensure the migrating group retained Giriama-ness on their travels. It was the accidental breaking of the pot that contained the water that has allowed for the Giriama to lay claim to the land they now inhabit, because their identity is literally soaked into and circulates throughout it.

Giriama cosmology places water as the primary material from which life emerges. But it is not simply life affirming. Water is portrayed as a complicated, troubling, dangerous yet vital material. In association, water is not only used to ensure security though consumption and hygiene but emerges as a significant agent in safeguarding the spiritual security and authenticity of cultural identity as well. Accordingly, Giriama culture requires multiple ritual behaviours that rely on activities with water to both keep the social status quo in balance and simultaneously replenish relationships with the substance and each other.

Many of the traditional methods the Giriama employ around water are shaped by its physical behaviours and what water can do to different types of bodies[1]. Giriama conclusions about water have emerged through direct attention to the science of water. Their conclusions therefore hinge on their ability to engage with water combined with its methods of being. Giriama relationships with water are first and foremost quotidian and pragmatic, in that water must simply be collected each day for consumption, but, equally, they are riddled with personal complexities, cultural expectations and cosmological information. For example, local entities called *m'pepo* (a word translated by the Giriama into both 'demons' and 'spirits' in English, but directly translates as 'wind' from Giriama) are able to become, retain, restrict or release water in the environment in a similar way that clouds do. Moreover, *m'pepo*, spend a lot of time in watery, cool places, and are described as able to live in or near water. *M'pepo* are tricky and generally feared; one works to avoid bumping into them on shady roads or around the water basins. They can be helpful to certain people sometimes, but equally they can become agitated, mean and harmful. In connection, the water that they live in (or as) has a tendency to become potentially harmful as a result of the behaviours of these other-than-human entities. Of particular note here is that when water is held contained and stationary for any length of time some Giriama maintain that it attracts problematic *m'pepo* that can cause injury, as the following quote from Alex, my gatekeeper, illustrates: 'Giriama believed water to be life still they believed that stagnant water was shelter to demons' (Alex Katana Mare, August 2015, verbatim transcript from email correspondence).

This reality suggests that the arrival of piped water from another location could impact on cultural beliefs significantly, and therefore would do more than simply bring water to the community. The manner by which piped water arrives at its destination means that it falls ambiguously between being motionless and mobile. That 'demons' 'shelter' in and around water is common Giriama knowledge, which caused me to wonder how piped water might then sit in this ontology? As collecting, containing and holding water from the river basins for any length of time in vessels makes drinking it a potentially

[1] The term 'body' is used in the widest sense and is not exclusively concerned with human bodies but includes other entities such as: plants, the earth/soil, river spaces and non-human animals.

dangerous activity, what would the inflow of tap water do to cultural practices and ideas about water? Prior to the pipeline, the population relied exclusively on the seasonal river basins and the ability of certain practitioners to appeal to the *m'pepo* for their water supply and security. Now that water arrives through different agents, what will this mean for the community's relationships with water and otherthanhuman entities?

The local water basins fill after the rains from the uplands flow down the valley and then sit, cooled, protected, but also stagnating as they deplete from use and evaporation until the next rains follow a few months later. Consternation about, and local knowledge of, water hazards, therefore, is utterly embedded in daily life, but is coupled with a resigned pragmatism that water is a necessity that demands regular engagement. Despite acknowledgment of the risks of engaging with water, people's methods of ensuring security varied dramatically. Esther, for example, is happy about and trusts tap water. Esther is a local pastor and is a well-respected, relatively affluent member of the community. She uses the tap water when she can but also cautioned against storing too much of it because "water gets dirtier with time …[therefore] keeping water is dangerous" (Esther Kombe, July 2016, pers. comm[2].). For Agnes, a woman with a large family to haul water for, using any water other than from the river basin is out of the question. Despite living proximal to the new taps, and also claiming to have the financial ability to buy the water, Agnes only drinks river basin water because "tap water makes me sick" (July 2016, pers. comm.). On the other hand, while Stella finds tap water has a "heavy taste" in comparison to the river water that "tastes like the earth", she is unconcerned about demons in the kiosk water.

> "The problem with still water only applies to places in the river, not really in containers, plus demons can't live in a pipe. They are too big and want to be free – so there is no issue with demons in the tap water."
> (Stella, July 2016, pers. comm.)

Having traditionally relied exclusively on environmental conditions and ritual sacrifice to provide water through rain, the innovation of piped, potable water in this community has allowed the devices and consequences of adaption to this novel acquisition to be

[2] I am using 'date, pers. comm.' to indicate quotes collected during fieldwork.

explored from inception. It has also offered an example of how the materiality of alternative methods reshapes lives. Moreover, as water is being supplied by an agency other than the environment, its inclusion into the community has had the potential to cause tension with other customary practices of water acquisition including rainwater rituals. Rainmaking rituals have remained a regular part of Giriama life for many of the locals, despite numerous developments that chime with modernity taking hold in the community. Rain brings water to the community, falling without judgment or prejudice on all members simultaneously. Therefore, water supplied by the climate acts as an environmental leveler that supports equality of provision regardless of other circumstances. The amount one collects from the river basin or a tap is dependent on personal capabilities that differ from family to family, but rainfall descends on all fields similarly. Collecting water from the river basin is a similar community venture. Multiple women can fill their jerrycans simultaneously and return *en masse* to their homesteads. Piped water, on the other hand, fills one individual's jerrycan at a time, and takes longer for the can to fill as the water emerges from the tap with restricted pressure. This is just one of the differences that means this water not only arrives in new ways but also, through its arrival, is transformed into an ambiguous material that has the potential for dramatically altering perceptions of what water is and how one can engage with it.

Approaching Water and People from a Materialities Perspective

> 'Aldo Leopold's famous dictum to "think like a mountain" was not just a poetic device but a plea to think in terms of the integrity of systems, because we cannot interrupt or replace the complex interrelationship in ecosystems with good results.'
> (Hawken et al 1999:147)

This thesis employs what I am calling a New Materialities perspective. The overarching aim of the perspective is to bring to mind the fundamental materiality of being human by foregrounding the physical (or material) tangles that determine and shape existence (Bennett 2010; Coole and Frost 2010; Iovino and Opperman 2014). This perspective understands that all engagements are rooted in material behaviours and attempts to illustrate how being human is a process of becoming-with matter (Haraway

2016). Therefore, the term ‘materiality’ is not used here to describe objects (as in ‘material culture’) or the economics of production. It is used to encourage thinking that realises being human is not a state divorced from a broader set of material conditions, but rather emerges-with and is (in)formed-by being-with (cf. Haraway 2016) the physics of wider interacting ecologies (Capra 2002).

New Materialities is a relational ontology that uses Barad’s (2003, 2007) accounts of quantum physics and Vedral’s (2012, 2013) explanations of quantum mechanics to propose a perspective that draws attention to how materials at a macro level relate to each other, and the role material behaviours have in the construction of our shared worlds. It takes as foundational the notion that, at its core, ‘being’ is a material event, and using the ideas emerging from modern physics adopts an inter-disciplinary stance to demonstrate how materials influence practice (and vice versa). In addition, it establishes how entities that are in relationship produce and inform themselves in concert rather than in isolation. Thus, it asserts that, as expressions of humanness are profoundly predicated on the physics of materiality, for accuracy, they should not be conceived of as separate or distinct but as dwelling with the world (Ingold 2000). The gap, established by the thinkers of the Enlightenment period, between thought, spirit and material is termed ‘the Cartesian Cut’ by Barad (2003: 815) in view of its origins in the work of 17th century philosopher Rene Descartes whose machinist approach asserted there to be a distinction and a physical separation between materials and the thinker (mind/body dualism) (Descartes 1985). The New Materialities perspective aims to draw the gap together, and in so doing, reconsider the substance of being.

The New Materialities perspective, therefore, also advocates a wider definition of agency. New Materialities, leading on from the notions of Latour’s (1993) actors and actants in Actor Network Theory, recognises the inherent abilities of items to influence, provoke, incite, induce and determine behaviour as a result of what they are *made of* – not just as a result of their existence within a structure or network (Bennett 2010; Coole and Frost 2010; Drazin and Küchler 2015; Witmore 2014) – but as a result of their materiality. This definition of agency draws the material capabilities of substances to our attention. Using this to explore water, its ability to flow, evaporate, stagnate etc., reveals how watery behavioural mechanisms predicate the way that bodies can be bodies. While, following Gell (2013), it might be helpful to assert that an item has

agency simply because it could provoke one to act, this definition tends to leave one playing ‘agency table tennis’, desperately attempting to locate agency within the human and then the object without success. Taking inspiration from Barad’s (2003) theoretical quantum physics, on the other hand, enables agency to be intra-relational: agency lies distributed across the material field and is the factor that produces both interactions and objects to come to form. Thus, it does not lie with the intentions or actions of subjects but is the manner by which substances (or materials) *can* engage with each other.

Therefore, the New Materialities perspective used here takes as its articulating core the truism that all engagement is predicated on the behaviours inherent within the physical flux of substances or matter. In association with what has been outlined above, it is not concerned with how objects influence *per se* but rather attends to the materiality of entities and explores both how the materials that things are comprised of act when in relationship, and what novelties those relationships produce. Key to this perspective is the notion that it is representationally inaccurate and potentially damaging to continue to imagine the world as divided into a hierarchy of distinct, self-interested pieces (Iovino and Opperman 2014). Following the lead of Kohn’s (2013) forms, and in some ways chiming with Ingold’s (2000) notion of dwelling, life presents as a cohered and transforming physical field where lives are embedded and materially dependent on the behaviours of the substances that ultimately fashion them. The New Materialities perspective is inspired by the material implications of the ideas of Barad’s (2003, 2007) theoretical quantum physics and the quantum mechanics of Vedral (2013) over Newtonian physics. Similarly, using Bennett’s (2010) vitality of the physical, it aims to produce a broader materially-inclusive discourse where the materials that things are comprised of are included as active agents that, through *the way that they can relate,* convey and generate novelty (and/or developments).

I will be using the notion of ‘new’ water, in part, to differentiate between the water that has been, and is, environmentally available without financial charge and the water that emerges from the taps at kiosks and that comes with a charge, but primarily because the inhabitants of Boré have not until recently had to engage with water of this type and in this manner before. The water that is piped does not only arrive with a monetary value attached, it is also filtered and treated, and therefore presents as distinct from

river or rainwater. Drawing back to the material theme of the thesis, this 'new' water offers itself almost as an entirely new substance altogether and thus demonstrates how, in this case, the manner by which water now arrives in this community – treated and regulated - has transformed the substance into a different manifestation of 'itself'. This unusual 'new' water demands distinctive relationships with it. Not only because of the economic cost associated with it, but also because to collect it demands altering practice – for example: the use of different paths, queuing for access and the resulting waiting times. Thus, different waters (as they become part of people's lives) have the power to remodel social and individual behaviours through the methods by which people can engage with them. 'New' water (in this case: tap water) in this setting, represents not just an additional method of acquisition but also, in some ways, a novel material altogether to that of traditional water sources such as the river, borehole or rainwater, and consequently embodies a variety of meanings[3] that directly contrast with the other naturally occurring supplies and the practices that circulate around traditional water procurement methods. With regards to the Giriama specifically, conceptions of identity, authenticity and methods of articulating relationships are modeled on, and take inspiration from, the different ways that water behaves. Furthermore, what water does is a constant preoccupation and topic of conversation, and its behaviours predicate how one's days are structured. Equally, people redistribute the water and through being in relationship with the local water sources actively alter water's passage.

As already noted, the theoretical purpose of my work is to reject human exceptionalism in favour of a 'multi-material' perspective in which water and bodies are recognised as interacting materials shaping each other. Thus, through recognition of the co-productive relationship between water and people, this work aims to demonstrate how water compellingly draws people to it and that, as a result of its vital material fundamentality and the concomitant insistence of regular engagement, water emerges as a formative, shaping component of cultural ideas and social lives. Thus, using this ethnographic example, I believe I am able to illustrate materio-cultural entanglements of water and people explicitly, but also propose that through the adoption of a New

[3] See: Blatter and Ingram (2001) and Strang (2004) for 'meanings' of water; Fontein (2006, 2008); Gandy (2014), the intersections between water and infrastructure; Hughes (2006) for examples of water provision in Africa, and Swyngedouw (2015) for the role water plays in producing modernity.

Materialities perspective - that ‘disturbs the conventional’ (Coole and Frost 2010: 10) – I am able to contribute and substantiate a perspective that offers a unifying, dynamic bio-political material paradigm that embeds people within its shifting complexity.

The focus I give to water could be accused of being a representational mechanism or literary or linguistic device that does little more than blot and blur the edges between human bodies and the material world in the text. However, in my defence, the intention is to highlight the complicated material dependences of being human by foregrounding how water and people become-with together (cf. Haraway 2008). And, as Morton (2016) reminds us, it is irrefutably precise and politically potent to promote an appreciation that one *is* a set of shifting materials in a world of matter in the Age of the Anthropocene. When realised in its existential enormity one begins to comprehend that what is done to materials is equally done to oneself, which may be able to support the generation of an alternative ethic to ecological relationships that is rooted in material equality and justice.

Consequently, by foregrounding the materiality of water, people (as assemblages of matter) are shown to blend *into* the landscape. This offers an alternative analytic that positions all of existence (human or otherwise) into a broad field of interacting materials. This perspective not only more accurately represents existence, it helps to grasp the notion of becoming as promoted by various scholars (e.g.: Barad 2003; Bennett 2010; Ingold 2011), and forces the insight that one is never separate from the collisions and productions of the material world in all its manifestations.

As will be shown in more detail later, there is an extensive body of literature that documents and recognizes both the significance of water as a ‘conceptual lubricant’ (Fontein 2008: 755) and the socio-political importance of water management and control (for examples, see: Chen et al 2013; Fishman 2011; Gandy 2014; Helmreich 2009; Palmer 2015; Strang 2004, 2009, 2015; Swyngedouw 2015; Wagner 2013). I intend to push past the work that demonstrates the role water plays in human cultural lives so as to draw water in as a participant and generative agent. Much as non-human animals are considered to enable humans to grasp their humanity (Cassidy 2012; Haraway 2008; Hurn 2012), I maintain so too should materials or substances be recognised for the part they play in crafting what it means to be human. Furthermore,

just as with the animal or multispecies turn, which asserts that other living beings must be acknowledged as social actors and not just as objects through which to better understand ourselves, it is possible for water to be acknowledged as an active subject within a wider complexity of interacting subjectivities. Moreover, to continue to focus on people as separate entities is, quite simply, anthropocentric (Margulis and Sagan 2007) and discriminates against materials. Worse still, this approach encourages the use of materials for economic gain with only cursory consideration for the broader material set of ecological requirements.

Articulating Ethnographies: Giriama and Water

Law and Lien (2013: 10) remind us that, 'realities – objects, animals or people – are multiple…and [where] their realities intersect with one another deserves careful attention'. Following that lead, I intend to demonstrate how Giriama conceptions of, and relationships with, water and what water does are connected and mutually informing. Moreover, as water becomes bodies, some of the intellectual boundaries described around - what are patently not discrete – entities are drawn into question. Therefore, both parties (water and people) are treated as active subjectivities (cf. Neimansis 2018), so as to avoid the tendency to imagine water as an inert substance devoid of the ability to influence or affect, or that people use water without its materiality enacting their lives.

In addition, like people, water manifests in colourful diversity; it has a multitude of behaviours, expressions, and organisational capabilities that alter depending on context and in so doing transform lives. Consequently, how people need water is not considered to be the subject for discussion. On the contrary, water is here in this thesis as a material actor instrumental in the co-creation of people's bodies, routines, meanings and futures. This work, therefore, questions where the division lies between what is water and what constitutes a person. Consequently, with a view to illustrate empirical connectivities, I have created a brief ethnography of water (perhaps is should be a hydro-graphy?) in this thesis for the reader to get to know 'who' water can be. In doing this, I realise that there is a fundamental discomfort in establishing two things

when the intention is to highlight intersections and show how lives are materially tangled. However, I have to work with this discomfort, as language, categories and species boundaries currently insist I communicate in this way. Therefore, having established what water presents - how it wants to move, act, behave - I then go on to show how it moves with and through Giriama lives. As Giriama culture takes inspiration from water-y behaviours, I demonstrate how water's material abilities are instrumental in shaping their choices.

To further complicate and problematise this endeavour, the ethnography of water I offer is *not* an ethnography of how I think the Giriama understand water as might be expected (that comes later). Rather, it concerns the physics of water coupled with my experiences with water. Only after exploring how water behaves, do I explore how water enacts the Giriama, as much as the other way around. Therefore, exercising some of the conundrums represented in Law and Lien's article *Slippery: Fieldnotes in Empirical Ontology* (2013), I have attempted to communicate how relationships and the blurring of subjectivities become each other materially. As Law and Lien (2013: 1, original emphasis) started their enquiry wanting to know what salmon '*is*' I too found my investigations wanting to know what water '*is*'. Following water (rather than people), I began by looking at the physics of materiality (how water behaves through the lens of science) and then, after doing participant observation (literally) sitting with water[4], I considered how relationships are enacted in association with how the materials that comprise entities are able to be together. This led me to give attention to the ways that water and people are inseparably materially co-productive. Consequently, I attend to how water's molecular methods enact water initially, and then draw water and people together later.

Anthropology – traditionally, and by definition – foregrounds people. It does this by firstly describing and analysing the structures of people's lives and secondly through

[4] 'Sitting' with water describes the phenomenological/ participant observation experienced with water at University of Wales Trinity Saint David, where I run a level 4 class called 'Interactions with the Environment' in the Materialities Lab. In that module we engage with water in multiple ways including: sitting in the stream that runs through the campus to sense its force, noise, temperature etc; watching and mapping how water engages with the edges of the riverbank; adding detergent into water to watch how its flow alters (in the Lab); painting with the muddy water; and carrying heavy loads of water to feel how it acts on one's body.

allowing certain people the authority to explain what they think 'other' people are doing. There is much value in doing this, but it also has its limitations some of which concern subjectivity, writing and language (Clifford and Marcus 2010), and more recently perspective and multinaturalism (Viveiros de Castro 1998), the notion of 'what is' (see, for example, overview of the ontological turn(s): Holbraad and Axel Pedersen (2017)) and human privilege (see, for example, the multispecies salon: Kirksey (2014)). The material focus of this thesis hopes to contribute to problematising this human-centric focus as the multi-species ethnographies have done (Kirksey 2014) and present a multi-material ontology. Just as people's relationships with different species shapes them, so too do those with the materials that run through their lives. Consequently, to be able to embrace the materiality of existence, how people *are* material needs to be explored, and perhaps an anthro-materiality needs to be born.

Conclusion

The overarching, original intention of this research was to examine how the arrival of piped water (available for purchase from a series of kiosks) is restructuring Giriama relationships with water. However, in relationship with water, this thesis has been reshaped to allow water a determining place at the table. Time in multiple fields illustrated how relationships with water are not uni-linear but are reciprocally formative, which prompted me to reconsider how to approach material engagement, and acted as the impetus to develop a materially informed anthropology that uses (what I am calling) a New Materialities perspective. Therefore, this thesis demonstrates how water and people are co-creatively determining each other at various scales. As a result, I have decided to offer multiple ethnographies: one of the Giriama, another of water and then one that joins both subjects to demonstrate how they become themselves together. This method allows the material 'cultures' of involved parties to be understood, which (hopefully) works to illustrate how materialities are fundamentally conjoined in practice.

Thus, I am adopting something of a hybrid theoretical framework that cumulatively coheres the intentions of the animal or multispecies turn (Kirksey and Helmreich 2010), with the morethanhuman move (Descola 2013; Kohn 2013, 2015; Whatmore

2002) and to some extent the ideas of posthumanism more generally, to highlight not only that practice is relational but that it emerges *because of the material capabilities of relating agents* (cf. Barad 2003; Bennett 2010; Latour 1993). Hybridity rejects any focus on singularity in favour of the recognition of the complex 'messiness' of the relational multiplicity of engagements – in this case, my research is focused on the material agency of different types of water and the roles they play in regulating cultural practices and the social relationships both between humans, and between humans and the rest of the material world. The purpose of this cohered framework is to contribute to the leveling of the representational playing field following Latour (1993) and Witmore (2014) so as to:

a) reject human exceptionalism as inaccurate and a problematic perspective that perpetuates an illusory separation between materials

and thereby,

b) re-present the importance of re-membering the existential entanglements and blurred boundaries between engaging material entities in a time of global environmental crisis.

Therefore through the adoption of what I am calling a 'New Materialities' perspective, this thesis presents an eco-critical ethical analytic that contests and rejects human exceptionalism in favour of a sensitivity and move towards becoming-with matter. A New Materialities perspective attends to the physical fabric of relationships in a bid to draw the material relationality of being human into clearer focus. It contests the misconception that people are distinct from, and can successfully dominate, the other materials that comprise them and attempts to illustrate that being matter results from a series of co-generative complicated and tangled material influences. This is demonstrated in this thesis by attending to how water and the Giriama reinvent their relationships with each other during a time when, alongside the consequences of climatic changes and the creation of a pipeline of water into the area, previous methods and interactions have altered.

Chapter Two

Methodology and Reflections

This chapter provides a description of the methods I have employed to collect the information to construct this thesis. It gives the reader a small window into who I am and the role that my materiality has played in sculpting the shape of my writing. What is made visible on the page does so at my behest. I am aware of this weighty responsibility and therefore intend for this chapter to allow the reader to grasp the much wider complexity of influences that have been drawn together in this creative 'entanglement' of words.

Before writing this section I took the time to read Malinowski's opening chapter, 'Subject, Method and Scope', in his book *The Argonauts of the Western Pacific* (2002) again. Recalling the assertion that he had made for a 'full searchlight of methodic [*sic*] sincerity' (Malinowski 2002: 2) being necessary in scholarly work, I wanted to remind myself of what he considered was required for an ethnographer to be effective. I was reminded just how influential those early words still are on the discipline. Nearly 100 years on, many of his words are still relevant, which shows how little has changed. Indeed, the fact that I am writing this section can be directly attributed to his calls for anthropology to follow the scientific rigour of other disciplines as we attempt to paint a 'true picture of…life' (Malinowski 2002: 5). However, on reading it I was reminded of what seems to be an inherent insecurity with its validity, an anxiety that has almost plagued the discipline throughout its lifetime (Ingold 1992). Notwithstanding their relevance, Malinowski's words also appear dreadfully dated, intent on producing a very particular type and 'shape' of knowledge that has significantly altered since the time of his writing. Therefore, the following section allows me to join the long, esteemed line of anthropologists that precedes me, those who have bowed down to the requirement for transferable methodology, but also offers a moment to note just how much anthropology has strengthened and developed since the confines of Malinowski's writings.

Introductions

My relationship with the group of farmers in Kenya who are the one of the subjects of this research developed when the then Welsh Assembly Government (WAG, subsequently the Welsh Government WG) requested that I monitor and evaluate the implementation of a solar powered borehole well and storage tank in Kenya, which they had commissioned as a part of the Wales for Africa Links programme in 2009. The WAG had awarded the money to the Community Carbon Link (CCL), a local not-for-profit reforestation initiative that connects the rural community of Lampeter (where I live and work) with a group of Giriama subsistence farmers in Boré, Kenya. The money was requested under the Welsh Government's International Sustainable Development and Wales/Africa Programme in a bid to support the tree seedlings that were struggling to survive in the local nursery as a result of the lack of rain and overall water shortage. The good intentions for reforestation were in danger of being thwarted by changes in the local climate and the CCL was concerned that the project would fail without a local ready water source for the trees. As the farmers received an income – albeit a delayed and small income – from the tree sponsorship scheme the CCL ran, the bid to dig a borehole was positioned as an economic requirement that would support the longevity of the scheme rather than as a physical need for the people; the lack of any water for domestic consumption was overlooked in the bid. Nevertheless, it was clear that any water liberated by the borehole would benefit more than the trees in the nursery.

After my initial introduction to the community in 2009, I have returned regularly to conduct brief spells of fieldwork in Boré, which cumulatively established a working relationship with some of the locals. In the first instance, my aim was to monitor and evaluate the well, but following that I turned my attention to recording local responses to the reforestation initiative, to commenting on the socio-economic consequences of the implementation of the well and recording the efficacy and sustainability of the international 'link' relationship made with the CCL. During these first periods of fieldwork, it became obvious that the creeping desertification and unpredictability of the rains was a cause for concern, not just for the trees but also for the survival or success of the vital harvests and the health of the local population. In 2013-14 the government told the locals that they could expect a pipeline of water in the future. In preparation, and at the request of an American charity that raised the funds for the

system, they joined in digging the trenches in readiness for the pipeline to be laid, which prompted me to attempt to secure research time and funding. Cognisant that the impact of bringing piped water to the community needed to be documented, not just for the account, but as a contribution to the literature that records how potable water is received and assimilated into a small scale traditional culture, I applied for funding to return to the field. In 2016, The Wenner Gren Foundation awarded me their fieldwork dissertation grant for 2 further short trips (one in each season) to the community to explore the social and economic consequences of 'new' water after the pipeline and kiosks had been constructed and the water system implemented in 2015.

The other subject of this research is water and my relationship with water has been a lifelong affair. However, conscious participation and observation of water has only been more recent and emerged from a tangle of relationships, correspondences and associations that developed through being with the Giriama in drought conditions where I felt the physiological need and urgency for water in a way that I had previously only intellectualised. Through living with the Giriama, I was almost forced to reassess what water was. This acted as the catalyst for me to reconsider the agency of substances, how they can be represented as inert or agential, are sidestepped as mere incidentals to humanity, or held as kin or friends (see Bird David and Naveh (2008: 61) for an example of Nayaka stone friends), or are materially formative, constantly recycled through people's bodies either consciously or unconsciously (Lamb 2000 and see Strathern's notion of the dividual (1988, 1999). From a chemical or 'scientific' perspective, water is defined as a liquid substance with particular properties within a wider schema of materials. On account of my upbringing and education, my understanding of water was confined through this lens. However, for the Giriama, water while also understood as a necessary liquid substance, also has other abilities than those prescribed by science. Rather than making a clear distinction between people and water, or by focusing on how people use water, the Giriama realise and utlise multiple methods that link water to how to be, and being, human. Moreover, water's multiple material methods communicate with people, and they communicate back to water. As an anthropologist the conflicting ideas of what water is and can do contributed to my curiosity around what water might be and how people's ideas about water impact on how they can engage with it.

Who am I?

I was born in Zambia to a German mother and a Lebanese father. Soon after my birth my father managed to ‘naturalise’ both my sister and myself so that we could obtain British citizenship. Despite being officially British, I consider myself partly African due to most of my childhood being spent in multiple African countries. My childhood was privileged. Primarily spent running around exploring the so-called wildness and swimming or playing with water. My parents separated when I was three and my sister five. This left us with our father in Africa, parented by the staff he employed while he ran his business. This afforded us children many freedoms and fun with water in the swimming pool in our garden. I am not a great water drinker. I prefer to get into water. Water holds the bodies that get into it without prejudice. The relaxation possible from floating in water has its own flavour. But water is not just passive, it is also playful and allows so many games to be played with it. As I have got older however it is the quietness that going deep under it creates that attracts me. Just like the crisp silence that befalls a town waking up to a heavy fall of snow overnight, going under the water cuts out the surrounding sounds otherwise jarringly audible. I have always felt bonded with water – telling people, including my children that, ‘water is a friend’, until an event, which occurred in Bali at the end of 2014, that made me think again.

As a result of a connection with a local Balinese person, I was shown a ‘secret’ beach that most tourists were unaware of. It formed a tiny idyllic bay of white sands, palm trees and a small group of fisher people and their colourful wooden houses and sail boats. I spent a wonderful day on that beach with my son. The sea was playful and we frolicked without a care. Realising that time was pushing on and that we should leave shortly, we decided to take a last swim before setting off. We swam out together, feeling the sea change temperature and colour as we moved away from the land, exhilarated by the mass of the water below us. At a certain point I decided it was time to return to the shore and shouted for my boy to turn round with me. It wasn’t long before I realised that the sea was restricting our passage. We were progressing but it was difficult. My son, not a strong swimmer, was struggling to keep up. It was not much longer after that that I realised we were in trouble. Suddenly the water had altered from

a soft body breathing its form rising and falling with its rhythm to being choppy, slapping and swirling. My boy was being pulled away from me and I could no longer reach him. I started gesticulating and shouting out to the shore in the hope of attracting help as the water shaped itself into a rapid series of dark dominating 12 foot high waves pulling us up high and dropping us sharply again and again breaking. I shouted at my son 'I think we're in trouble', felt my legs heavy and incapable of moving and disappeared into the water as it forced me over and over again until I hit into something. That something was a local fisherman who, like a harpoon in the water, had shot out towards me and dragged me out on to the shore. Similarly, my son was pulled out from the water. Shocked, water poured out of us. We vomited water, it poured out of our ears and noses, as if it had explored us internally. I asked a local "what happened?' wondering why the sea had changed so dramatically and so rapidly. 'Ah, it does that sometimes' he said 'You have to be careful with the sea'. My son had different questions and answers. 'Why is the sea angry with us?' he asked. 'The water seems angry.'

The water's ability to shift from benign to hazardous seemed almost immediate and without warning, the unpredictability and my powerlessness to counter its demands engendered penetrating insecurity and fear to live with me for some time after the event. The emotional intensity felt as if it had soaked itself into my flesh and through lingering there insisted that I think it through to assimilate it. Of significance for me was that water had never been terrifying to me. This was an aspect of water's behaviour that I had not experienced to date, and the alarming change in character reverberated through me; it was as if part of my worldview had shifted. It felt significant. In a similar way to the artist Peter Matthews who thought the water was communicating with him after being hit by a rogue wave while swimming near Mexico in 2007, I also felt there was a message from water to be understood. Matthews now paints *in* and with the sea as a result of his terrifying near death watery encounter and the art he now produces is co-created with the water as it engages and alters his canvas while he bobs about painting in it (Petermatthews.org n.d). I too needed to listen to the event.

Later it was explained that the traffic of heavy tankers, cargo and container vessels that regularly sail through the relatively tight stretch of water between Indonesia and Australia, moving commodities from Asia and the Americas to India and into Europe

impact on the behaviour of the water nearer the shore of that beach. Knowing this made sense of the occasion, but felt incomplete because of the emotionally charged memories I held. The more interesting learning came from feeling the force of the water, which transformed from an idea of water and into a bodily knowledge of what water can do. In addition to the magnitude of water, its ability to affect and transform brought a field of material collisions into my view. When approached this way, the situation played out as a demonstration of the physical connectedness of existence; because activities on the other side of the globe had manifest in the material fabric of the water I was swimming in. This was like my own personal 'butterfly effect' in action, that through phenomenological embodiment it allowed me to feel my physical association with the global practices of transport and delivery, and the consumption choices of strangers. Thus, the distance between my experience and the consumers awaiting the delivery of their purchase reduced as an environmental consequence was made 'visible' for inspection. If the entities of this example are looked at in separation, it appears as if things 'bump' into each other, causing changes through the processes of cause and effect. Looked at through this lens, what happened to me was just a coincidental physical by-product of a number of impacting factors. Wrong place, wrong time. However, that perspective inadequately explained my experience. That explanation felt like a layer over the corporeality I had undergone. I felt insignificant and depowered; that explanation seemed to skim over the surface of the water and failed to get below, as it were, into the very materiality of what was happening. I felt I had experienced a unifying enactment or performance of what is materially happening all the time at all levels.

The water had not only physically moved me, but also it was moved. It also literally enveloped me so that there was no space between us, and then it flowed into and through my flesh as if encouraging me to feel it fully. I was temporarily one with the ocean and, as a result, I thought-with the water, which demanded I also think about it. Consequently, the event helped me to grasp the genuine material lack of space between entities, and therefore comprehend almost visualise the material connections that are constantly articulating actions. As I was already attempting to understand

water through the activities in my undergraduate classes, this event assumed another significance[5].

Not only did this feel like an important message that prior to this event was harder for me to phenomenologically and intellectually appreciate, but I also felt that water had communicated with me. This is not to suggest that water as an entity talked to me, but rather to suggest that in relationship with what water does, being-with water had reshaped the way I understood it (and how I perceived being/existence). Water taught me an enormously potent lesson that day.

Thus, I think it is possible to make the claim that, 'the subject chose me'. Because, through a complicated series of kaleidoscopic events articulated through the materials that comprise my body, this document has developed in the precise shape that it has become.

Data: Intentions and Realities

As a result of my familiarity with the Giriama and the fieldsite in Boré, the participants in the Kenyan arm of this research were initially drawn from the households with which I was already acquainted. Other households, that I had had only minimal contact with, were recruited using an informal 'snowball' method. This was enabled through attendance at community gatherings, for example after Sunday church and at the regular public meetings held in the central gathering point with the Chief and local elders. I conducted participant observation throughout and in all situations.

In association with my aims and 'training', this research relied primarily on qualitative, informally collected data acquired through the processes of being-with people: partaking in open-ended converstations; talking, watching and listening while working in the fields, collecting water, cooking, and conversing in impromptu meetings and discussions after eating in the evenings. However, it is also supported by some

[5] The activities of this class are covered in more detail later.

quantitative information, which I have used to underline the qualitative data that communicate the ideas within this thesis. Attending to quanities demonstrates some of the physical realities of an increased, secure and regulated water supply numerically. The type of data collected concerned weight, volume, usage, cost and physical (or material) consequences (such as for example, where one washes and what water is drunk) in association with the standpipe. Additionally, time spent at the standpipe helped me to show who is economically afforded access to this water, how this is accomplished, by whom and why. Quantitative data therefore allowed for certain comparisons to be made and attention to the measurements contributed to my ability to determine how flows of water have altered since the inception of the standpipe. Thus, attention to all aspects of water intensive activities such as: collection, transportation, daily amounts used and stored, rationale for use, alongside the number of persons (and their sex) involved in water based activities was sought. This information allowed me to determine each family's time commitment to water, and compare it with periods dedicated to water prior to the tap water being available. That type of quantitive data is not represesented in this document other than incidentally because my intention is to let the voices speak louder than numbers[6]. Consequently, the collation of qualitative data was used to reveal how engagements with, and conceptions of, water are produced and consumed as a result of this new kind of water; the gathering of quantitative data allowed me to grasp some basic metrics of water relationships, including comparing how much time is dedicated to collection and the usage of different waters (piped versus climatic). Both approaches have been used together to explore the materiality of engagements with water and how materiality disturbs the relationships with water in this setting.

As the collection of water is traditionally a domain of women and their children, most of my time was occupied with these social groups. However, access to water in kiosks

[6] This is because I want to offer an account that focuses on lived experiences rather than the economic abstractions that numbers can be used to produce. Quanitities can often be used to validate actions and support conclusions, as if to suggest that they more effectively represent the heart or the core of a situation. However, in this case, substantiating my points with numbers produces Giriama relationships with water through an economic lens. This, I believe, fails to adequately communicate how people and water live together in this region, and as this document will show, places water as a resource rather than co-constituent partner – something the NM aims to avoid. On the other hand, using numbers to quanitify amounts should not be fully discounted and was used as a rather clumsy starting point for understanding water relationships, hence my mention of them.

is predominantly managed, regulated and occasionally restricted by those men who are economically able and also hold status in the community. Consequently, I also collected data on how this inequality is negotiated by a range of community members, particularly the conceptions of the women who carry the weight of farming and homestead responsibilities when the men do not. Data acquisition was almost always achieved informally through conversation whilst being with the women while they completed their chores, and with the men during meals or other places where we met, but a very brief survey of water practices was completed in the intial stages to get a sense of the energy people committed to water haulage. In order to answer my questions regarding how new waters enhance, contest or blend with traditional ritual methodologies for water acquisition, unstructured interviews with elders and ritual practitioners were also necessary. However, time in the field and word of mouth concerning my presence and requirements subsequently brought other people to 'my door' with stories or requests for me to visit their homes and record their lives.

In my research proposal I stated that I intended to record conversations where appropriate so as to isolate key themes and draw out references that may have connections to broader cultural themes concerning water. This was an example of a laudible but unrealistic, ill concieved intention that needed revision when in the field. Limited initially by a phone with a restricted amount of storage space on it, I was forced to make a choice between pictures and videos early on. Because of the enormous amount of digital space videos can occupy, and the inability to store to 'the cloud' whilst in Boré, I was obliged to restrict my videoing. This caused a further problem because it becomes difficult to predict what constituted a moment 'worth' videoing and what did not, before the event (Pink 2004). This was remedied subsequently on my second visit through the purchase of a new phone with extra space and an external hard drive.

There were, however, further concerns about recording. Recording demanded a request and agreement to record by all parties. As people's lives spill into each others in Boré it was sometimes difficult to acquire consent from each person each time. Furthermore, as so many other anthropologists, I felt recording set up a kind of artificality in conversation, which I believe made people feel self-conscious, and inhibited the flow and informality people are more comfortable with (e.g.: Ellen 1984;

Hammersley and Atkinson 2003). Consequently, I relied on what is currently considered to be a more sensory understanding of 'the endless unfolding of everyday life' (Pink 2004: 5; Pink 2015). I recorded songs and some traditional stories, when appropriate, but other than a few situations (such as, community meetings) I avoided recording entire conversations in favour of relying on traditional methods of simply taking notes in the moment and writing up later.

Time in the Field

The Wenner Gren Foundation funded 2 periods of fieldwork; the first occurred during the dry season from mid July through to the end of Sept 2016, the second took place in the anticipated rainy season starting from the beginning of April through to the end of May 2017. The funding was awarded to pay for the travel and subsistence needed to examine the consequences of the regular piped water. It did not buy me out of my employment, which meant that I was restricted to the amount of time I could take out of my work at any one time. Therefore, opting for multiple shorter trips arose because of the restrictions of my personal commitments, including my employment and my child's education and represents a realistic structure for a working mother. After negotiation with my employer whereby it was arranged that I would continue working at a distance while in the field[7], and with the local school (securing a similar deal for my son) I managed to fix times that impacted on both areas insignificantly and with the use of holiday allowance with my employer enabled the trips to be viable. In addition, 2 shorter trips of approximately 10 weeks each allowed me to be in the village over different seasonal times – ostensibly to be one wet and one dry season. Having to come and go did not end the communication between the community and myself. Between visits email, Facebook and WhatsApp correspondence with videos, photos and updates on latest events continued regularly.

As I came and went from 'the fields' (both in Kenya and with my classes) multiple times

[7] As a lecturer in an HE institution in Wales, it was agreed that I could continue to mark, correspond and even tutor at a distance. This was achieved by a weekly visit to the nearest large town where the Internet could be successfully accessed.

over the years, one might consider this constitutes multi-sited fieldwork as outlined by Marcus (1995). However, there are different ways to understand the term 'multi-sited fieldwork'. It can be conceived of as a global approach to qualitative research methods and ethnography that maps flows and relies on 'spatial de-centredness' (Falzon 2009: 2) to draw multiple sites into discussion (Hannerz 2003). But, equally it can be understood as a method that challenges the need for extended time in the field and allows for multiple methods to be used. Guterson (1997: 116) called the latter a method of 'polymorphous engagement', in which he includes the use of virtual spaces as research sites[8]. While all understandings assert that different methods produce robust data, it seems to me that the term 'multi-sited', as it is typically used, refers to the researcher's location. 'Multi-sited', therefore, suggests that I researched different sites rather than the research continuing regardless of my location or the geographical location changing. Researching into how a material behaves falls problematically between two stools here. Therefore, while my work can be positioned as multi-sited fieldwork (Marcus 1995), I would contend this research was more multi-methodological, and, adopting Guterson's (1997) term, polymorphous because the 'site' remained the same (i.e.: water), I just moved around.

In association with my impacting life commitments (a full time employee, single parent and part time student), each of my visits to Boré has been restricted in length but cumulatively over the years I have managed to spend between 9 and 10 months in Kenya. In the past, extended periods of time in the field were advocated following Malinowski's recommendations, which resulted from his fieldwork experience in the Trobriand Islands (2002); certainly, extended time in the field is well established as the discipline's cornerstone and 'methodological norm' (Agar 1996; Carroll and Mesman 2011: 164). Protracted time doing fieldwork is typically espoused as the mechanism that supports the 'proper conditions' (Malinowski 2002: 6) for validity, where 'sporadic plunging' (Malinowski 2002: 6) into the culture cannot. In connection with the assumption that a comprehensive knowledge of culture can only be known after time has passed, countless anthropology students have been troubled by their inability to devote enough time to being in the field. On the other hand, some areas of

[8] Digital communities are now regular field sites with much written about how to do digital ethnography (e.g.: Horst and Miller 2012; Pink et al 2016).

current thinking (in recognition of shifting lifestyles and contemporary temporal constraints, such as those described in my life) contend that a variety of lengths of time in the field are as equally valid, appropriate and therefore satisfactory depending on the type of project and research questions one is asking (Carroll and Mesman 2011; Hammersley 2006).

The amount of time one needs in the field needs to correspond with the information sought. That is, it is expected to be sufficient to obtain enough information to answer the questions posed in the research proposal. Therefore, one or two months in the field may well be plenty. Equally, it has been argued that immersion does not necessarily result from concerted time but emerges from the attitude of the researcher and their commitment to the field when there (Hammersley 2006). On the one hand, I agree that the researcher's attitude shapes their practice; on another, I would have to assert that something changes in one's understanding of daily life after time passes. This may seem like a contradiction of the point I am attempting to express here but needs to be taken in the spirit of acknowledging the relevance of time for anthropology specifically. Less than a month certainly allows one time to collect very pointed data, and begin to grasp the way people go about their days, but more time than that allows one to embed into the community and one's presence to normalise. In so doing, it seems to lift the veil of difference that initially formulates the relationship. The sense of being an outsider is never taken away fully but it is replaced with a sense of the ordinary and a feeling of assimilation as the outsider. Subsequently, I have to acknowledge that time does appear to allow various correspondences to pop up into view that are not otherwise visible; it was only after longer periods that I started to feel I had a grasp on the nuances and cultural relevance of what Malinowski might term 'the imponderabilia of actual life' (2002:18).

Ethnography or Not Ethnography?

In writing a section on methodology in an anthropological thesis, one is expected to state that one completed ethnographic fieldwork to accumulate data. I am cautious to do so as the following will explain.

What constitutes a suitable amount of time in the field is not the only keystone of anthropological method that has been queried and reviewed by the discipline. After withstanding many years of spreading in popularity and use, and with a relatively uncontested reign of influence across the social sciences as an effective research method, the value of producing ethnography is also now in the process of being challenged in some quarters. Ingold (2014), for example, reminds anthropologists that the discipline should not imagine that writing ethnographies forms the heart of the field but rather, that through the method of participant observation, experiential information allows anthropologists to centre themselves on exploring what it means to be human. Thus, anthropology for Ingold is not the endlessly descriptive record of cultures for comparison (as is sometimes peddled), but rather is a method of producing knowledge together through consciously being with people. Moreover, he boldly asserts that a blinkered emphasis on ethnography is forcing anthropology into a 'spiralling descent into irrelevance' (Ingold 2014: 384), and in a spirit of protest against the methodological restrictions he sees as strangling anthropology, he establishes that the discipline needs to remember that it is 'long-term and open-ended commitment, generous attentiveness, relational depth, and sensitivity to context' (2014: 384) that defines its method. Chiming with his own words written in 1992, he reminds us that he still thinks anthropology is:

> '"Philosophy with the people in": an enterprise energized by the tension between speculative inquiry into what life *could* be like and a knowledge, rooted in practical experience, of what life *is* like for people of particular times and places (Ingold 1992: 696).'
> (Ingold 2014: 393)

And I am inclined to agree. Consequently, my work here is informed (has taken shape) with the information that inspired me to think harder about how being human is a material affair. I maintain that my time with the Giriama farmers in Boré afforded me an alternative, even novel, perspective on how to know about water specifically but also, how to know about and engage with materials generally as a result. In opening to different perspectives one sees the world afresh (See Bernard 2007 for a dramatic example of this). Therefore the farmers I spent time with supported, even encouraged me, to see the world through new eyes. This not only required me to compare and

contrast how I understood water with their understandings of the material, but also opened the door and ignited fresh methods of perception that encouraged me to engage in 'speculative inquiry into what life *could* be like' (Ingold 2014: 393).

On the other hand, taking inspiration from West (2007) I am aware that I have gone some way to being an ethnographic sorcerer in the crafting of this thesis, in that through writing I am remaking the Giriama, water and myself as much as the other way around. To extend West's ideas (2007), I also draw water as shaping agent into the 'dream'.

Language and Translation

Recognising the importance of language for effective communication I began lessons in Kiswahili after my first trip because of my assumption that it would be the language I needed to know. Most Kenyans speak English and Kiswahili so I assumed knowledge of Kiswahili would be valuable. However, I was mistaken. While Kenya is a multi-lingual country, I was naïve to underestimate the significance of the many other tongues used by the many different ethnic groups living there. According to Simons and Fennig (2014) Kenyans use 68 different languages as a result of the many different ethnic groups held within its borders. The Giriama language (Kigiriama) has clear and direct links to Kiswahili but is also both grammatically and terminologically regularly quite distinct and unique. Unfortunately, many of the words (possibly because of conjoined roots) sound similar, and some of those similar sounding words are used quite differently. For example, tree in Kiswahili is *mti* while in Kigiriama it is *m'hi* (said through the nose); the word for 'man' in Kiswahili is *mtu* while in Kigiriama *m'tu* is used to denote one's state of being and *mulume* is man or husband. Similarly, the word for child in Kiswahili (*m'toto*) means safety in Kigiriama and the word child in Kigiriama (*muhoho*) has absolutely no meaning in Kiswahili. The word 'here' in Kiswahili is *hapa*, in Kigirama it is *haha* or *kuku. Kuku* in Kiswahli is chicken; chickens have eight different names in Kigiriama dependent on their body size or stage of development. The stock Kiswahili phrase, 'piga picha?' ('Can I take a picture?'), as used by tourists across Kenya, unfortunately translates as a jumbled phrase

suggesting a desire to beat, hit or strike. I could go on. This initially caused much puzzlement and confusion on both sides. My assumption was the problem, as I had not thoughtfully considered the possibility of other languages for other ethnic groups. My initial contact and gatekeeper, Andrew, a white Kenyan, spoke only Kiswahili when in Boré, and made no mention of Kigiriama. Watching him speak to the community on my first visit, I was unaware of how only a very few of the locals he was talking to actually understood him. I sensed that often conversations felt flat but was unsure if I was imagining it. He told me that it was because the locals were mistrustful. I now know this is not the case. They simply couldn't understand him.

As a result of this early error on my part, initial conversations regularly faltered – particularly with the women, children and elderly who were not able to understand me. This meant that in the first instance, when I spoke to certain groups or individuals I was misunderstood and, equally, I stumbled in conversation and confidence as I found that I could not understand them. While with some people, perhaps those who had spent time on the coast and in more urban settings, I was able to just about get along, with significant numbers of people I was unable to communicate effectively. It was only with a bit of time that I realised we were talking different languages altogether and put my Kiswahili app to the side in favour of a notebook with my own peculiar phonetic attempt at writing Kigiriama words. Therefore, it was my rudimentary knowledge of Kiswahili and my failure to realise that I was talking a different language that problematized my ability to communicate in the early days.

Finding a Giriama dictionary proved problematic but eventually I managed to locate one that the Rev. W. E. Taylor, a missionary writing for The Society for Promoting Christian Knowledge, had complied in 1891. However, while the book is undoubtedly helpful, simply being with the children was probably where I learnt the most – mainly as a result of them hooting with laughter at me and my inabilities.

My flawed assumption about the language was not the reason that I was finally compelled me to accept a translator. On the one hand, it is true that I did experience difficulties in learning the language because of the short amount of time allocated to each visit, however, it was finally the local taboos about misfortune that demanded I had a Giriama companion with me (during times when away from my homebase) that

clinched the deal. Custom attributes unexpected misfortunes that might befall a family group or individual to the powers that strangers can exert even unknowingly when accessing areas without the permission that comes from being considered kin. The extensive local family that I was staying with were concerned that to ensure safe passage and avoid any accusations of creating misfortune, I needed a chaperon. Obviously, I acquiesced. During my stays I had 2 young women (Mercy and Pendo) working with me depending on their availability (and 2 stand-ins when both had other commitments). All Giriama, they afforded me safe access to all areas and both proficient in English, Kiswahili and Kigiriama meant that confusions and problems of non-Giriama travelling into homesteads were dealt with, along with the multiple communication issues that presented regularly. Both Mercy and Pendo became more than work colleagues as a result of the extraordinary experiences we shared together. I consider them both good friends and am still in contact with both of them using WhatsApp. I know that I am utterly in their debt for the amount they taught me and their endless tolerance of what often turned out to often be shamefully ridiculous questions.

Mercy Katana, a local to the nearest substantial town of Marafa, was from a family of well-respected schoolteachers. When I met her she was between jobs. Her employment as a lab assistant on a project exploring resistances to malaria had come to an end and she was in a hiatus before moving on to training teachers – work that came through her father's connections. Unlike many of the women in Boré, Mercy had aspirations and a sense of possibility about her life. As a result she presented with a certain type of confidence that many women from Boré did not exhibit. Furthermore, and perhaps in consequence, she is an effortless communicator and helped enormously to smooth my entrance into group meetings, and allow the community in the widest sense to accept me. Her explanation of the etiquette and significance of Giriama greetings not only humbled me but also enabled me to get my first genuine glimpse into how to be Giriama, and how these small almost imperceptible social behaviours construct and connect cultural structures. I am ashamed to admit that I assumed it was acceptable to simply introduce myself to people as one might in Europe. Without realising it, and imagining that I was being polite, I was, in fact, coming over as domineering and brutish – something that uncomfortably linked my performance back to the unfortunate colonial past of the British administration in

Kenya, and something that I imagined I was avoiding. As an outsider, it is customary to work slowly towards establishing connections through one's identity rather than assert who one is when greeting. To take the lead and say who I am before enacting the cultural protocols meant that I automatically adopted an elevated position of status in the hierarchy. By doing this I structured how we could then communicate further, and without me realising it, would constrain the relationship and inhibit other people's freedom to engage. Mercy reminded me of this endlessly but in the moment I inevitably forgot. Finally, probably exasperated, she stepped in, took the lead and forbade me from initiating introductions until I learnt. Thanks to Mercy, my lesson was sharp and lasting, and obliged me to reconsider the role I found myself to automatically be playing.

Pendo Peninah Ngumbao, the daughter of a local pastor and ex headmaster, was also from another nearby town, called Garashi. Pendo, like Mercy, was also more privileged than many of the people in the families we were to meet together. Staunchly political and concerned with gender issues, Pendo had been working with the Bill and Melinda Gates Foundation to record the levels of malnutrition in the area and previously had worked educating girls about sexual health and contraception. After spending time in deeply rural homes, on some occasions Pendo overtly expressed concerns that she felt that the traditional customs were holding women back. There were some situations when I felt that Pendo's position got in the way of 'anthropology'. Her aim was to educate and instigate change using a Euro-American model, where mine was to record and understand in the first instance. This meant that sometimes she would be concerned about what looked like my ineffectiveness and she puzzled at my qualitative, ethnographic methods because she was used to accumulating data using quantitative methods.

As well as being concerned with progress, Pendo was also deeply Christian – a combination that meant some of the activities I engaged with troubled her intensely. During the time I spent with Pendo some locals called me to attend a series of witchcraft possession rituals that were being performed by a troupe of young men who were somewhat mistrusted, and considered potentially dangerous. I also spent a further proportion of my time with the local elderly ritual practitioners learning about their methods, medicine ingredients and ideas about rain-making. Pendo was very

concerned for my welfare during these times and worked tirelessly to ensure that the spirits that I was working alongside did not possess me. Coming from a family headed by a respected religious leader, Pendo tried to convert me to Christianity to ensure my protection. She maintained without doubt that evil spirits could possess people and that one's safety relied on Jesus Christ. I do not feel this way. The fact that we felt so differently about traditional beliefs liberated a significant amount of information about how these ideas are meaningful, are held, change and perform Giriama culture. Pendo's honesty and braveness remains inspirational to me, as she sat alongside me despite her genuine fears for our safety. Despite any power dynamics that could have been placed between us, she remained utterly faithful to her beliefs throughout and as a result taught me an enormous amount about integrity. Saying that, there were times when I felt that Pendo inhibited the 'flow' as I saw it. There were times when she refused to let me do what I wanted to do, and stopped rituals midsession as a result. The domination of her Christianity felt like a dreadful imposition on her traditional heritage but on the other hand, she was simply acting as she saw to be right. Furthermore, it was interesting to see how the traditional practitioners in this environment prefer to concede to their methods being inhibited by Christianity than fight for them – a stance that seemed to suggest Christian beliefs, and the actions of history in the name of Christianity, have indeed defeated their courage to rehearse their spiritual traditions.

Being an anthropologist can produce a tension between one's integrity and acquiescing to other ways in the name of understanding other cultures. From vegans considering eating meat to participation in activities otherwise considered counter to one's principles, even violent (see Hurn (2013) and Herdt (1987)), this kind of conundrum is well documented in the literature. After a point I realised that there was a part of me that elevated '*the* research', almost uncoupling it from the people producing it, which propelled me to imagine that it took precedence over other concerns. After all, I rationalised to myself, I had a time limit and needed to know things, and I did not want Pendo's fears to inhibit progress and impact on what the research needed to know. Thankfully it didn't take long for me to realise that it was the way I held on to the notion of 'being an anthropologist' and the spurious driver of 'doing research' that functioned as an imperious power trip that was the problem. From the process of sharing time and multiple experiences, Pendo, despite our, at times,

enormous differences, was primarily a friend to me - rather than a translator, chaperon, or even participant or informant. Consequently, when I stopped trying to perform the identity of anthropologist and hinge importance on the idea that I was engaged in research, things altered dramatically and instead of feeling frustrated with a lack of progress, uncontrolled circumstances began to flow to me. Mindful of Ingold's (2014) call for learning-with not about, and that anthropology is not ethnology but simply uses ethnographic information accumulated through participant observation, I began to (perhaps for the first time) learn-with Pendo and the others, not about them. As a result, it became easier to do things for her rather than imagine that every moment of mine should be primarily occupied with activities that supported my data acquisition requirements. I was also able to fully acknowledge despite this being work it was unreasonable for me to expect her to attend rituals that caused fundamental friction to her beliefs. After discussion, we came to a reciprocal agreement that if she attended the rituals, I would go to her father's church with her each Sunday.

Clearly, then, Pendo taught me a lot. She reflected back an image of my self-importance that was uncomfortable to see. It is easy to be dazzled by the notion of 'doing research' and adopt an identity that demands elevation in a fictitious invisible hierarchy. Luckily Pendo was not having any of it. Obviously, as with Mercy, I am also irrefutably in her debt. It is hard to know what different learning I would have received if I had not had Pendo with me, but one thing is certain, that I more fully understand how to do anthropology and be an anthropologist than before I met her.

Other than Mercy and Pendo, Alex was also a constant companion and source of amusement and information during fieldwork. The house I lived in was built on Alex's family land. A two roomed structure without internal doors, modelled on local designs offered my son and myself a sleeping section and a cooking/eating/living section. The Giriama use their houses for sleep and storage. Some cook inside when it rains but cooking is mostly performed outside on a shared wood fire that the women feed. Not wanting to be occupied with sourcing wood, I cooked on a gas ring that I bought at the coast, much to the puzzlement of the locals. We did however have to collect our water. Alex now uses my house as his office. Alex is the CCL project coordinator in Boré and speaks excellent English. Alex made it his business to ensure that I was always working – as he explained, men think and women do the work. Thus he felt it his role

to make sure that I had jobs to complete each day. This could mean weeding or planting his fields with the other women in the family or taking me out on wild adventures to find sacred sites or meet local characters. I could write a series of books called 'Adventures with Alex' because of the amount of fun we had together. Infuriating, fair, utterly sexist, kind and tremendously amusing, in equal measure, I miss Alex – and the rest of his family.

Being a Parent and Fieldworker: Children Anthropologists

Every time I stayed in Boré, my son Al travelled and stayed with me. He was just 6 when we first visited and now as a teenager feels life in Boré and his relationship with the Giriama to be an important part of his life. In the first instance I found myself sporadically but utterly occupied with his comfort and health, as any other parent in the field would have to. He found the heat suffocating and regularly came down with fevers and non-specific but typically minor albeit debilitating gastric problems. After a point, a bout of diarrhoea and vomiting became almost *de rigueur* on our trips, akin to something of a rite of passage that we knew we would have to endure as if to facilitate transfer from one identity to another. Never knowing what exactly was causing the problems, locals attributed it to the water, changing seasons or the circulating bug of the time. I suspect it could more often that not be attributed simply to poor hygiene. Lack of available, clean water, novel bacteria and the regular demand for physical contact, and sharing food eaten with hands, easily accounts for recurring stomach issues for local children, and therefore would affect incomers similarly. These conditions raise some ethical concerns associated with taking your child into areas that may be deemed dangerous for a variety of reasons.

The Ethical Guidelines as outlined by the Association of Social Anthropologists of the UK and the Commonwealth (ASA 2014) fails to mention children in research or as researchers. The guidelines do of course attend to the need to protect, anticipate harm and obtain consent but explicit mention of one's own children is not evident. The American Society of Anthropologists (ASA 1997), on the other hand, does mention children but only as research subjects. In their Code of Ethics it states that researchers

who want to work with children must obtain parental consent before starting their work, a point which suggests that the authors of the document accept that parents can supply consent for their children. The Research Ethics Guidebook (n.d), an online resource supported by the ESRC and other academic sources, explores the complications associated with obtaining informed consent from minors and the role of parents in this task, but also exhibits a blind spot with regards to the children of researchers. Clearly, the issue of using children as research informants is one thing (and much is written about this from multiple perspectives), but taking your kids to work is another. Of interest however, is that Reynolds (2017) reminds us that keeping children out of the workplace is a relatively modern concept and queries the value of it. Certainly, for the Giriama farmers we were staying with, it was expected that children should contribute to the family's livelihood, and therefore, for them, it was appropriate that my son was working with me.

I certainly do not want to argue one way or another, my aim here is simply to highlight and reflect on my own experiences. However, I can see that because anthropology expects extended periods of time in the field that some parents may not have any other choice than to take their children with them, and that some children may be disrupted and protest at having to live 'in the field'. I was not prepared to leave my child back in the UK while I was working and freely admit that I gave no thought to leaving him behind. Saying that, my decision came with a number of resistances and consequences – for example, he did complain, he hated the travelling, made it clear that I had given him no choice as he constantly negotiated his position, and there were times when I thought it would have been so much easier without him. In addition, there were numerous practical penalties, for example, luggage requirements expanded, health and security issues shifted to include his presence and insurance necessities altered costs. However, in the final analysis, despite any asymmetry inherent in a child/parent relationship, I would argue that the experience developed him in ways that other children have not have the good fortune to encounter, and, as a result of companionship 'in adversity' forged us together into a solid unit.

However, on asking him to reflect on his experiences after the event, my analysis is different from his. He said:

> "I literally had no choice, [long gap with weary sighs] but I enjoyed it. Having the experiences changed me; I could express myself more than in school and learnt about life in Boré. But I hated that you said we had to wash in the river, was annoyed by their ideas about what men and women should do, and how they treat kids. Plus I felt I couldn't criticise them because *you* are an anthropologist. But I wasn't and am not!"
> (Al Attala, August 2018, pers. comm.)

The quote above illustrates some of the tensions Al experienced in the field when confronted with ideas of correct practice that ground up against his own, and the position I held over him. This forced discussions both between us and with the locals on occasion, and certainly encouraged me to think about the role of the anthropologist… again. Pedagogically, both in reference to the method and breadth of his education, the experience was enriching in ways that remaining in the UK could not have facilitated. In addition, as (what amounted to something akin to) my informal 'research assistant', he not only offered astute insight, but also corrected me and helped with learning the language. By using inter-subjective perspectives collectively we together managed to compile richer understandings of the people we were with. Moreover, with each trip he strengthened physically and developed mentally so that by our last trip his only health issue that needed treatment was an infected thorn puncture on his foot, and he spent more time in activities that I was not included in such as learning how to catch tilapia in the river basins. Obviously I am indebted to him.

Povada (2009) reminds us that there is a long history of anthropologists taking their children into the field. However, despite this being a routine practice, children's contributions assume little status other than the incidental or anecdotal. He cites Weiner's use of her daughter's diary entries at the beginning of her chapters in Trobriand Islanders of Papua New Guinea (1988) as one obvious example of an anthropologist's child's contribution to anthropological written works. I am restricted in this document to delve deeper into this subject suffice to say that I maintain (and anticipate) that there is a wealth of information that anthropology could successfully use by looking at how children are (often reluctant) co-anthropologists with their parents.

Gender

Despite numerous influences that call for equality, this community orders social life around a fairly stereotypical gender divide with women expected to do most of the so-called menial tasks while men are expected to bring food to the home. Women are expected to support their husbands and do the lion's share of the child care but increasingly women are diversifying through education and training schemes. Thus it is not unusual for younger women particularly to imagine they might become a teacher or a tailor (local term for seamstress) making the school uniforms that everyone requires. Men say that women 'sit on them', which means that women are a burden and hold them down. Men complain that women always need new things and that men must think very hard, and worry, about how to find ways to get these things they ask for. Women, on the other hand, see men as lazy, always sitting and talking together while they fetch water and firewood, cook, work in the fields and so on. My presence in the area seemed to be an amusement for many people, and I felt overwhelmingly accepted by everyone – mainly because we all laughed so much together. But, for the women, my behaviour was sometimes puzzling because I behaved as if equal to the men. Consequently, there were times when people were unsure of what I was doing. Luckily this had a tendency to make everyone laugh and also restricted the men from telling me what to do.

As a woman in Boré, having my child with me was helpful as it was expected. To stay in the area without him might have caused puzzlement. To have him with me caused no questions, but rather positioned me alongside the other women I was working with. How we treated each other – that is, my relationship with my son – did provoke questions, as I clearly parented quite differently from the locals. These questions were valuable as they helped all parties understand each other. Participant observation is not a one-way street and the role of researcher was a puzzle for some of the people I met. Being described as a researcher met with deference from some and from others, mistrust. Being a mother, on the other hand, was a relatable social identity from which we could share experiences that revealed similarities and differences.

I found it difficult to keep up with my research, work with the women and parent particularly in relation to food preparation. Food is always simple fare but nevertheless takes time to prepare. There is no such thing as making a 'quick sandwich' for lunch. Tending to want to use as much of the day's light to write up my notes also made finding the time necessary to cook problematic, until we found a local woman who sold chapattis on the side of the main road and who offered to bring us a plate of 10 every day for 100 Ksh (Kenyan shillings). Rather like a pizza delivery service, I acknowledge that I fell back on the area's version of fast food for the working mother. Chapattis can be eaten with *githeri* (mixed bean soup) but are typically consumed as they are. We added jam, honey, chillies or peanut butter when we had them.

Each night I cooked the leaves I had picked with onions and other vegetables to add as 'relish' to a staple. Not overly keen on the bland *ugali* (thick maize porridge), we used rice or potatoes more often than not.

Further Discomfort

> 'Day 1 – extremely hot. Arrived last night, sweating profusely. The journey was fraught because Winston [the name of the second hand jeep I bought] was constantly threatening to overheat. As always the journey was uncomfortable: slow, bumpy and on the edge of torturous. Everything always takes longer than anticipated. Our eta was after lunch. It was nearing sundown by the time we finally arrived.
> Arrival comprised of a vast somewhat daunting greeting committee. Very unsure of how to negotiate these broad groups - I become uncomfortable and I tend to babble. We were organised into a circle on the ubiquitous plastic chairs from where we all proceeded to greet, acknowledge and thank each other repeatedly.
> All the food I left behind has gone (tinned goods, oil, coffee) – even the salt. Indicative of the needs of those left with it…I suppose. But it was too hot to eat anyway. 7.30 saw us horizontal, hiding in the relative security of the mosinet. The night's heat intensified. The net ramping up the heat as it stopped any wind flow. We became hysterical laughing at our situation and our responses, but eventually slept. The discomfort of the mattress – legendary discomfort – was nothing compared to the heat.
> The next morning – today – we drove to Marafa to sign into the Chief's visitor book. Bought a new mattress, 2 pineapples, and some salt.'
> (Diary entry, April 2017)

As the quote above illustrates, being in the field is uncomfortable in a multiplicity of ways. The change in circumstances can be overwhelming even with extensive experience. Each visit it has taken time to acclimatise but has invariably happened.

Every Friday we drove in to Malindi to stock up on our supplies and to use the Internet available in the town. There I caught up on emails and did any other tasks necessary for my employer (e.g. marking, feedback on assignments). The journey's discomfort never abated and there were times when the journey to Malindi felt like an annoying imposition and regrettable burden that impeded my progress. On the other hand, it was also part of the process. Each time, someone needing to access Malindi's services accompanied us on the journey. We transported the sick, delivered messages, and carried back provisions – so the trip helped others as well.

Literary Approaches to Water

Unsurprisingly, there is an extensive body of literature on water across disciplines. The attention has established it as a vital substance, an inspiration, a tool, a source of power, and as a resource (Shaw and Francis 2014; Strang 2004, 2005, 2013a), amongst other things. As a resource, discussions around water security, supply, storage and ownership abound. Thus, numerous authors explore the politics of water from the perspectives of control (Strang 2009, 2013b; Swyndedouw 2015; Thomas 2013; Tvedt and Coopey 2006), while others attend to seeking the technological and scientific solutions necessary to ensure a regular, enduring and secure supply (Gleick 2014a and b).

Much of the work published by the environmental, meteorological or geo-sciences in recent years explore how, and show that, water's behaviour has changed. As already explained, water and the climate are materially similar and therefore are very obviously causatively entwined, thus, any modification in the weather inevitably affects global waters and vice versa. Works that are predominantly concerned with the effects of climate change above other issues such as water pollution or contamination, exhibit a tendency to focus heavily on the political significances of water (in)security specifically

and cite the increasing potential for conflict associated with countries that rely on shared riverine resources (Gleick 2014a) for their supply. In addition, apprehension is also offered about the consequences of altering watersheds, increasing frequency and intensity of storms and extra water vapour in the air producing dry land due to raised climate temperatures are centred on human use and foreground human needs above an inclusive, holistic perspective of water's activities. Consequently, any calls to reconsider how water systems are designed and assembled attend to ensuring that supplies to humans are secured above consideration of other ecological partners, as the construction methods of numerous dams across the world verify (Leslie 2005).

The redirection, obstruction and containment of water are not the only areas of unease these days. Other scholars are, of course, also concerned with water contamination and pollution. For example, Spiegal's chapter in Chen et al's *Thinking with Water* (2013) details a paradox of water contamination by explaining how it is both transformational and disguised due to water's materiality. Using the tragedy of the Bhopal Gas Disaster in India in 1984 as an example of the lingering invisibility of groundwater contamination caused by continuing leakage of chemicals into the site of the disaster, Spiegal reminds us to be anxious about 'the unknown failures that gestate within [waters'] flows' (2013: 84).

Plastic is a highly visible contemporary disquiet (Hawkins et al 2015). Not a day goes past without some mention in the Press of the problematic durability of this substance. We are confronted on a regular basis with images of huge swirling gyres of plastic detritus in the oceans, with strangled, netted and imprisoned animals, stomachs bloated with ingested plastic bags and roads, forests or beaches that are littered with discarded single use plastic packaging in some form or another, more often than not as a result of our predilection for mobile hydration (Hawkins et al 2015). Increased plastics circulating in the water systems either obviously as bags or bottles, or invisibly as microscopic pieces coupled with rising sea temperatures mean that water is not quite what it used to be. Alterations in the way water performs its wateriness are a material concern – not just in the sense that human access to water could be affected, but also because all life forms, through being touched by these shifts, will inevitably be forced to respond. Water's failure to reach certain areas that it previously serviced, or its tremendous inundation of other zones whereby homes and property are flooded

and washed away, inevitably impacts on more-than-human lives. Furthermore, detergents and other nitrogenous chemicals from the agro-businesses from around all areas of the world are held in, and circulated by, the fact that all waters are global. Therefore, water's behaviour is not simply an issue of sufficient water for human consumption, but is one that highlights a concern that the manner by which planetary materials are changing is not exclusively about contents, but also affects the way that they are able to act. In keeping with Morton's notion of hyperobjects (2010), the way water behaves now, therefore, is predictive of potential futures and also suggests that action needs to be taken to respond to these changes. How water behaves is beginning to have a bearing on both human perceptions of water, and how more-than-human lives (at all scales) can successfully engage with water. In addition, alteration to the chemical content and therefore, the materiality of water significantly alters the method by which water can move (as will be covered in detail later, see: Schewnk 2014). Water, now, full of new chemistry, is almost a novel substance entirely.

In connection with the modifying chemistry of water, Spiegal adopts an almost materialities perspective by characterising all types of bodies as 'fluid conduits' (Spiegel 2013: 89) affected and infected by the water available in this environment. In addition, because matters flows through bodies trans-corporeally and the world is not simply a material backdrop 'offering fodder for the production of goods (Spiegel 2013: 88), this example demonstrates the enormous implications of activities that fail to ensure that people are connected with the materials around them safely. Moreover, she asserts that 'in a globalised context… the question of *how* relationships between bodies and matter…form around the planet' (Spiegel 2013: 97) will need to be seriously reassessed, and that in association conceptions that continue to present water as simply a resource or as a substance that can be controlled by those who happen to be in charge need to be confronted.

The cultural significance of water is now also well represented. According to Carse (2010) prior to about 20 years ago water was not favoured as an anthropological topic and therefore rarely presented as anything more than an ethnographic incidental. This is countered by a recent article in *American Anthropologist* that maintains water has always been a lively area of interest in anthropological circles (Rasmussen and Orlove 2018). While the authors acknowledge water's current relevance and resurgence in

interest, they are also keen to point out that water has figured highly as an anthropological topic. Their article provides an overview of the breadth of areas covered by the journal and sharply contrasts with Carse's conclusions in *Cultural Anthropology* (2010) 8 years early that claimed a paucity of information.

In my view, other than some notable exceptions such as Lansing's (1987) work in Bali that focused directly on the control of water in Balinese lives, water was rarely explicitly featured in the anthropological literature until Strang produced her book *The Meaning of Water* in 2004. Yes, of course, water was present in texts, as rivers full of spirits and anacondas in the Amazon, as the seas surrounding Kiriwina where the Kula took place and as the water holes that the Ju/hoansi circulated towards and shared with their more-than-human neighbours in the Dobe region of the Kalahari, but few texts made it their aim to demonstrate the cultural meaning and significance of water as Strang did. As water has become an increasingly important topic to discuss, Carse wonders why this been the case. Carse speculates that possibly water was thought too 'banal' a topic for consideration (2010). Obviously, water played a part in the story of people's lives, but in keeping with ideas of the time that restricted respectable topics to social structures and organisation, water was not afforded much attention despite it clearly being vital.

However, *American Anthropologist*'s recent review of anthropological representations of water (from 1893-2013) directly counters the point made above. The authors make the claim that, despite renewed interest, water 'is not new to ethnographic inquiry' (Rasmussen and Orlove 2018). Rasmussen and Orlove produce a comprehensive list of authors and series of topics to illustrate their point (2018). Starting with Boasian ethnologists they demonstrate works that record the cultural significance of riverine place- and river- names; ethnographies covering snow knowledge including games, building and other activities; rain ceremonies; mythologies of water-beings; irrigation technologies; marine navigation and more (Rasmussen and Orlove 2018). They explain how water has allowed anthropology to think about themes such as power, order, production, civilisation and environmental knowledge, to just list a few, but they go on to note that they perceive a shift in the way water is now placed in studies. Echoing my earlier point that water is always presented as playing a subsidiary role in supporting people to be able to live, they too note that water was typically placed as a

conceptual backdrop in past works. They maintain that water has moved away from former representations to emerge as a complicated multifaceted force that generates power in multiple ways (Rasmussen and Orlove 2018).

Similarly, a recent special edition of *Society and Natural Resources* edited by Krause and Strang in 2016 shows how current scholarship is now very much occupied with new methods of representing and conceiving of water, which has given water a 'prominent place in academic research' (2016: 633). In their guest editorial, Krause and Strang, expound the virtues of refraining with divisions so as to allow the political, social and ecological to merge through realisation that 'social and hydrological relations [act] together (2016: 634).

Therefore, today, as interest in water develops, there is already a wealth (even a flood) of anthropological literature that shows the significance, and cultural shaping powers, of the fluid (e.g. Bernard 2013, 2016; Carey 2010; Carse 2012; Chen et al 2013; Dillon et al 2012; Fishman 2011; Fontein 2008, 2015a and b; Helmreich 2009; Krause 2016; Krause and Strang 2016; Lansing 1987; O'Leary 2016; Singh 2006; Strang 2004, 2005, 2009, 2010, 2015; Wagner 2013). This work adds to this body of work but from a New Materialities perspective. Discussions that establish water as a material vital for survival without considering the many ways in which humans approach and engage with water ignore the cultural component of human-material and material-material relationships. Furthermore, discussions that sidestep the materiality of water and its predilections ignore the part the physical properties of water play in shaping humanity. Thus, the New Materialities focus adopted here places water and people on an interactive, co-creative continuum together in a way that is comparable to Krause and Strang's suggestions (2016).

Accounts of water as a resource or environmental substance are inescapable as any book catalogue can testify. However, increasingly, texts that make it their business to approach water using an interdisciplinary perspective with a view to reconfigure the conceptions held about humanity's dependency on water (e.g. Alexanderson 1990; Ball 2002; Consiglia 2008; Fishman 2011; Gleick 2014 a and b; Gooley 2016; Hawkins et al 2015; Lahiri-Datt 2014; Leslie 2005; Mathur and da Cuhna 2014; Nichols 2014; Schmidt 2017; Swynegedouw 2015). Nevertheless, explicit demonstration of the

material or agential abilities of water to provoke behaviour (as suggested by Krause and Strang (2016)) is only now, tentatively, being approached by scholarship (see SI *Society and Natural Resources* 29: 6). Drawing water into the foreground as I intend to do, contributes to this call. Recognising the human need for water, it extends this focus out from the person to establish that the material itself also acts to co-produce the form that relationships adopt. In this case, for example, the ability of static water to bring misfortune if not allowed to move is responsible for the way in which Giriama live with water. Thus, I intend to demonstrate that it is not just that water is, but how water behaves, that prompts action and the concomitant behaviours. Therefore, it is not just that people need water that creates practice, but rather how water behaves *with* people that determine how practice can be enacted. This political shift towards materials reminds us that it is not just that the need for water that shapes culture in multiple ways (as the literature amply demonstrates) but it is how water behaves in different ecological and environmental settings that is responsible for the ways in which people can organise their sociality with it.

There are some remarkable texts that offer alternative approaches to water already available. For example, Chen et al's rich interdisciplinary text *Thinking with Water*, states that it aims to 'bring water forward for conscious and careful consideration' (2013:3). This rather inspirational edited collection blends the arts with philosophy and the social sciences to skillfully demonstrate the value of unifying approaches into one volume. Reading through the diverse chapters offers the reader a sense of both how water is variously conceived but also how, held together, these ideas create fertile ground for further creativity. Of significant interest is the work of Neimanis (one of the editors of *Thinking with Water* (Chen et al 2013)), who describes her approach to water (and the environment generally) as feminist and posthumanist. Neimanis uses water to encourage relational thinking and break away from separation and distinction as the mode of conceptualizing existence. Her latest book *Bodies of Water: Posthuman Feminist Phenomenology* (2017) begins by reminding the reader that people are 'made mostly of wet matter' (2017: 1) and that, in light of the current concerns about global water 'this meaningful mattering' (2017: 1) comes with a sense of urgency. While her primary focus is bodies, I still take much inspiration from Neimanis' boldness and poetic approach to materials.

Helmreich's *Alien Ocean* (2009) is another notable text that helped break the mould with regards representing water. Helmreich's book provides a picture of the oceans through the lens of human relationships with marine microbiology in different setting. He is not so much concerned with the water as with the life teeming within it. He demonstrates how microscopic life and people are changing the narratives constructed about 'drier' areas of life, such as politics and origins. His book contributes literature that exposes the strange in the ordinary and demonstrates the potency of relationships the water.

Moving away from the miniature world of microbes, Bear and Eden (2011), ask us to reimagine the way water fills our thinking. Depicted as a zone utterly alien to air breathers (following Helmreich (2009)), they demonstrate how anglers on the east coast of the UK attempt to think like the fish they are hoping to catch. Castaing-Taylor and Paravel (2012), continuing the theme of engaging with water through fishing, but taking a 'wildly' more radical approach, have produced a disorientating, experimental sensory ethnographic film called *Leviathan*. Filmed through the use of a collection of tiny cameras positioned around the boat, the visuals are spliced together from multiple intensely intimate angles. This produces an almost material assault on the viewer as they experience the violent bloody shifting and sliding of water, boat, fish and people as they clash into each other, buffeted in their relational struggles.

Mathur and da Cunha's paradigm shifting approach to architecture and water needs to be noted for its exceptionality (2014). Mathur and da Cunha question perspectives on water, particularly rivers and the depiction of what they call the porous boundaries between land, sea, deltas, mud and rivers. Why, they ask, are rivers inscribed as lines running through land on our maps, when in practice they are temporal shifting almost breathing entities that seep into the earth on all sides? This false depiction places rivers only where they are obviously visible, and, they assert, forces our imaginations to erroneously conceive of rivers as channels filled with water running down from one place to the sea. 'Hasn't rain fallen everywhere?' they wonder (Mathur and da Cunha 2016). They suggest we make peace with water and redesign our shared worlds in such a way as to avoid confining and restricting how water behaves. Water's fluidity should not be seen as a fixed entity within the landscape, but should be approached 'sectionally' and as a complex multiplicity of relationships with rhythms. Concerned

with the ever-increasing frequency of flooding, they call for intelligence and sensitivity in how water is approached, and maintain that the characterization of water as an uninvited stranger in the language of floods needs to be reconsidered (Mathur and da Cunha 2016). Water is everywhere and our designs must reflect that. Their edited collection compile from contributors at the SOAK conference in Mumbai thoroughly problematises conventional representations of water and calls for 'regenerative rethinking' (2014: viii) and a new design language that recognizes land and water are in relationship.

Lahiri-Dutt (2014), inspired by the call from Appadurai and Breckenridge (2009) for a wetter kind of theory that emerged from SOAK, maintains that a 'reconsideration of one of the foundational boundaries, that between land and water' (2014:1) needs to be dissolved in recognition of the hybridity of the landscape. Usually concerned with policies that created gendered access to water, this 2014 paper is a slight deviation from Lahiri-Dutt's routine focus, but nevertheless stands as a powerful contribution to the accumulating voices that are calling for changes in how water is understood. Casting shadows that resemble the nature-culture debate as an inaccurate binary, quoting Domonoske (2012: 4), she says 'water-land is associated with nothing-something', and that realization of complexities, of soft lines in theory and of hybridity will help us to move forward in our environmental engagements.

Strang's rich and prolific contribution to this topic area has been instrumental in demonstrating how water troublingly flows between cultural and natural with the potential to cause both order and disorder effortlessly (2004; 2015). Her work has helped move discussions regarding planetary water forward in a materially and culturally sensitive way that accepts current global problems are not 'exclusively human problems' (Kohn 2015:311).

My research builds on the scholarship that aims to reassert the significance of the material world - as it were: anthropologically and ontologically (Kohn 2013: 2015). This will be achieved not only through demonstration of how water plays a part in the articulation, mobilisation, and generation of bodies (individual, social and political), but through recognition that being human emerges through relationships that are predicted by the way materials (in this case, water) can behave, and therefore should also be represented as co-productive organizing forces in how lives are lived, rather

than simply resources to be consumed, or substances to think [with] (cf. Lévi Strauss 1962). In so doing this perspective accepts and honours the affective position that materials can claim, and realises how communities are permanently in profound conversation with their ecological partners (Boivin 2008; Cruz 2014; Malafouris 2013).

Theoretical Influences and Approaches: New Materialities, an Almost Elemental Anthropology

> '…The rupture between reality and imagination—the one annexed to fact, the other to theory—has been the source of much havoc in the history of consciousness. It needs to be repaired. It is surely the task of anthropology, before all else, to repair it. In calling a halt to the proliferation of ethnography, I am not asking for more theory. My plea is for a return to anthropology…. [to] an undivided, interstitial field of *anthropology…*'
> (Ingold 2014: 393)

As stated earlier, working with water has helped me develop a novel perspective on materiality (or the substances that collectively make up the world). I have chosen to call this perspective New Materialities as it emerges through (or with), but nevertheless differentiates itself, from New Material*isms*. The reason for the slight shift in name is because New Materialities chimes with the core tenet of relationality and equality of the New Materialisms but instead of focusing primarily on people, it foregrounds materials (substances) with a view to create discussion around how materials shape people's lives specifically. Moreover, rather than attending to how people use stuff, this perspective contends that people are also just stuff, and therefore asks 'how do/can materials and people relate to, and make, each other?'. This approach, therefore, while linked, is quite distinct from New Material-*isms*, which attends to subjectivities and has been described by Van der Tuin and Dolphijn (2010) as the 3rd (post-human) wave of feminism. In contrast, New Material*ities* can be described as more of an elemental [9] affair because it can get almost to the molecularity of

[9] However, it is important not to get dazzled by the notion of elements, as this is not about 'the elements', despite the concept being seductively of the moment in the Humanities (see: Cohen and Duckert 2015). My rejection of the use of the term 'elements' firstly concerns the fact that what is an element varies dramatically depending on one's philosophical predilection, and secondly, because, as I show later in more detail, with regards chemistry, water is **not** an element. In short, there is no 'water' in the periodic table, but rather just hydrogen and oxygen molecules, and as I intend to embed this perspective in the

engagement due to its concern with how materials are able to behave together. As such it acts as a continuation or off shoot of New Materialisms and other relational materialities that offer ways to 'transverse the human/non-human interface' (Clark 2011: 29).

New Materialities takes inspiration from a number of theoretical threads – namely: the multispecies ethnographic approach, morethanhumanism and posthumanism (see: Chen et al 2013; Helmreich 2009; Kohn 2013, 2015; Latour 1993; Tsing 2015; Whatmore 2002 as some examples of these directions), all of which advocate a reconsideration of a human exceptionalist focus and a rejection of sharp dichotomies or dualities, in favour of inclusivity and relationality (Clark 2011). In addition, broadly speaking, it also chimes with various aspects of the recent works of: Bennett (2010), Coole and Frost (2010), and Drazin and Küchler (2015) and Iovino and Oppermann (2014), as the following illustrates.

Bennett (2010) paints a world that is inhabited by things imbued with a liveliness that seemingly sparkles for attention. Her world is one where objects transform into subjects on account of their inherent ability to influence people around them, and where animation refers to the ability to incite action. Her phenomenological eco-political philosophy is about how things affect people. My first reading of Bennett excited me intuitively and enormously; I *felt* her ideas, as if from the inside of me, as if she had found a way of representing the world that chimed with my experiences. In addition, her quest to reconfigure conceptions of engagement with the stuff around us as lively felt like an ethical direction I was tuned to.

My core issue with Bennett, however, is that she claims to be de-centring the human whilst continuing to rely on conclusions steeped in eco-morals so as to be able to speak of what things are doing to us. According to Bennett, things, entities, aspects of the environment (e.g.: the weather, a stick, a rag) are 'talking' to us, even warning us,

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physics of matter – with a view to, as Barad (2003) suggests, make matter matter, using the word 'element' would move my aims away from all materials towards certain ones. However, the word 'elemental' (rather than 'element') can be used to describe something that is in the raw and fundamental, and with this flavour in mind, the approach I am taking could be judged as engaging with the elementals of materials.

and certainly making us rethink our methods, as they pile up around us and affect processes. While I have sympathy with this train of thought, this perspective feels literary rather than material. And it also implies that a certain kind of eco-sensitivity is necessary to teach people a 'better' way to be. To substantiate her thesis, Bennett animates things with 'vitality'. Her vitality directly relies on humanity to understand it. Without human experience there is nothing that can sense things. This manner of animating things reverberates with the well-rehearsed conundrum of where to locate agency, and forces me to ask again, 'where is the agency?'. Which raises the question, what does Bennett mean by suggesting things influence us? She implies that substances communicate but I don't think she is suggesting that they intend to. Rather, the way they materially present themselves acts on us. Therefore, is she saying that the things we make act in ways that remind us of other consequences or perhaps she means that things are reflecting back our own thinking about material processes, correct practice, excess, ecology and so on? Either way, people are not sufficiently de-centred in this philosophy, as people decide what the influences *mean* - and if agency is distributed by this philosophy, its power still remains in human thinking. As I want a way of looking at the world that offers a smack in the face challenge to the rigidity of mechanistic thinking[10], one that is directly rooted in what is materially happening, Bennett's ideas (while undoubtedly helpful) simply do not go far enough for me.

Coole and Frost's (2010) edited collection similarly sees matter as agential and calls for a new bio-political version of nature that considers the place of people in the material world afresh. Their endeavour is not simply to produce a new posthuman theoretical position – although they do that – but rather to explore how people fit into the technological and political developments in the 21st century world. Theirs is a powerful explanation of the value of reengaging with materials ethically and sustainably, but falls short of allowing the full materiality of being human to be explored, as they continue to sidestep 1) that bodies are made up of materials in assemblage and 2) that materials are determined by sets of physical behaviours or even cultures of being that, like people, shift and transform in relationship.

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[10] 'Mechanistic' thinking or thought refers to the machinist approach of Descartes (1985) that proposes a physical separation between materials and people (mind/body dualism) (see page 21).

Drazin and Küchler (2015) take the philosophical and theoretical approaches soaked into the books above and use this to create a series of edited chapters that offer ethnographic stories of the lives of various materials, such as gold, plastic, silk, tea leaves and pharmaceutical chemicals. Making a play on Appadurai's notion of things having a 'social life' (1988), their book considers the life of materials over the things that they create and in so doing reminds us of the affective role materials play. *The Social Life of Materials* (Drazin and Küchler 2015), therefore illustrates how materials act, and explores their role in shaping and producing the worlds of the people they are in liaison with.

Iovino and Opperman's (2014) edited collection *Material Ecocriticism* is concerned with the abilities of matter to build meanings and how words and materials engage together. Compellingly, rejecting any dichotomy between meanings and matter, they maintain that 'the 'material turn' is an extensive conversation [that must be had] across the territories of the sciences and humanities' (Iovino and Opperman 2014: 2). Their project is to recognise the porosity between ideas and things, and to blend any boundaries that may be perceived between meanings and stuff. Where Bennett might inadvertently allow meanings to be human, Iovino and Opperman strive to avoid this by allowing matter to be conjoined in narratives.

From the above influences, it is easy to see how the NM perspective has been born, as it concentrates on materials rather than the things made out of materials, it calls for a serious reconsideration of planetary engagements with materials and it takes as obvious that materials are lively and agentive. Where it pushes these ideas on is to remind the reader that there is no separation between the world of materials and the world of people, because people are *only* material too, despite any *ideas* otherwise. They are, as De Landa puts it: temporary 'hardenings' (De Landa 1997: 259) in the material flux that constitutes existence and that, because we are the materials we tend to intellectually separate ourselves from, we must work to re-member our materiality and ensure that activities, projects and developments take this brute fact as its starting point.

Epistemologies of Separation, Or: Materials are Important Because…

Despite numerous uncertainties of its value, the habit of studying objects or items as if they exist in isolation continues (Bennett 2010; Coole and Frost 2010; Drazin and Küchler 2015; Ingold 2000, 2007; Iovino and Oppermann 2014; Kohn 2013; Latour 1993). This habit insidiously perpetuates the fabrication of the world as one that is populated with entities that exist in their own right, divorced in form and function from the rest – despite any ideas that they are able to influence each other in a net- or mesh-work. With regards humanity specifically, there are epistemologies that recognise people are bodies composed of materials (for example, bio-medical professions), however, to conceive of people in this way is considered uncomfortable as it degrades humanity (Annandale 1998). After all, people are subjects and not just 'meat', and to think in those terms can be critiqued as reductive. Consequently, an intellectual distance is placed between how being human is imagined and what physically assembles and produces the bodies that humans use to think with about their condition (Mol 2008).

Contrary to appearances, using the knowledge produced by science, bodies, humans or otherwise, can be conceived of as material collectives or microbiomes comprised of and animated by countless other relating bodies (Bennett 2010; Kirksey 2014; Margulis 1998). They are material assemblages cohered together as multi-material, organismic endeavours. For example, microscopic beings – parasites, fungi, bacteria and viruses – collectively become organs - heart, liver, brains and so on - each comprised of a community of fluid entities occupied collectively in accordance with their materiality and the physical laws of the material environment they find themselves in. Using this knowledge, it is difficult to actually determine what is human and what is not. Rather, 'human' becomes a collective, an assemblage of entities working in concert. A cell membrane that holds my cell organelles in place is almost materially the same as the cell wall of a plant; both are made up of various forms of glucose molecules. The difference between plant and animal cells is the structures made out of the materials not the materials. People, therefore, despite any illusions of grandeur brought on by self-awareness, are atomically and molecularly identical in composition to bananas, oak trees and other animals. Therefore, at the chemical level of materials

not only is everything connected but also everything uses everything else to reform into new selves. Thus, as the physical processes of the world compost materials down into smaller bits, those smaller bits go on to support the growth of another entity in what seems like an eternal cycle of sharing. It makes complete *material* sense then to claim people are not only connected to, but *are*, the environment. Not only does air go into our lungs so that it can circulate around (and support the functioning of) the systems that collectively comprise 'you', it also leaves the lungs and through its engagement is altered in such a way that plants benefit from the chemistry you expire. Similarly, the water that hydrates your flesh later pours out of you taking what your body no longer requires with it, and the apple you digest provides carbohydrates that, in part, make activity possible (Attala in press). Thus, through a material lens, everything is materially manifest, present only in the way that it is because of the other material entities that exist.

Therefore, this perspective not only draws all of life's inherent materiality onto the table for inspection, but also enables discussion of how the 'potent mixings and interplays' (Hinchliffe and Bingham 2008: 227) of the more-than- with the human makes *the human what it is* and simultaneously avoids any discrimination against other aspects of the material world in doing so.

How My Thoughts Have Been Shaped and Why Use Materials to Understand Social Life

The last 50 years has seen numerous disciplines displaying discontent with the inability of linearity reductionism (or straight line thinking) to deal with the convolutions of sociality successfully. Scholars have struggled to effectively or realistically grasp the complicated sprawling of social life (Latour 1993), and, in consequence, have proposed multiple alternative methods with which to approach social life in all its density.

Assemblage (Deleuze and Guattari 1980 and 2004), Actor Network Theory (ANT) (Latour 1990, 1993), Systems and Complexity theories (Bertalanffy 1968; Capra 2005; Urry 2005) use the concepts of networks, meshworks, rhizomes, plateaus and fields

as their representational models of choice, over linear methods, suggesting that they more helpfully (and accurately) mimic the three-dimensional unpredictability of lived realities and avoid troublesome abstractions or deterministic causal chains of thinking. For some (e.g.: Ingold and Palsson Capra 2002; Deleuze and Guattari 1980 and 2004), using biology and life processes as inspiration is useful. For others, (e.g.: Ingold 2013a; Morton 2010) the notion of weaving or knotting together as might occur in making a fabric or net has been adopted to illustrate connectivity. All of the methods overtly challenge a simple hierarchical ontology in favour of multiplicities with a view to open up discussions to include more than just humans. For example, De Landa's *A New Philosophy of Society: Assemblage Theory and Social Complexity* (2006), which plays around with its own assemblage of some of the ideas cited above, recognizes that material performs a role in social life, and Latour's actants are testament to this too (1993).

Morton, in attempting to understand the vastness of conditions, labels ungraspable events of magnitude, 'hyperobjects' (2010). Hyperobjects influence on a global scale, they exist across the planet contemporaneously but also have the ability to manifest differently depending on context. Lava, capitalism, the Internet, climate change and water are all hyperobjects; all events that manifest simultaneously and differently in separate parts of the planet. Thus, what climate change is doing in Kenya is quite distinctive from its effects in Britain. Morton used the notion of a hyperobject to firstly illustrate how difficult it is to think about these affective aspects of our lives, but also (chiming with Bennett (2010)) to demonstrate how the behaviours of the hyperobjects can be understood as indicative, or portentous, of the shape of the future.

Despite the doom and gloom atmosphere of Morton's ideas, hyperobjects should not be thought of as fundamentally sinister. For example, the forces, connections and developments of globalisation have produced new conceptions of the planet as a unified entity. This relatively fresh perspective has supported discussion of the world as undivided rather than 'differentiated political space[s]' (Spiegal 2013: 85), as the recent proliferation and strength of globally focused environmental organisations are a testament to (think: Greenpeace, for just one obvious example).

Regardless of the varying structure or 'shapes' these ways of thinking generate, the

key articulating theme that I draw from them is relationality. And, this is not just to realise that 'things' are affected by the other things that they are in relationship with, but instead urges us to grasp the enormous complexity of the brute fact that *everything* ***is a*** *relationship*. As such, the notion of a network or a field is used to apprehend a magnificent unification, and not to provide a representational abstraction that offers a cognitive schematic of the architecture of a structure as if dotted or knotted with objects (or subjects). These modes of thinking enable discussions of the kaleidoscopic processes, correspondences, links and potentialities that are situated within the milieu in which subject/objects/items manifest from within the overarching material flux. Moreover, and most significantly, this does away with any sense of emptiness or distance intellectually placed as if between things. What appear as expanses of nothing between items is far from empty, blank or void. Indeed, the notion of spaces being immaterial, as Morton reminds us 'has revealed itself as the convenient fiction of white Western Imperialist humans' (2016: 11). Spaces, or the places seemingly between things, are far from empty. It is full of the stuff typically called 'air' for shorthand, and therefore, rather than nothing, is, in fact, matter hugging up close to the other matters, seeping into the bodies of other matters and inveigling itself or penetrating within the microscopically porous boundaries of things. In line with De Landa's ideas on bodies as stated earlier and as cited by Urry, entities should be thought of merely as '"hardenings" in the more basic flows of massive amounts of minerals, genes, diseases, energy, information and language (De Landa 1997: 259–60)' (Urry 2005: 7) rather than as complete and stable finished products.

Turning things nicely on their head, Capra (2005) sees nature (a word which I could perhaps swap around with 'matter') as human in its unpredictability, which in one way again demonstrates how people and materials are unified in their methods and shared materiality, and adds a dimension of agency to the way that materials' behave. In addition, and of great value to my purposes, this simultaneously challenges any distinction and difference proposed between nature and culture and any separation to be made between being people and the activities of people when aggregated into what is called 'society'. As a result, any tendency towards thinking dualistically and /or in oppositionals such as those cited above emerges as a byproduct of tired mechanistic thinking, which fails to chime with the organisational methods of ecosystems that both mobilises, and constitute, materiality. Using this view the social, society and culture

are not just conceived of as *comprised* of materials but, empirically, are irrefutably material – almost as the 'globalist chemistry' that is recognised by Clark (2011: 13).

Shifting Categories: Geology, Chemistry, Physics, Biology, and Back Again

As has already been stated, I am not constructing an ethnology that explains how the Giriama understand water, nor yet comparing different methods of understanding water. Rather, by using different conceptions of water I am constructing an interdisciplinary, inter-subjective thesis that considers how water shapes people's lives by placing materiality as the location of the relationship at the centre of the discussion.

The construction of this thesis has been slippery (following Law and Lien 2013), because when approaching materials they effortlessly and physically slip between taxonomies and species' boundaries regardless of ontology or culture, which forces one to shift between methods, categories and labels sometimes uncomfortably. By way of illustration of just one aspect of the problem: imagine the copper that has been found and measured in a human body. Prior to its transformation into flesh, the copper was in the soil and then became a plant, which after ingestion transformed it into flesh. The process of being ingested shifts the copper between the geological to biological without a concern for categories, which allows copper to be copper and flesh simultaneously (see a similar discussion offered by Carsten (2013a) about blood and Coard (in press) about dust and body detritus). If one is to take the burgeoning discussions that challenge the value of categories and boundaries seriously, one needs to ask, 'When is copper, actually copper?' and 'Can the mineral be named copper when it is in flesh in the same way that it can when in soil? Or has it become another entity on account of its current relationship?' (cf. Barad 2003), like the ingredients of any recipe when mixed together. Moreover, when is any material, simply exclusively itself? (see Neimanis 2017 for a similar discussion with regards water and her body).

A concern with category boundaries and material porosity has been a preoccupation of numerous disciplines for some time. For example, evolutionary biologist Margulis

(1998) has also been troubled by the tendency to determine beings as separate. She is specifically concerned with the biological inaccuracies of such representations. Rather than independence and selfishness acting as the core articulating themes around which the processes of evolution circle, Margulis (1998, see particularly chapter 1: Symbiosis Everywhere, and 3: Individuality by Incorporation) makes it clear that material amalgamation is the very basis of biology and material change. Materials, therefore, in biological terms, do not remain existent in estrangement but urge towards transformations through the disintegration and merging of relationships. Her earlier work on evolution demonstrated that the processes of change hinge, not on selfish genetic mustering to develop or maintain autonomy and distinctiveness, but, rather, are dependent on assimilation, integration and symbiosis. She is not talking about within species either. Merging and symbiosis occurs across species boundaries when looking at life microscopically. Serial Endosymbiosis Theory (SET) outlined in the 1960s by Margulis (then using her married name Sagan (1967)), specifically notes that symbiogenesis – the term that describes how new beings result from the methods and manners by which biological materials and entities (e)*merge* – is the activity that is responsible for the kind of life we know today (Margulis 1998), and undoubtedly will be the process responsible for further adaptation and innovation in the future. Quite simply, without material entities merging into each other there would be no cells - without cells, probably no life. (Also, see Capra and Luisi's (2014: 137) notion of 'bio-logic' that considers if biology organises social life.)

It is obvious that from a material perspective nothing exists in stable isolation despite appearances and representations. The work of theoretical quantum physicist, Barad (2010) challenges conceptions of the world as predictable, temporal and continuous in favour of an uncanny, spasmodic, queer world where electrons perform diffracted discontinuities as entangled ghosts at the quantum level. Her work confronts objectivity and dichotomy as she demonstrates the complexities of particulate behaviours to be random, dispersed and 'threaded through one another' (2010: 240) simultaneously. Present in the intra-active energetic field she calls 'spacetimematterings' (2010:240) (which is soaked through with possibilities), she demonstrates that all actions are unpredictable as particles urge to relate to different outcomes instantaneously in multiple dimensions.

Until very recently it has been considered contentious to take the workings of the micro and apply it to the macro (Vedral 2013). However, increasingly, the methods of workings used at the quantum level have been found in use in a variety of biological processes. Thus, the term quantum biology is now used to label exploration into how organisms benefit from the eerie processes of quantum mechanics (Lambert et al 2013). Recent studies with bacteria, photosynthesis and European robins (*Erithacus rubecula*) demonstrate that quantum methods are without doubt used in biological systems. For example, birds use quantum entanglement to navigate their migrations successfully each year (see the work of: Gauger et al 2011; Ritz et al 2000; Ritz et al 2004), photosynthesis and the startling efficiency of capturing photons is possible only because of quantum processes (O'Reilly and Olaya-Castro 2014), and bacteria can pass through barriers using what is known as 'quantum tunneling' to be in more places at once (Hildner et al 2013). Moreover Oxford physicist Vedral (2013) is using a bio-inspired approach to ask deeper questions about how quantum mechanics operates in the macro domain. Taking a bottom up approach, he explores how differences manifest from the quantum field. He asks, 'if collections of atoms exist in different places simultaneously, can we say there is just one atom or many?' (Vedral 2015). In short, this is not a question of unity having many parts, but concerns the extraordinary 'otherness' of quantum entanglement – that is: the method by which something can be in two (or more) places simultaneously. This, therefore, is not about things being tangled up together as is frequently used to depict 'entanglement' in the social sciences, but is about the troublingly counterintuitive notion that things are in more than one place at the same time. For anthropology the above is significant because it seriously brings into question what being human means.

In addition, an anthropology that embraces materiality to the degree that this thesis is advocating supports exploration of the novel material innovations and the relationships they produce. This can be exemplified by the materialisation of cyborg technologies and the notion of programmed materials as popularised by McCarthy (a sci-fi writer) in his series of books that explore the properties (and 'secrets') of matter (2000a, 2003a and 2003b), as the opening paragraph of his paper for *Nature* cited below illustrates.

> ‘4 July 2100. The flick of a switch: a wall becomes a window becomes a door. Any chair becomes a hypercomputer, any rooftop a power or waste-treatment plant. We scarcely notice; programmable matter pervades our homes, our workplaces, our vehicles and environments. There isn't a city on Earth — or Mars, for that matter — that isn't clothed in the stuff from rooftop to sub-basement. But although we rarely stop to consider it, the bones of these cities — their streets, their sewers, the hearts of their telecom networks — were laid out in a time when the properties of matter were dictated exclusively by mother nature.’
> (McCarthy 2000b)

The field of programmed materials is not an imaginative fantasy. Tibbits (2017a and b), at Massachusetts Institute of Technology (MIT), is just one of many academics who are now working to harness material activities in the ways that McCarthy’s quote plays with. Tibbits (2017a and b) demonstrates that materials can be programmed to grow or transform themselves in response to environmental conditions, individual desires or in accordance with other requirements. Using what is called a quantum dot as a switch which instructs the material to self assemble or shift shapes, [11] Tibbits’ (2017a and b) work uses inherent biological processes to produce transformations. To date Tibbits (2017a and b) has developed pipes that respond to the quantity of water flowing through them, has engaged with intelligent textiles and self-transforming wood products. Similarly, Tao et al (2015) have created a bioactive inkjet printable silk that is both 4000 times stronger than its ‘natural’ iteration and is programmed to change colour when contaminated, and work on ‘the domestication’ (Nguyen et al 2014: 2) of biofilms to support wound healing is underway.

Finally, in keeping with the workings of quantum mechanics (as is understood to date), revelations in the use and value of complexity are being published with rapid regularity these days - and not just as abstract theories of ‘superposition’ ‘entanglement’ and ‘topology’. For example, it is possible to store all of our

[11] ‘A quantum dot is a device which traps electrons in a very small region of space, forcing them to behave like tiny standing waves, just as they do in atoms. An "artificial atom" is a cloud of electrons trapped in this way. Although it has no nucleus of its own, the artificial atom behaves in many ways like a real atom does. Producing large numbers of artificial atoms inside a bulk material, such as a semiconductor, will alter its properties dramatically so that, for example, it can be made to appear and behave like a metal, or an insulator. The material's color, transparency, reflectance, thermal and magnetic properties can also be altered, in real time…"Quantum dot" is a word like "switch," which describes a lot of different devices which look very different but fundamentally do the same thing’ (Rawstern 2003).

exponentially proliferating data on bacterial DNA (de Silva and Ganegoda 2016), and Microsoft recently announced a new paradigm called ‘quantum computing’ using ‘qubits’ rather than ‘bits’. Apparently qubits mimic the processes inherent in ‘nature’ and therefore act as both one and zero at the same time, something that seemingly shrinks and speeds up computation by allowing much more information to be stored in a tiny space. These machines designed by quantum engineers use the same principles as photosynthesising plants to solve computational problems. Therefore, ‘nature… speaks quantum language [which] we are now learning to speak…too’ (Kouwenhoven 2016: 2)

The Subjects of Agency and Personhood

> ‘Agency is democratically distributed rather than concentrated in particular levels or categories of existence.’
> (Clark 2011: 31)
>
> ‘And matter is not a fixed essence; rather, matter is substance in its intra-active becoming – not a thing but a doing, a congealing of agency.’
> (Barad 2003: 828)
>
> ‘When I drink a glass of water, where does it go? … does it animate me?’
> (Neimanis 2017: 30)

At this point I think it is necessary to briefly dip a toe into the vast ocean of the topic of agency. This is because I am drawing people and the materials that comprise them into focus together, in such a way as to remind (as the notion of entanglement does) that they are literally one and the same, simultaneously people and materials. In doing this, the locus (and substance) of agency comes into question.

At root my discussion holds that it is useful to take the field of materiality as a starting point or foundation from which to approach being human. Thus, taking inspiration from quantum physics that shows phenomena in-forms (becomes formed) from an active latency that pervades throughout materiality, NM extrapolates that materials are possessed with the ability to become themselves, because of the field that they have

formed with or in. Quantum physics shows that it is difficult to predict how physical states become what they are before they become, as a result of the mind-twisting fact that they are simultaneously numerous things in potential (Barad 2007). Indeed, because of this, it is only after something has happened or materialised that you can know it is there. Taking these ideas raises queries about agency, change and choice.

The subject of agency has stimulated much discussion across disciplines over the years. Scholars interpret the word differently, ranging from the capacity to act to the ability to choose. On the one hand, agency is deemed to be biological (although it is disconnected from impulses and other physiological drivers), it is maintained to be connected to thinking and rationality (Rapport and Overing 2000). However, on the other hand, agency can be understood as social as it emerges because of the values and meaning that people attribute to their existence (Bourdieu 1977). Numerous criticisms have contested these restricted perspectives on agency, noting with some irritation that it relies on a human exceptionalist focus (Bennett 2010; Ingold 2013b; Malafouris 2013). However, while certain definitions have overtly restricted agency to people, others allow agency a sphere of wider influence. For example, otherthanhuman entities can be attributed agency in that they are considered animated (Harvey 2005), and things/objects are afforded agency primarily because they affect people causing them to feel or act (Bennett 2010; Gell 2013). Bateson (1987), in some ways rejecting a human exceptionalist focus, preferred to think in terms of energy rather than agency. He asserted that energy is the 'determinant of behavior' (1987: 7) not the mind or rationality, and not as an economic equation, instead, chiming to some extent with Barad (2003), he saw this as a material process that occurs through relationships. Barad offers an insight that attends to both agency and energy simultaneously, and uses matter or materiality as the outcome of agentive intra-actions.

Barad's ideas are densely packed and she uses neologisms regularly. Moreover, her ideas flow in such a way that I have struggled, and am loathe, to attempt to paraphrase them. Consequently, I offer this rather lengthy quote slightly apologetically to illustrate the how agency and matter are co-productive partners.

> 'Agential intra-actions are specific causal material enactments that may or may

> not involve “humans.” Indeed, it is through such practices that the differential boundaries between “humans” and “nonhumans,” “culture” and “nature,” the “social” and the “scientific” are constituted. Phenomena are constitutive of reality. Reality is not composed of things-in-themselves or things-behind-phenomena but “things”-in-phenomena. The world *is* intra-activity in its differential mattering. It is through specific intra-actions that a differential sense of being is enacted in the ongoing ebb and flow of agency. That is, it is through specific intra-actions that phenomena come to matter—in both senses of the word. The world is a dynamic process of intra-activity in the ongoing reconfiguring of locally determinate causal structures with determinate boundaries, properties, meanings, and patterns of marks on bodies. This ongoing flow of agency through which “part” of the world makes itself differentially intelligible to another “part” of the world and through which local causal structures, boundaries, and properties are stabilized and destabilized does not take place in space and time but in the making of spacetime itself. The world is an ongoing open process of mattering through which “mattering” itself acquires meaning and form in the realization of different agential possibilities… In summary, the universe is agential intra-activity in its becoming. The primary ontological units are not “things” but phenomena—dynamic topological reconfigurings/entanglements/relationalities/(re)articulations. And the primary semantic units are not “words” but material-discursive practices through which boundaries are constituted. This dynamism *is* agency. Agency is not an attribute but the ongoing reconfigurings of the world.’
> (Barad 2003:817-8)

Agency, therefore, if we are to accept Barad’s characterisation, does not emerge once objects or entities have formed, and is certainly not a particular characteristic of humanity, but is the process by which things come into ‘form’ or ‘being’ in the flux of materials that is producing everything. It is the fundamental, raw dynamism intrinsic in physics; it is a mystery and is simultaneously the impulse, ability and the result of matters interacting. This utterly material philosophy puts agency everywhere and nowhere concurrently, and takes it out of the heads of thinkers and puts the thought into matter (cf. Malafouris 2013). This is clearly useful for a perspective that focuses on materials.

Therefore, attempts to locate agency may be futile and a distraction. Such pursuits force you to look for something that is everywhere, like trying to find air. When using an NM focus, being unable to separate people from the rest of ‘it all’ also means that the attribution of agency in selected portions becomes problematic. Thus, perhaps the point is not to seek for agency but realise its all-pervasive mutating material presence. Therefore, following Latour (2014a: 15), ‘we should abstain from de-animating the

agencies that we encounter' and realise that actions are material affairs that never manifest alone.

Using these ideas the conception of agency as choice emerges as a product of human exceptionalism that befuddles us from understanding our physicality as anything more than 'wrapping'. Moreover, the impetus and intentionality traditionally associated with human agency is shown to dissipate across the swarm of impacting influences that produce human lives. Instead of desperately seeking agency, perhaps attention to the behavioural methods, attractions and relations of our materiality would better serve us. In other words, look for what things do, rather than what a thing is (Bennett 2010). This, of course, is not to suggest that life is monotone or materially levelled. On the contrary, the field or inherent culture of materiality is potential differences, all jiggling as particulates together. Therefore this is not a reductive or deterministic methodology that simply advocates for the exploration of how materials interact with each other but rather draws the material processes from which the different colours, forms and shapes generate to attention (Kohn 2013) – not unlike the animated character Morph who forms and reforms out of the same putty modelling clay that everything is made of. For Latour (2014a: 3), this enables the formation of a cohered 'geostory' that hinges on a material 'cosmopolitics' (Latour 2014a: 15) that converges and coheres physiology, morphology, physics, geography, philosophy and politics.

As with agency, the notion of personhood has also been restricted to humanity since an Enlightenment inspired epistemology tightened its rational grip. In brief, most philosophical perspectives attribute personhood to those entities that are deemed to display the mental states for self-awareness, reason and can adopt a moral position, which disqualifies nonhumans from having personhood (Warren 2000). However, anthropological literature stresses that any attribution or denial of personhood is always situated, or culturally contextual, a position which forces one to rethink the definition. In association, previously held definitional constrictions have loosened and personhood is now more widely understood as both distributed between individuals and as an attribute of multiple other-than-human entities including materials and substances.

An inclusive definition of personhood has in part paved the way for the notion of environmental personhood. Environmental personhood offers planetary entities the same legal rights as other persons. It does not transform parts of the environment into people or agents *per se*, but, rather, is one that recognises an alternative value to the environment. Used in this way, personhood can be attributed to areas or aspects of the landscape to which people feel an inalienable cultural, spiritual or material connection. Different from a heritage monument that connects to memory, having personhood aligns people with the environmental materials around them. In 2010 Bolivia passed a law that established personhood for the whole planet. (For *The Universal Declaration of the Rights of Nature,* see Global Alliance for the Rights of Nature (2018) and May and Daly (2015)). Another recent example of this is the declaration in 2014 that gave The Whanganui River in New Zealand (*Te Awa Tupua*) personhood and therefore rights under the law. The claim emerged from concerns about the wellbeing of the river, and the need to rebalance indigenous sovereignty. The river embodies the product of a disagreement between Maori mountain ancestors. The mountain ancestors are not 'people' in control of the mountains; they *are* the mountains, and therefore the river they produced is a material extension of their descendants. At the hearing that successfully changed the river's status, Tūtochu Whakatupua said, "Ko au te awa, Ko te awa ko au - I am the river and the river is me" (Hsiao 2012: 371) thus providing a material association between bodies and the rest of the eco-materiality of the area. The notion of nonhuman personhood is regularly seen in ethnographic writing. One familiar example is the River Ganges in India; others perhaps less familiar include the Ituri forest for the Mbuti (Mosko 1987; Turnbull 1987) and, with regards nonhuman animal personhood, see Locke (2017) on elephants in Nepal, Hurn (2012: 94 and 108-9) on Inuit conceptions of polar bears and how 'pets' are understood, and the attribution of personhood to dolphins (BBC News 2012).

Anthropology provides further examples that blur the material and status boundaries between people and other materials. For example, in Uganda the unborn child, initially formed from male 'water' and female 'blood', develops through the exchange of a combination of substances taking place in other bodies. Thus, any foodstuffs including beer and livestock consumed by people other than the mother contribute to the formation of the person *in utero* (Vokes 2012: 223). Fayers-Kerr (in press) illustrates how the Mun (commonly known as Mursi) in Ethiopia exist as a 'community of

substances' by regularly harvesting and 'eating' soils from different locations. Similarly, Lamb's (2000) work in rural Sri Lanka illustrates how personhood leaks out of the boundaries of the body and soaks into the landscape causing one's material being to seep into another.

This section outlined my influences, methods, and the approaches that have shaped this thesis. Using the above it is possible to question the bounded-ness of people from a variety of perspectives: intellectually, ideologically, culturally and physically. Having established the fluidity of boundaries, the thesis now moves to consider what I am playfully calling a 'dry' ethnography – or overview of the Giriama.

Chapter Three

Being Giriama (in Boré): Dry Ethnography

This section acts as an introductory overview to the geographical, historical and ethnographic context of this document. It includes a brief ethnographic or ethnological summary of the community that I have spent time with in Kenya, and also offers information on the Giriama generally. It also presents some historical data with a view to help contextualise the following discussion on water and the Giriama. This is designed to establish how Giriama relationships with water have been enacted, produced and reproduced in the rapidly shifting current climate. In addition, this part of the document also considers some disparities between the group of Giriama farmers I got to know and how other communities of Giriama are ethnographically fashioned in the literature. The aim of highlighting differences is to demonstrate the role and elucidate the material significance of water.

Location

This document focuses on a group of Giriama horticultural-pastoralists who live on the east coast of Kenya in an outlying rural location called Boré. They form a scattered, semi-peripatetic community in a non-homogenous landscape just a few hours' drive north-west of the tourist destination of Malindi and north of the topographical division of the Sabaki River (also known as the Athi and the Galana). The population is mainly comprised of Giriama but other ethic groups also inhabit the area (e.g.: Kambe and Wathu). Regardless of ethnic group inhabitants mainly live dispersed from each other and spread, just inland, along the full 95 miles of the coast. The nearest town to the place I spent time in constitutes a 'single-street' economic centre known as Garashi. It is situated approximately 3.5 kilometres to the southwest of Boré.

Boré sits in an ASAL region and benefits from between 500-900mm mean annual rainfall across the two rainy seasons (Ruuska 2013). It is elevated at only 46m above

sea level, which puts it at some risk from rising sea levels[12]. The whole region now falls under the jurisdiction of the recently formed Kilifi County Government, an administration created through the merger of 2 previous smaller districts (the districts of Malindi and Kilifi) in 2010. The now larger district has 7 constituencies, one of which is Magarini. Magarini Constituency incorporates Garashi and the next biggest town to the north east of Boré, Marafa. The specific region this work is concerned with is not a town. It is simply an area described locally as Boré, which lies between Garashi and Marafa. The last census records Garashi's population (which includes the inhabitants of Boré) at 25,745, with a total of 11,200 between the ages of 15-64 (KNBS 2018), with most of that number concentrated around the trading centre (Maghanga et al 2015).

Boré is significantly smaller and homes approximately 2000 people. It is split into a series of distinct sections. This thesis uses information from individuals who live in Boré Gonja, Boré Singwaya and Boré Koromi. However, the content of this chapter focuses predominantly on the households of Boré Koromi. Boré Koromi sits between Gonja to the north east and Singwaya to the south west. In accordance with the productivity of the soil type of each area, each presents, broadly speaking, as progressively more affluent, with Gonja presenting populations living in abject poverty, Koromi as relatively affluent, and Singwaya as the area with most wealthy families with what seem to be the biggest, most productive land plots. Koromi is named after the seasonal river that dissects the landscape at certain times of year, if it rains in the uplands. Similarly, just one main road and bus route cuts through the area joining Garashi and Marafa.

The road is a simple dirt track discouraged from shifting by the deposition of lorry loads of 'maram' stone spread onto the surface ostensibly with a view to making the road's dry soil less vulnerable to the regular flash floods. While this method does deter the formation of mud and affords traction when roads are wet, it also has other effects. Firstly, despite it being bone rattlingly uncomfortable to drive on, locals still speed across it causing multiple problems both to the vehicle and the passengers, and

[12] According to Kenya's environment minister the waters of the Indian Ocean are rising at 2.2millimetres each year (Agutu 2018). 2018 has seen devastating floods in nearby areas that are situated closer to the Sabaki River. As a result 6000 people have been displaced across Kilifi County (Nation Team 2018).

secondly, its weight rapidly causes the roads to sink below the level of the fields thereby encouraging even small amounts of rain to puddle on the roads rather than the crops – a situation that has been troubling farmers across Kenya for the last decade as the transcripts from the Kenyan National Assembly illustrates (see KNAOR 2007: 1808). Nevertheless, it is still the go-to solution for road construction and makes the journey from Malindi to Boré always an eventful and uncomfortable one.

Most inhabitants access the main road and the basins of the seasonal river by using a network of narrow footpaths that weave through the last patches of remaining forest and the surrounding bush. Those with the means use a pushbike or motorbike (*pikipiki or bajaj)* however the majority rely on walking. Some may have a donkey and cart to transport goods at a price, but the primary method of mobilising is walking.

Approximately 500 people make up the core of the community with which I spent my time. The population is primarily comprised of small-scale farmers whose fields surround the remains of the tropical forest in the area. This method of production (once termed 'bush fallow swidden' before land ownership was officially recognised and mobilisation reduced (Ruuska 2013)) hugs the edges of the forest and is scattered accordingly to the altitude, climate (including rainfall) and the variety of soils. Local soils vary dramatically shifting noticeably from grey clay (that becomes unnervingly sticky once wet) to ochre sands and back again in very short distances. These geological changes generate a palate of bold colours, which contributes to the production of a majestic, magical, almost other worldly, landscape full of reds, yellows, whites, pinks, oranges and purples situated as dramatic patches across the otherwise forested terrain hardly touched by development. Consequently, stretches of forest across the landscape incorporate and are punctuated by series of canyons (formed after centuries of weathering on the local variegated sandstone) which display vast dramatic striated spires, sculptures and caves that twinkle and creak at sunset thereby encouraging thoughts of the supernatural. These areas are locally called '*nyari*' translated by locals as 'depression', but literally means 'the place that broke itself'. Despite the extreme beauty, people do not live in the *nyari*. *Nyari* remain free of human inhabitation, but are home to many other beings including the endangered Clarke's Weaver (*Ploceus golandi*)*,* a bird only seen in Kilifi County (IUCN 2017). Lack of human habitation may be due to poor soils that are prone to leaching from floods (For

example, records indicate that after the 1997 El Nino flooded the area the following year's crop was significantly reduced (Ruuska 2013)).

The area homes the Dakatcha forest, a stretch of woodland now protected for conservation by multiple agencies because of its biodiversity and environmental significance. The Dakatcha Woodland Protection Plan 2015-2019 aims to control development and discourage locals from illegal activities in the forest such as logging and charcoal burning that are considered to be rapidly destroying the area. Mindful that many locals rely on the forest, conservation plans must take every effort to include people in their strategy. In this instance, a lack of water - both as rain and otherwise – is stated by the plan as the key factor that limits development in the region (Maghanga et al 2015).

Getting to Know the Giriama of Boré Ethnographically

This chapter offers an overview of Giriama life with the intention of enabling the reader to get a sense of what it means to be Giriama in Boré. It does this by attending to some of the 'imponderabilia' of every day life, through paying specific attention to subsistence, settlement patterns, kinship and marriage, education, social and political organisation, and identity in turn. In this section I introduce the Giriama phrase and concept of *fu ha mwenga*, which is used to develop my argument about how water physically shapes and organises social life.

The group of Giriama farmers living in the Boré area are significantly under-represented in the literature. Indeed, to the best of my knowledge, there is no other ethnographic work that describes their lives to date. Most of the published ethnographic work that I am aware of details other groups. Parkin (1991), for example, lived with the Giriama near Kaloleni, which is south of Malindi towards Mombasa just a few miles inland from the coast; similarly, McIntosh (2009a and b) lived in Malindi and Waaijenberg (1994) focused specifically on agriculture in nearby Marafa. A number of postgraduate student papers are also available; they detail the Giriama

from a variety of perspectives (including, religion and gender. For examples see Beckloff (2009) and Jumaa (2013)).

Subsistence

Most of the Giriama in Boré are economically dependent on subsistence horticulture, but as a result of its insecurity, mixing methods of income generation is common practice. Other methods used include keeping chickens, herding (mainly cattle and goats, very occasionally sheep), hunting and fishing, gathering (fruits, roots and leaves), small-scale charcoal production (using tropical forest hardwood) and also some informal or casual wage labour (such as construction or land clearing) when the opportunity presents. Storable crops such as maize and cassava are grown in the *shamba* (cultivated fields) and provide the staple carbohydrates for every meal. Cowpeas and beans are often grown. Equally passion fruit and pineapples are popular plants cultivated depending on the soil, as are moringa, mango and cashew. Small salad gardens with onions, tomatoes, spinach, cabbage and aubergines are used to add 'relish' to the one's meals. Similarly, local uncultivated greens such as *Kikosha, Logatzhi* and *Mutzunga* [13] are regularly foraged in season. Living on the edge of tropical rainforest offers a selection of ever-dwindling forest resources such as honey and bush meat (typically small birds, porcupine, small antelope (dik dik (*Madoqua*)) and a variety of monkeys – but also sometimes larger animals such as yellow baboons (*Papio cynocephalus*), or much smaller, such as insects). Palm wine, made by tapping the fruits whilst on the trees, is a sought after product.

In Kenya, baboons (locally known as *mayonda* (sing: *honda*)) are protected and killing them is illegal. Nevertheless, baboon troops that continue to frequent fields and threaten human subsistence are challenged and sometimes killed regardless of any

[13] I have not identified their botanical names. *Kikosha* and *Logazshi* taste like young spinach but *Logatzhi* has a broader leaf and looks akin to wild marjoram. *Kikosha* has a tendency to get slimy. Something that people like as they say it just slides down your throat. *Mutzunga* (trans: bitter thing) looks like spaghetti strings when you cook it and has a peppery, chili hot taste. It is considered medicinal and eaten only in small quantities.

consequences [14] . Some individuals reject baboon meat due to the perceived resemblance and similarity of baboons to humans, stating that to eat it would be like cannibalism. However, there are others who whilst acknowledging correspondences still feel able to consume the meat based on its taste – and the victory associated with stopping the baboon from further eating the crops. Perhaps in some ways echoing the core concepts outlined in Viveiros de Castro's Amerindian Perspectivism (1998, also see, Descola (2013)), the similarities between baboon and human activities seen by locals challenge the distinctions often constructed between human cultural and non-human so-called 'natural' lives.

> 'humans see humans as humans and animals as animals; …Animals however, see humans as animals …By the same token, animals … see themselves as humans… they experience their own habits and characteristics in the form of culture'
> (Viveiros de Castro 2012: 47)

Chiming with the well-used quote cited above, locals describe baboon activities using human terms. Baboons cry tears like people when hurt or scared, and organise their families as the Giriama do. With regards to the ingestion of baboon meat specifically, I was told that the taste and colour of the flesh is clear evidence of how baboons lead lives as humans do. Ingestors state that the meat is very sweet and does not need any flavouring. This is because it is striated with "white, red and purple"; colours that indicate baboons consume diets of corn, milk, tomatoes and purple onions, similar to those of human farmers.

Here, shepherding small herds of drought resistant cattle and goats, and holding chickens are commonplace, but also wealth dependent. Cattle can offer milk, as can goats, but I rarely saw it used for human consumption other than very occasionally in chai or porridge (or as a medicinal drink to calm an agitated stomach). Cows and goats are used for meat rather than dairy, and are sold to liberate cash. Males are typically responsible for herding the animals; women take most of the responsibility for working the fields, although husbands choose what crops to plant. Land parcels where crops

[14] The tension that lies between human and baboon populations in this area is being exacerbated by the current drought. Killing one member of the troop is believed to keep the rest away for a significant amount of time, but never long enough for the crops to recover. Many farmers in Kenya are now calling for the law to change as they continue to battle with the baboons (Kibor 2016). Also see Hill (2015).

are planted are typically just at a short distance from people's houses. The labour of clearing, tilling planting and weeding fields is primarily (but not exclusively) women's work; this depends on the family's situation and men can be employed to work other's fields. Any children that are not in school are also expected to work with their mothers or, alternatively are charged to look after the younger children so that their mothers' can work faster without interruption. This was often my job. Mothers would shout to me, "Come and get your baby!". I was much slower and often needed help to 'do it properly'; consequently it was sensible to give me the babies so that the women could work without the extra weight to carry.

In the mid 1990s Waaijenberg (1994) reported that millet rather than maize was the staple crop around this area. Today, it is undoubtedly maize. People are prone to break out in praise of maize when it is mentioned. They tell stories about how tasty it is, despite eating it nearly every day and for every meal with very little seasoning. They also wax lyrical about its versatility and how it fills them and staves off hunger allowing them to work for longer hours. The significance of maize should not be underestimated. During my last stay in 2017, maize flour was rationed due to a national shortage brought on by the drought-induced reduction in harvests[15]. In response, the government declared that families were temporarily restricted to the purchase of only one packet of flour per day, a decision that caused prices to rise, fights to break out and arrests to be made in supermarkets across Kenyan towns despite a ready supply of other carbohydrates such as rice and potatoes being available.

Fresh maize can be roasted as cobs on the fire. Later in the season, stored maize is ground to make flour. Maize flour (*unga)* is typically made into a watery gruel or porridge, eaten without sweetener with an accompanying cup of chai for breakfast if water supplies allow. Later it is fashioned into a thicker paste called *ugali* for lunch (if you are lucky enough to eat lunch) and supper. *Ugali* is steamed and shaped into a shiny white dome and presented as the meal on a shared plate where the family pinch small portions of the paste off the dome with their fingers until it is finished. Using just

[15] Kenyan press reports show that Kenya continues to face shortages in 2018 due to a 29% deficit on maize productivity due to the persistent drought (Daily Nation 2018).

the one hand they skilfully roll the separated piece into a ball ready to be eaten. Each meal should have a 'relish' with it. This could be steamed leaves that are gathered as they grow along the pathways without intervention, or fried tomatoes and onions that one has cultivated (if one has the oil). Another addition might be a few small fresh water fish from a nearby water basin (including, goby (*Acentrogobius simplex*), tilapia, (*Oreochromis niloticus,* formerly *Tilapia nilotica*), catfish (*Amphilus uranoscopus* and *Amphilus kreffti*) and bald glassy (*Ambasis gymnocephalus*) or *githeri*, a mixed bean soup or gravy. Rarely is there more than this to eat. Once one has a ball of *ugali* ready, one pinches off a very small amount of the 'relish' using the same hand to accompany the maize in your mouth.

Figure 3: Loice prepares *ugali* for lunch. The portion is for her husband, Alex.

Figure 4: Loice prepares *kikisho* as a relish.

At times of planting maize and when the newly sprouted seedlings are vulnerable, whole families will decant from their homes into smaller, temporary shelters in the fields to protect the crops throughout both day and night. Waaijenberg (1994: 30) claims that in the past children acted as 'sheep dogs' might have in Europe. This is certainly still the case today in Boré Koromi. Due to their nimbleness and speed at seeing off scavengers in the fields, children are regularly required to run out and into the crops in an attempt to discourage the flocks of birds or troops of baboons that destroy the crops (Hill 2015).

People hope for a surplus to sell to the tourist industry on the coast but the last few years have not realised that hope. This results from a series of detrimental impacting circumstances. For the farmers this starts with the increasingly poor harvests from the dramatic lack of rainfall. For the hotels along the coast from Lamu to Malindi, a fall in

tourist trade began in earnest in 2011 following the spate of terrorist attacks in both towns and other Kenyan locations. Moreover, the border with Somalia and a purported base of Al-Shabaab is merely 60 km away; a situation which has propelled governments around the world to proclaim people should exercise caution if one is thinking of visiting. To this day the area just north of Malindi remains characterised as a high alert region where only essential travel is recommended by the British government's Foreign Office, as the following indicates.

Figure 5: UK Foreign Office map indicating areas of Kenya restricted for travel

'Summary: still current at: 31 March 2018
Updated: 23 March 2018
Latest update: Terrorism section and summary - on 14 March 2018, the Inspector General of the Kenyan Police reported that a major terrorist attack, targeting Nairobi, had been prevented by Kenyan police in February 2018; Terrorism section (Kidnaps) - update to existing information on the threat from kidnapping in the areas within 60km of the Kenya-Somalia border, in Garissa County, in coastal areas north of Pate Island, and at the Dadaab refugee camp in north-east Kenya'
(Image and text, gov.uk 2018)

Similarly, other governments recommend only essential travel to Kenya (see US Department of State website, (2018) and Government of Canada's travel section of their website concerning Kenya (2018)[16].

In response to these impacting factors, farming approaches have reformed. The arrival of a European reforestation initiative NGO (The Community Carbon Link (CCL)) hoping to simultaneously encourage biodiversity and the water table alongside the

[16] The Oxford Business Group 'conducts on the ground research' (OBG 2018a) about global business. Their report on Kenya for the year 2017 maintains this situation is set to recover in 2018 (OBG 2018b). They base this prediction on intentions to repair Kenya's international image and to increase MICE tourism over holidays. (MICE: meetings, incentives, conferences and exhibitions).

reabsorption of atmospheric carbon has slightly reduced the local dependence on coastal trade by stimulating tree planting as a potential income source. The CCL sponsors farmers to plant the trees that they provide, after which the farmer owns the tree and its produce. Therefore, for some families, trees are now considered to be a safer investment to augment harvests than other crops. Consequently, drought resistant trees, such as cashew (*Anacardium occidentale*), neem (*Azadirachta indica),* casurina (*Casuarina cristata)* (for building timber) and moringa (*Moringa oleifera*) occupy increasing portions of the landscape. These types of trees offer both additions to the staple and can provide cash crops for sale to alternative markets than the hospitality trade. Until recently, however, the value of the trees was not fully appreciated and, while locals seemed open to the offer of trees to plant, they were sometimes equally confused as to why to plant them[17]. For some it was the moderately slow development of trees that made planting seedlings an unhelpful venture in the short term. However, this was countered by other factors. For example, the trees are easy to plant, need relatively low maintenance once established and (even though they take up field space) are less likely to be stolen by humans or otherwise, as other crops and livestock regularly are. As time has passed, and some farmers have collected their crop of cashews (or similar), their value has become recognised. In association, people are now finding that their seedlings can be dug up and taken under the cover of darkness.

Settlement

Typically groups of between 20 and 40 people live in shared compounds of extended families, but there are also houses occupied by sole individuals or nuclear families. Shared compounds are patrilocal, polygamous residences and, though while often on first inspection seemingly amorphous in structure, tend to be shaped in accordance with kinship structures. Thus, the collection of buildings forms a material

[17] Planting trees comes with some uncomfortable colonial overtones in this area. The Giriama are renown for their remarkable resistance to the British Administration's activities at the beginning of the 20th century. Part of this was in connection with the insistence of the British to change farming practices, of which planting trees was one aspect. Porter et al, critical of development methods that denigrate traditional practices state that this was akin to 'disrupting a relatively sound farming system' (1991:247). Also see section on 'Social Organisation', this document.

representation of patrilocal kinship structures with each son's home situated alongside their father's in accordance with their place in the family with more distant kin positioned outside or at an angle to the primary circle. Any unmarried daughters' houses join the circle to care for her father.

Buildings are, more often than not, inward facing, and comprised of one- or two-room houses. Structures are placed around a wide-open central point, often surrounding or at least near to a shading tree. However, in line with certain social prohibitions that are based on complicated kin relations some houses are built at a tangent. Equally, houses may be constructed at a tangent or slight distance simply because of the lay of the land and personal preference. Buildings are constructed out of a loose weave wattle and clay daub thatched with palm leaves, and are thus in some senses temporary as they regularly crumble or decay. House size, construction materials and amount of livestock signify status and wealth. These days those sons who have secured jobs on the coast are able to construct their homes using modern, more permanent materials – including tin and concrete, but for the majority resources available in the landscape form their homes. Families work together to build the houses. Men construct the basic framework of the building using wood; the women are responsible for making the walls using water mixed with a certain type of clay soil. The overall structure of the compound enables shared childcare and cooking between units. The inhabitants share a 'kitchen' building with fireplace under a mezzanine grain store, which allows the smoke from the fire to inhibit any insects that might find the grain attractive. While the group regularly – but not always - shares cooking responsibilities, water supplies are collected and kept separately by each home. I was always told that it is the duty of the women and children of a household to keep the water containers filled.

Food is cooked on an open fire. Those with enough money may own a metal or even ceramic *jiko* stove, as those in urban settings use. A *jiko* acts as a mobile firebox and grate on which a person can place a cooking pot. It stands approximately a foot high and is shaped like an hourglass allowing air to flow and feed the fire placed in the upper bowl of the device. A *jiko* only uses charcoal and cooks quicker as it produces more sustained heat faster than a wood fire, but it causes other problems because of the carbon monoxide emitted by the charcoal.

Kinship and Marriage

The Giriama are traditionally polygamous. Today the majority of marriages are monogamous but there are still significant numbers of families with more than one wife. Giriama girls are expected to leave their family homes to become wives; women, therefore, move out of their families to be brought into another receiving family. Producing echoes of many other African social systems (e.g.: Evans Pritchard 1940) the Giriama method embeds people into something akin to a 'hire purchase' scheme, which establishes women and children as primary economic units for consolidation of networks via exchange (Meillassoux 1981). The movement of money and alcohol accompanies the movement of women. Bridewealth payment is comprised of two discrete types. Firstly, the families negotiate a sum of money for payment by the groom's family to the father of the bride at the wedding. Then, as a result of that union, a further amount is due as each child is born. Alcohol is the expected payment for children; cash is given at the wedding. This system sets up a continuous burden of payments across lifetimes – something like a pay-as-you-go contract – that not only produces and maintains alliance networks, but also enables families to prescribe and control actions. Payments are often late, delayed, or even fail to be completed and are sometimes reneged upon. In the event that families fail to receive the correct payments they are within their rights to demand their daughter and her children be returned to their original home. This right arises because the seller retains ownership until payment is complete. The same applies to any children. Children can only be seen as the husband's after he has paid for them.

In addition, this system demands a return of the payment in the event of a divorce, not from the father who originally received the money but from the divorcing daughter herself. A father will support the returning daughter if she can buy herself out of her marriage. However, if she cannot pay her way out, it is unlikely that the family will support her separation, and she will have to find a way to manage on her own.

According to this generation, while there have been some changes to the traditional system of bridewealth, the sale and purchase of women is still a standard and unquestioned practice. Women today talk about their value in terms of the price their husbands paid and compare themselves with the current market values attributed to new brides. For example, not so long ago, Lennox, a relatively affluent man who has accumulated enough earnings to build a furnished breeze block house with tin roof from employment as a private nurse on the coast, paid 48,000 Ksh (equiv. £35) for his wife Clara; a price she remains unhappy about because she believes it failed to represent her worth. Lennox is an elder but he is not often in Boré, coming only for fleeting visits. He has had some medical training and owns an apartment and practice in Malindi where he treats patients. He has built the house in Boré for just his immediate family (his wife and children). Its design mimics those in an urban setting sporting concrete floors; a decorative, coloured tin roof; glass windows with iron bars over them; a huge water container to collect water from the roof through guttering and an internal bathroom with a toilet. Regardless of any differences in design, the materials used make it stand out strikingly alongside the mud walls that the rest of the houses in the area use. Adding a bougainvillea arched entrance and plastic chairs on a tiled patio make it (as far as I was concerned) almost a gaudy eyesore against the rest of the vista. Clara is left alone in this opulence surrounded by family who have markedly less than her and live in almost abject poverty - a situation that seems to have created an air of separation and loneliness between her and the rest of the group. As a result of this prosperity, it seems Clara would prefer her bride price to reflect her current value, and it does not[18].

Past prices circled around 50,000 Ksh. Today, I am told, the price could be as much as 300,000 Ksh (equivalent to over £2000 British pounds) to be paid in cash – but in instalments over time[19] accumulating into substantial amounts of money not dissimilar to perhaps getting a mortgage to buy a house in the UK. On occasion, fathers, have been known to set prices prohibitively high to deter suitors. Women recount stories of

[18] After my return to Wales, I was informed that Clara had suffered a mental breakdown, had become violent and had to be treated to help her stablise.
[19] Average wages are approximately 300-500 Ksh per day. Wage labour is typically casual and consequently payment is daily.

lovers meeting extortionate prices with a sense of romanticism and amusement that their fathers were thwarted.

> "When Laurence Charo's daughter wanted to marry a Waathe man [Waathe is the name of the last hunter gatherer group that used to inhabit the forest in the area.], the man was asked for 70,000. This was a high price but the man came and he brought 100,000 instead. The men want the women very much"
> (Clara Katana, Sept 2016 pers. comm.)

Families can receive money back for transgressions – such as violence, infidelity or lack of conception - although divorce is discouraged. For example, 50 year old Theophrastus Kasungu received money back after his first wife's attempt to poison him was brought to light. He received 25,000 Ksh in compensation. He paid 65,000 Ksh for his significantly younger third wife in 2012. She gave birth to their second child in 2018.

In the past, this generation's grandfathers chose the family's wives, and very young girls were obliged to marry older males as a result. Nowadays, mothers are involved in the discussions and need to be happy with the choices made or they can threaten to leave and return home. Even though people claim that unmarried women are mistrusted, some women have children, remain on their father's compound and simply do not marry without encountering social stigma. On the other hand, those women who live out of a compound on their own with children and no husband can be socially frowned upon and spoken of derogatorily. Contemporary middle-aged mothers have modernity-inspired aspirations for their growing daughters. These women, who were once bought into a family to work for their husbands, now talk about how they want their daughters to have jobs before they get married and claim they would not let the girls become wives at the early age they did. Nevertheless, fathers still effectively sell their daughters and buy in brides for themselves and their sons, and through this process accumulatively increase the family wealth and status. As illustrated earlier, wives are desired but are equally considered expensive, and while many marriages are polygamous, the majority today prefer monogamy because it reduces the costs one can incur.

According to the women I lived with, removing female labour from the homestead for marriage adds strain on the women left behind caring for the men and children. Bringing in new women rebalances this and polygamy offered further female support for the other women. As polygamy fades its influence, women must increasingly work separately and much of the burden falls to the oldest children. The value of many working together is communicated by this system (a point that I will develop later in the section entitled *fu ha mwenga*). Families with few children cannot easily increase their influence. Men repeatedly talk of the value of having lots of children, brag about their wives' fecundity and commiserate with those who are not producing. If a man has 20 or more children he is considered to be a successful individual. For example, when I mentioned that a Russian woman had lived to 76 and gave birth to 69 children during her life (see: Guinness book of records, Feodor Vassilyev's wife) this was met with nods of appreciation for the husband, with people ignoring the wife's abilities but noting that the husband was a very lucky man. This is not concerned with sexual prowess as one might immediately imagine, but rather references his ability to strengthen the family unit workforce and prepare properly for old age. Waaijenburg (1994) presents marriage as a method to strengthen the extended family by increasing the overall workforce, and this sentiment chimes with some of the current ideas employed by the inhabitants of Boré.

Education

Being educated is highly valued as the passport out of poverty. Parents work hard to maintain a regular education for their children so that in their old age their children will be able to pay for them[20]. The government provides free primary education for all. In contrast to systems in other countries, primary school does not necessarily relate to age but concerns when you can afford the time to come to class. Consequently, it is common to see 20 year olds in school uniform alongside the younger children hoping to pass their exams. As long as they can pay for the exam papers, people can attempt to pass until successful.

[20] The State does offer financial support to the elderly but it is limited. The provision for older members falls heavily on families.

As a result of the social expectations concerning education, children are unable to work in and protect the fields as they did previously. This leaves the tasks to the adults, mainly the women. When I first visited the area a number of women complained that their children were losing their ability to contribute to daily chores through being otherwise occupied by school. Furthermore, mothers complained that education brought arrogance and a set of unrealistic aspirations from their teenagers. Now, they wanted motorbikes and sat around drinking as they imagined themselves in urban lives. Most worrying for mothers was that the educated teens shunned Giriama culture. Waaijenburg (1994) suggested that in the past there was a conflict between education and *shamba* work, based on an inability to recognise education's value. Education is a long-term investment and something of an abstract notion, thus (in ways reminiscent of the Nuer and money (Hutchinson 1996)), the value of getting an education has taken some time to be appreciated. For some this is still the case today, but for most people this social institution has taken hold. Despite the fundamental lack of employment, the skills education brings are now considered to be the sure pathway out of scarcity and towards abundance.

In the past children had to earn money if they wanted to get the benefit of an education. It was not considered the role of the parents to source the cash, and because of this many of the middle aged Giriama (particularly men) talk of how difficult it was for them to get the money to attend. Today, however, basic primary education is free to all and there are multiple, government supported schools throughout the area enabling all children to attend, provided they adhere to the necessary requirements the system stipulates. These necessities include shaved head, correct uniform and money to pay for extras such as paper, pens, exams and sports activities. This has, indeed, taken most of the children out of the fields and placed them into the classroom. However, despite parents invariably making the claim that an education is vital for the futures of their children and the family, in practice many of the children from less affluent families often regularly fail to attend. Reasons for lack of attendance circulate around finances rather than *shamba* work: incorrect clothing, hair length (shaven heads requires a razor blade) or an accumulation of late payments for extras including school dinners that mean a child is banned from school until the debts are recouped.

The ability to get a primary or '*pri*' education, as the locals call it, is available to everyone, however, one must pay to continue on into secondary school, putting higher qualifications out of most people's reach. The average family simply cannot afford for just one let alone all of their children to transfer into high school. However, funds allowing, the one child considered to have the most promise is chosen above the others. Education offers a potential future in which children could be employed and able to support the family through the receipt of wages. However, this of course is predicated on the availability of jobs in an area with very little in the way of employment, and therefore demands that the educated individual leave for urban areas where the likelihood of securing a job increases. The burden of support, therefore, can lie solely on particular children. In addition, families collectively decide which trades their children should become skilled in. For example, the heads of the Katana Mare family made the decision to train one of their brother's sons as a plumber in anticipation of the projected needs that the pipeline could bring.

Social and Political Organisation: Hierarchies, Gender, Property and Ownership

As the above indicates, the Giriama adhere to fairly rigid patriarchal gender roles for daily tasks on the whole. In association, land ownership is strictly gendered with head patriarchs retaining jurisdiction and final arbitration rights over the different areas of family land. Each son can use sections of the land on request year after year, and uses the land on condition that the original owner (often one's father or uncle) is simply regularly recognised for their generosity through small gifts. However, the act of farming and the ownership of land it enables, is, according to Waaijenburg (1994), a fairly modern affair. He maintains that in association with the migratory pastoralism practiced by the *Mijikenda*[21], land was previously used rather than owned (1994:13). Encouraged by the British colonial administration in the early 1900s, land use

[21] The term *Mijikenda* refers to the 9 Bantu tribes in the area collectively, the Chonyi, Kambe, Durama, Kauma, Ribe, Rabai, Jibana, Digo and Giriama. Thus, the Giriama are also one of the *Mijikenda*. *Kenda* means 9.

transformed into land ownership along with their directives to plant trees rather than other crops. Thus, Waaijenberg (1994) maintains that it was through planting a tree that the land could be claimed as one's own. Nonetheless, and despite Waaijenberg's assertion, it has taken until 2015 for ownership to be officially recognised by the Kenyan Government[22].

All physical work is considered necessary but demeaning – a sentiment that embodies echoes of the history of slavery that mobilised trade along the coast in the 19th century. The manual labour of farming is also held in this regard. Consequently, farming itself, while not a gendered occupation *per se*, is a manual one, and thus falls below certain individuals' station. Women, children and men of lower status are expected to do the chores, while the men of higher status assume what amount to the managerial positions in the family. Men must sit and think, I was told. Thinking ensures the family's security and is harder work than digging because it demands planning ahead and directing activities. Thus, thinking is an onerous responsibility that women are considered unable to do. Moreover, men consider women unable to follow simple instructions.

There were many times when I heard husbands complaining about their wives' inabilities to carry out instructions. "What is this about?" Alex (Katana Mare, May 2017 pers. comm.) exclaimed after Loice had failed to do the washing as he had asked, "You tell them one day, and they do it, but the next day they go back to how it was before. What is that about?" I always felt this kind of behaviour was more about women being bloody minded towards their manager husband's dictates rather than any inability. However, men experienced this with a mixture of acute irritation and weary resignation, saying that they felt women, "sat on them" (Alex Katana Mare, May 2017 pers. comm.).

Christian men are more 'Christian' about their wives' so-called failings, saying that they have to remember that they are just weaker then men, because the bible says

[22] The move to officially recognize land ownership comes in association with the Sultan of Zanzibar's claims of ownership after having rented it to the British administration early in the 20th century, coupled with the rise of the MRC (Mombasa Republican Council) in 2010/11 who demand the coastal strip become a republic (Willis and Gona 2013).

so. In contrast to women's intellectual frailty, men do not consider women physically frail. Indeed, "They can do it. They are used to it" is the regular refrain I heard from the men as women carried the water and other weighty items. To say otherwise is to encourage laziness, something that is openly frowned upon. How one sits and moves can have an accusation and judgement of laziness hurled at it. The fact that I sat cross-legged and bent my knees to work in the fields was a sign of my great laziness, which I was reprimanded for. I was told that such behaviour would never afford me a husband. Something I was not too concerned about.

"It is difficult to be a Giriama man," Stephen Ngumbao (May 2017 pers. comm.) told me after I had enquired into the strict gender regulations.

> "Our customs are different. Long ago before education, women had their own work and men had their own work. Therefore, women did family, cooking and the man brought the food [by hunting]. Therefore, it looks like the women had hard jobs but hunting was dangerous. To know how to kill a lion is difficult. Women are weaker vessels. It says so in the bible."
> (Stephen Ngumbao, May 2017 pers. comm.)

After some further discussion using the bible to validate his point about female weakness, he ended by explaining that the problem concerns women's tendency to emotional volatility. "If there is something to get angry about women will get angry first" (Stephen Ngumbao, May 2017 pers. comm.). I rarely saw a woman get angry openly towards her husband. Most women's recourse was to fall silent and broody.

All of the women I spent time with – regardless of their husbands' occupations - are farmers who work on their own designated land plots. The plots are distributed by the husband who uses some of the land he has 'borrowed' from the family elder to give to his wife (or wives). The women are free to create their own *shamba* where they can then also grow the crops that please them. (They would also be expected to help on their husbands' (and wider family's) fields as well.) Consequently, farm gardens are personal concerns and an individual's responsibility but, as a result of the ambiguity of ownership that this system presents, the produce may also be used to support the extended family members when and if others are in need. Thus, despite having distinctly personal and private areas and particular tasks to tend to, the farm gardens

and constructed spaces offer a materially obvious support network from which, collectively, relatives can draw if necessary.

In the past a council of elders (*Kambi*) sat at the head of community affairs. Comprised only of men (who had passed through the necessary life stages) and ritual practitioners (able to enact the much feared *fisi* (hyena) oath[23]). The group articulated collective decisions that were final. Those in the group able to enact *fisi* are considered to be the peacekeepers or police of the Giriama by Parkin (1991), but locally they are characterized as having much more ritualistic and mysterious power. Even today many fear those who know of the *fisi* oaths. Taylor (1891) illustrates how local fears are deeply rooted into the past when he says that the *fisi* practitioners 'inspire great terror' (1891:45) due to the potency of their medicine and their horrendous 'drunken howling' (Taylor 1891:45) during the rituals that lasted for days. On the other hand, in less flamboyant tones, Taylor (1891:45) describes the meeting places of the *Kambi* called *kaya* as simply something akin to secret 'club house' where groups of male elders (who he compares to the Masons in the UK) organise clan life. The *Kambi* group functioned so as to avoid any single individual obtaining overall power, but there was a spokesperson elected by the group. The members of the *Kambi* held ownership and control over all Giriama land use (Jumaa 2013). According to Waaijenberg (1994) a shift to trading accounts for the demise of the *Kambi* in its previous form. However, a group of elders and respected community members still exert a tremendous amount of influence in Boré today.

In addition to local elder groups, there is a system of local chiefs. Chiefs are expected to act as moral agents and arbiters, as much as they are conduits of information. In addition, permission for changes is sought from the chief. The Kenyan government recently changed and elevated the status of local chiefs to agents of the administration. Thereby, through the deployment of a network of chiefs in each newly formed county, they are able to enact government policies directly at a local level. Elders in Boré consult with and favour support from the local chief in Garashi.

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[23] The fisi is a powerful oath that uses water to spread its message (Brantley 1981 and 1986), also see section Identity Solutions: Blending Place, Power and Water.

‘The Boré Green Umbrella’ (*Muvari wa Rangi ya Nyasi* or BGU), advertised as a ‘self-help group’, appears to function similarly to the *Kambi* of the past. Composed predominantly of men, membership is connected to age but is also linked to wealth, as members must pay a fee to be included. The committee meets regularly under the shade of a huge mango tree to come to decisions for the future and adjudicate on local transgressions.

Fu Ha Mwenga – Fluidity, Unity and Identity

> “Brothers cannot go hungry if you have food in your house”
> (Agnes Ngumbao, August 2016 pers. comm.)

The Giriama of Boré regularly use the phrase ‘*fu ha mwenga’*, which translates as ‘we are together’ or directly as ‘we are one’ (*mwenga* is the number one). This phrase punctuates dialogue to indicate that the engaging parties recognise their connection and that, because they are connected, axiomatically have an obligation to support each other and treat each other as if they are one and the same. During times of concern, when I needed help – for example, if I had another puncture, or feared running out of petrol – I was always met with, and reassured by, the phrase “*Don’t worry, fu ha mwenga*”, meaning “Don’t worry, I will help you in the same way that I would help myself”.

Establishing whether (and how) ‘we are together’ mobilises social relationships in Boré. How one is together with another (or with the group) impacts not only on all relationships human and otherwise but also forges a sense of unity, the force of which sits almost invisibly at the very heart of Giriama life. Indeed, as will be covered in a later chapter, determining whether people are together or not is an articulating theme that demonstrates how Giriama authenticity is one that dwells-with (Ingold 2000), and draws inspiration from the patterns and behaviours of the water that shapes their worlds.

Ascertaining similarity and therefore togetherness instigates the formation of groups and is a processual method that encourages group cohesion. Instituting similarity through kin and alliance networks is commonplace, and relatively easy and quick. However, determining similarity with strangers is more of a challenge and can take a long time to complete. This is no different for the Giriama then other people.

In the event that an individual meets another with whom they are not familiar - for example, on a road or pathway - he or she must begin the process of finding out just how much the other is 'together' with them. This is done through a complicated series of elaborate and structured questions that reveal information about clan (*mbari*), family (*mviago*), residence and heritage or ancestry. The bevy of questions is designed to reveal just how close one is to the other person– if they are family, if you are '*mwenga'*. Once this is determined it is possible to enact the immediate obligations of the relationship together. This then sets the stage for any future behaviours and shapes the level of engagement culturally expected.

These questions are initially asked with what seems like a sense of suspicion, something akin to mistrust and certainly trepidation. Faces are slightly turned away, bodies positioned side on to each other and eye contact is avoided. The body language and verbal communication enacted in these moments illustrate the danger strangers are thought to pose to each other. A stranger by definition is 'strange'[24]. Until this strangeness has been transformed one is unsure of the person; they could be god, beggar, hostile, friend (Pitt-Rivers 2012). Adopting a sectional position protects the body through the reduction of the surface area available for puncture or other damage, and is illustrative of the initial reticence people have in a semi-remote location without the immediate protection of the law. Echoing the elaborate hospitality rituals of Bedouins who share food and drink to produce (not just recognise) similarity and incorporate the traveller or guest into the body of the group (Young 2007), this Giriama roadside ritual likewise acts as a 'rite of incorporation' (Young 2007: 64).

[24] In Giriama, the words 'strange' and 'stranger' are connected (as they are in many languages) and translate as *jeni* and *mujeni*.

If the interchange manages to establish even the slightest link at all – and they usually do – then everyone visibly relaxes, as one is considered, even named as, part of the wider family group within one of the seven Giriama clans. To be positioned as part of the family in this manner, dissolves attention to one's individuality and foregrounds the place you take in the wider field of expectations that draw the Giriama together. The strength on this field of associations relies on its constant reaffirmation, which relies on engaging with others regularly. Through establishing similarity *fu ha mwenga* creates and structures the notion that people are not individuals alone having to fend for themselves without support from the fabric of connections (cf. Neimanis 2017).

However, with non-Giriama this can be more difficult and so there is a mechanism to draw strangers into the family group by naming them. Thus, the family connection can be completely independent of any notion of bloodlines, alliances or ethnic similarity (cf. Carsten 2013b; Sahlins 2013). Willis and Miers (1997), in their paper about slavery in east Africa demonstrate the fluidity of membership to Giriama society, showing clearly, furthermore, that who is considered kin does not rely on marriage or birth. They say that the Giriama regard those people who scholars tend to call slaves are actually held as siblings.

> 'There developed in these societies no new conceptual categories for the marginal, nor any widely shared ideology of 'slavery'. Those acquired were incorporated alongside other followers, and became 'brothers and sisters'.'
> (Willis and Miers 1997: 480)

In addition, I, for example, am now family, and my Giriama name Kadzo[25], reflects that. Being named is hailed as both a privilege and an honour, and furthermore allows one safe passage across the district[26]. It is delivered with whoops of delight and generalized merriment, with women loudly ululating in appreciation of what I, at the time, thought to be the recognition of our mutual similarity and connection. However, I was mistaken. In my case, being part of a family and a clan comes not with an

[25] I was told that Kadzo means both someone who has everything and beauty; it can also describe a small river. My son was named Ngumbao, which translates as brave and stubborn.
[26] Misfortunes can be attributed to a stranger's entry into a space, if they are not recognized as a member of the group. Thus, prior to my acceptance as family, I was chaperoned everywhere. This was deemed vital for both my protection and the protection of the wider group. Being accompanied ensured that misfortune did not befall anyone. Even now, as family, there are many places that I should not go alone because it would be hard to explain my difference.

acknowledgment of likeness or fondness but with a tie that binds one to what feels like a weighty obligation to support my now much extended family. With the obvious power inequalities between the local population, and myself, obtaining me as family implies a lifeline to economic security. Therefore, the group strategically named me in accordance with what the kin group I lived with collectively recognized that I could give to them - and not, as I initially assumed, in my vanity, in recognition of being personally accepted, or even liked. Having taken the name, I am now family, which means that I can be (and am regularly) called on to help my family when they think they need it. Equally, the obligation is reciprocal and I too can call on them for information without resentment, which for an anthropologist is more than fair.

Greeting practices and absorbing visitors are clearly illustrative of the cultural force *fu ha mwenga* exerts. Greetings with the Giriama are highly structured regardless of familiarity. For those people that one sees regularly, including close family, each encounter must be opened with a series of phrases that are sometimes all but muttered at each other. Entry into a populated space requires one to greet every person in turn using a similar volley of expressions for each. Hands are held, slapped or touched depending on status; similarly, the level of audibility and whether to hold eye contact or look to the ground depends on one's position in the social hierarchy. Women tend to look away from men whilst reciting the greetings, as do children who also offer limp hands to touch. Different phrases are used for different age groups. Elders or individuals with status must be met with an arm outstretched but with the other arm crossing the body, the hand resting on the outstretched arm's elbow as a measure of one's respect. Depending on the amount of people in an area, the act of greeting can consume a lot of time. Trading partners are also drawn into the system by making them part of what Zeleza called a 'blood brotherhood' (1995:18). So-called blood brothers pledge an oath that draws the entire family into the set of obligations, not just the individuals trading.

To fail to greet an individual causes social consternation. If you neglect to greet another it indicates that you do not hold them in your sights; you are not thinking about them because you are too absorbed by other thoughts. Doing this once or twice will be tolerated, but more than that will draw questions to find out what is occupying you so much that you cannot notice the people around you. Thinking about things other

than those around you is mistrusted. People imagine that you might be plotting or scheming for some personal gain that ignores your membership of the group.

Through the constant referral to others, each person realises that they inhabit a place within a group. This perspective draws the focus from the self as an individual to one of the self as part of the community. Thus, when one family is in jeopardy, there is a sense that every family is and actions are taken to support those in need but only in reference to the whole. This communistic sense of being together is also reflected in other social practices. Zeleza (1995: 47) describes Giriama families taking turns to work each other's farmland (*kukumbana*) a practice still regularly played out for activities that require a group today. Another example is that of the activities that depend on *harambee*. *Harambee* is a KiSwahili not Giriama term for 'let's pull together' but is the label used for activities that demand the actions of community members to complete without payment. It is regularly invoked across Kenya and has similarities with the Bantu humanist philosophy of *Ubunte* used in South Africa that reminds people of their interconnectedness. *Harambee* or 'pulling together' occurs periodically at particular shared events. *Fu ha mwenga,* on the other hand, is a recurring cultural idiom that orders social life. As a result it is also subtler, works as a constant reminder that one lives as a dependent part of a wider whole, and as a social force it effectively dissolves the individual into the group. Being minded that the group *is* together lubricates Giriama social life. Indeed, as will become clear, 'being together' embodies the very essence or authenticity of Giriama-ness.

Being together is both challenging to, and threatened by, separation and difference. The potent/ial danger of being separate and different is nowhere more clearly illustrated than in hospitality theory (Candea and da Col 2012; Pitt-Rivers 2012). The ritualised actions of hospitality diminish the vulnerability induced by the notion of the strange/r penetrating the social body (Derrida and Dufourmantelle 2000; Young 2007). Establishing if *fu ha mwenga* (if, we are together or one) is the first necessary action in all engagements and, as such, can be interpreted as the precursor to, or initiation of, further hospitality rituals that assimilate – or in this case, engulf – the stranger into the group. Rather as water engulfs all that it surrounds, one's individuality is dissolved into the cultural medium through this expression (cf. Neimanis 2017).

The outcome of the elaborate set of greeting questions used by the Giriama is the categorisation of the engaging parties into similar or different social bodies. This process determines how the interacting parties should continue to relate to each other. Thus, by sorting through genealogy, the watery notion of *fu ha mwenga* dissolves the potentially destabilising or disrupting forces of difference (Douglas 1966) and self-interest, and stops them from materialising.

In addition, terminological restrictions draw more people together as family. For example, in Giriama there is no word to indicate friendships across the sexes. This means that a man cannot say that a woman is his friend and vice versa, despite this being materially the case. Instead one would adopt the term sister, aunt, cousin, grandmother or similar kinship term as connector depending on age set and proximity with other kin. I am told that a male/female friendship is quite simply impossible as it suggests a sexual component to the relationship that is unacceptable. There is a word in KiSwahili that some people now use (*rafiki*), but this is not typical. To overcome this issue, therefore, people must be linguistically transformed into family and on hearing 'she is my sister' I often had to endeavour to ascertain if this was a sister using my terms of reference or not.

All of the above could be labelled levelling mechanisms but might be better understood as incorporation or assimilation processes that allow detached individuality to both exist, and blend, because the 'one' stands only as it does because it is in relationship to others. Thus, from the cultural milieu emerges difference and similarity simultaneously. Just as with Barad's particles, what becomes is only itself as a result of what it is in relationship with at any given point in time (2007). Just as water is a fluid unity, different but also the same, so too are the members of this community. The phrase *fu ha mwenga* insists on similarity alongside any differences so as to produce a flexible lubricated concord wherever possible.

Chapter Four

Being with Water in Rural Kenya: Wet and Dry Representations of Giriama Origins

The presentation of the Giriama in the literature is confusing because of the variety of different spellings of their name. They can appear as either the Giriama (McIntosh 2009a; Parkin 1991; Zeleza 1995), the Giryama (Willis and Miers 1997), the Agiryama (Champion 1967) or even the Kiriama (Krapf 1860: 262)). I am choosing to use local spellings that coincidentally follow the lead of McIntosh (2009a) Parkin (1991) and Zeleza (1995). In addition, the Giriama identity is subsumed within one of a wider group of nine Bantu tribes collectively named the Mijikenda or Wanyika or *Midzichenda* (in the vernacular) (Geerhart and Giles 2014: xxix), a term, which means: nine tribes or houses (Helm 2004) or nine villages (Zeleza 1995). Probably unsurprisingly, missionaries, such as the prolific Krapf, (1860) and New (1873) wrote the earliest ethnological accounts of Giriama life establishing their presence in east Africa in the 1800s. Of the many historical texts written about the Mijikenda during the following years and through the 1900s, most seem almost transfixed by the puzzle of the group's origin. Even notable ethnographies reiterate and engage with this mystery as an introduction to the Giriama (cf. Brantley 1981; Parkin 1991; McIntosh 2009a; Spear 1978 and Waaijenberg 1994).

Parkin's work undoubtedly established the Giriama ethnographically (for just a selection of writings on the Giriama see: 1968, 1970, 1980, 1982, 1989, 1991, 1995). His influential text *Sacred Void* (1991), explores the use of the forest as a ritual space and its significance in producing a narrative of cultural authenticity, but the part water plays in shaping Giriama lives has not yet been explored in any depth, despite acknowledgement in most of the literature that the Giriama have been troubled by water concerns since their purported arrival in this part of East Africa (Brantley 1981 and 1986; Champion 1967; New 1873; Parkin 1991). Representation of the Giriama has typically tended to focus on 'land', particularly in an attempt to locate the Giriama place of origin (Helm 2004; Willis 1993), but also in connection with their subsistence methods and ownership through tree planting (Waaijenberg 1994) and with regards to

their iconic forest structures (Parkin 1991; Willis 1996)[27]. This is more, I suspect, to do with the ontological and epistemological leanings of the scholars than any other reason.

In keeping with the textual representations cited above all the Giriama that I have spoken with recount the story of their ancestry similarly. They state that they originate from a place called Singwaya – a place they sometimes enigmatically situate without clear reference point somewhere 'in the north'. Singwaya, it is claimed, was a city with permanent housing, royalty and great riches, where everyone was more affluent and comfortable than they are today; a paradisiacal, flourishing, developed and wealthy kingdom of high status individuals. Forced by constant conflict from unnamed herding neighbours who let cattle graze on Giriama crops, they moved south into the then dense forest coastal strip for safety. This simply happened 'in the past' but according to Parkin (1991) this could have been approximately 400 years ago where they lived in fortified forest encampments for their protection and to preserve their authenticity. In keeping with other aspects of Giriama origins, there is some lack of clarity about the dates of this movement into the area – something that Cashmore (1967:157) notes: 'Kirkman suggests 1350-1400. Prins considers that internal evidence shows that...they probably did not leave till as late as 1700, Champion...arrives at the date of 1624'. The anecdotal stories of their migration are characteristically lavish and are recounted in exciting, mythically rich detail. Collectively the stories create a picture of mystery, heroism, kindness, magic and power together forming a sketch of a people apart from other groups and resilient in adversity.

However, any attempt to locate the mysterious Singwaya by European scholars has been unsuccessful (Parkin 1991; Spear 1977; Morton 1977, 1978; Willis and Meirs

[27] Cashmore (1961:157) using the work of Taylor (1891) also fixates on the land. He does this through the application of geographic boundaries to the lands in which the different Giriama clans can be found. He creates 3 distinct territories (north, middle and south) as fields of reference that position the group into a place. Using this schema, the Giriama of Boré that I have spent time with would be placed in Northern Giriama located near to Mwangea Hills and north of the Sabaki River. As a result of conflicting data on the history of the movements of this group of peripatetic farmers, the group of Giriama in Boré Koromi today could inhabit either the newest of locations for Giriama or the oldest. This remains unclear. Consequently, the enigma of the dematerialized place or the immaterial land retains its potency as a story.

1997). Spear (1977) thinks this can be accounted for by an error in nomenclature, and maintains that the people currently named the Mijikenda were once known as the Kashur – a Bantu group living in Brava East Africa (farmers with similar cultural traits such as child exchange) – now known as Baraawe approx. 100 miles south of Mogadishu). This information is repeated, possibly substantiated, by the claims in volume 3 of *The Cambridge History of Africa* (Fage and Oliver 1977: 189), where the Kashur Bantu (aka the Mijikenda) are described as the people living in Somalia around the time that the Galla (or Omoro) were expanding their influence in southern Ethiopia.

To confuse things further, there are multiple Singwaya-s dotted around the area. For example, in the hinterland of Boré Koromi, travelling north towards Baricho is a town named Singwaya – big enough to have its own primary school, and which also happens to flank a protected ritual forest space called a *kaya.* In addition there is also another area nearby that is locally known as Boré Singwaya (it happens to be a rather affluent area comparatively). Unfortunately, according to my informants, neither location is the original Singwaya, because the original site is not to the north but (and in contradiction to other accounts) is situated to the south in Tanzania.

Spellings of the location from Singwaya to Shungwaya (and even "Chungwaya" (Katsungu 2013, pers. comm.) have been proposed in the hope of finding the spot, as have investigations into linguistics (cf. Spear 1977). Later writings, such as Helm (2004: 66) claims that the word should be understood as '*tsingwa ya'* meaning 'other people's land' because the term does not reference a physical piece of land (also see Pakia (1996:8)). However, the individual Giriama I have spoken with contest this interpretation claiming the authors to be mistaken – the term simply translates to "sub-location" (Alex Katana Mare, July 2016 pers. comm.). Helm (2004:73) continues, stating that the creation of a land of origin was an attempt to unify a political position through the 'adoption of a common tribal identity', and in referencing Willis (1993: 147), Helm (2004: 66) claims that Singwaya 'has been one of the great historical chimera of coastal historiography'. In agreement, Walsh (1992) too contests the veracity of any geographical location, stating Shungwaya is just an idea perpetuated by excited historians.

As the above overview demonstrates a material location of origin for the Giriama remains illusive (also see: De Vere Allen 2005; Morton 1977; Parkin 1991; Spear 1977; Walsh 1992). Nevertheless, the narrative continues to be compelling for the inhabitants of Boré. Locals will regularly revisit this story on request and never discount its veracity.

Stephen Ngumbao, a retired schoolteacher, preacher and very well respected elder, even took it upon himself to write the story out for me – going to the trouble of purchasing paper and a pencil to do so – to ensure that I could represent it in the manner by which he thought it should be told. Stephen is seen by many in the community as the font of knowledge and is the person they approach for advice. Whenever I found things difficult to understand, I was directed to Stephen.

Stephen is a tiny man who lives some distance away on the other side of the ridge from my house within his pineapple fields. It is not possible to simply turn up at Stephen's. One must organise a meeting. Therefore, getting to have an audience with him always took some planning. He is not one for talking on the hoof. He insists on sitting and giving you complete attention when you visit. There are shadows of Kenya's colonial past in his behaviour. He writes his thoughts out in notebooks using a ruler to inscribe a margin and underline his heading before filling the page. He can quote effortlessly and accurately from the battered copy of the bible he keeps in his wattle and daub walled house because it has been almost his sole reading matter for about 60 years. When he heard that most people in the UK are no longer religious or go to church, he was equally puzzled, horrified and saddened. 'But you British used to beat us as children to make us take God, and now you don't practice?' he said when he found out (Stephen Ngumbao, June 2017 pers. comm.). From his shaking head, it seemed he was unsure of what to make of this information.

Even when seated Stephen always responded slowly, as he carefully deliberated on the answers he was formulating. Despite his pensive manner, he wasn't stern. His eyes always seemed to smile at me from underneath the battered and fraying sun-bleached red cap that shaded his face, almost tolerating what appeared to be daft questions. He has a tendency to almost whisper when he speaks, which demanded that I pay total attention to him for fear of missing any words. This always produced

an air of anticipation for what might come next and an aura of authority around him. Stephen is obviously still mentally sharp despite his advancing years. I always felt like a blundering rhinoceros in his presence, crashing about with ideas, thoughts and questions, but always came away with a sense that my understanding of Giriama life had developed after being with his gentle, calm quietness.

> SINGWAYA
> This name when mentioned represents the original peace [*sic*] where the Mijikenda and other tribes like the Pokomo and the Taita are said to have come from.
> The Mijikenda, Pokomo and the Taita were farmers, and up to this time their occupation is still farming. Their neighbouring tribes, the Gallas were herders of animals eg-cattle and on [*sic*] at present they are.
>
> There rose a conflict between the headers and the farmers. The cattle grazed on the farms of the crops the farmers had planted. There was a constant war between these two people. Lastly, the farmers moved away and sought other areas to settle and practice farming peacefully.
>
> The Taita went to the Taita hills, the Polomos settle along the river Tana. The language of the Polomo is all most similar to that of the Mijikenda, only that they had adapted several words from the Gallas since they live near them.
>
> The Mijikenda have settled along the coast, near Mamburi, Malindi, Kede, Watamu, Mombasa and beyond, all along the coast.
>
> As they settle along the coast the Mijikenda have given names to various places like Bore [*sic*] Singwaya, and there is another Singwaya somewhere else.
>
> The Mijikendas are good people, living peacefully with their neighbours.
>
> Formerly they worshipe [*sic*] idols, and yet a few are still worship idols and other gods. But many these days have become Christians worshiping the true god.
> Their children are now going to school, and we hope in the near future life will completely change.
>
> Changes however are slow, since poverty is making most children not to progress further, because of the cost of living. School fees are high and food is scarce. Let's hope that as the Mijikenda struggle, God will help them to achieve success.
> (Stephen Ngumbao 2013)

For the Giriama around the Boré district then, the tale of an alternative location of origin validates their identity. Stephen failed to include the fantastic claims to great riches that others talk of, preferring to paint a humble and kindly picture very much in keeping with his Christian beliefs. Other representations seem to lie in diametric

opposition to the social status and lived reality that most Giriama occupy in contemporary Kenya.

How Important is Dry Land?

For Parkin, Singwaya is very much a place, which he locates north of the Tana River in Somalia. He continues to say that it is 'a significant reference point of origin' (Parkin 1991: 23) and goes on to substantiate this by explaining that Giriama burials are structured so as to include this place of origin, that is: corpses rolled onto their sides need their eyes to be facing the north as if looking back to home. This is not a practice that I have come across. However, Parkin was working with a group of Giriama who live significantly further down the coast near Kilifi. In contrast, my informants are clear that burial methods indicate the lack of significance of earthy material reference points in the landscape. Headstones are rarely used and graves are danced flat (Zeleza 1995). Any wooden carvings made of the deceased are not placed near the gravesite but sit as a family member in the compound[28]. As a consequence of constant migration in the past, I was told that 'the dead understand the living must move on' (Theophrastus Kithunga, August 2016 pers. comm.). Thus, the dead bodies of the Giriama over time simply merge back into the landscape without emotion or sentimentality for the flesh, leaving little or no reference point for the living to revisit in the land. The dead however do have similar needs to those of the living and therefore must be remembered through food sharing and regular communication.

From this, coupled with the ambiguous method of land ownership the Giriama employ, one could conclude that land itself fails to be of the material importance one might assume it to have. Consequently, I argue that the point of significance lies not in the claim of migration, or any links to a piece of geography but, rather, lies in the details

[28] *Vigango* (singular, *kigango*) or funerary posts are carved wooden sculptures that roughly represent a person standing 3 – 5 foot tall. They typically sport a neck and head, some have a 'waist' but the rest of the body is simply a log or plank of wood with occasional patterns as decoration. Rather than being artefacts, or a grave stone as Taylor suggests (1891), the *vigango* are considered to be a material version of the person who has died and, as such, are treated as part of the family in a similar way to a person who is alive. According to Ngowa (2016), they represent the unity of life and death and allow families to remain together (*fu ha mwenga*).

of the journey and water's role in maintaining Giriama authenticity. Most texts fail to offer any description of the journey and very little on how it is thought to have ended. Further attention to the events of the journey and how the journey concludes reveals an alternative picture that suggests water plays a leading role in constructing and materially maintaining the substance of Giriama-ness.

Solutions: Blending Place, Identity and Water

> '…of central interest here are the political implications of the intricate relationship between water, memory and landscape. In these senses, the variety of practices and languages associated with water often appear not so much as responses to a scarce 'natural' resource but rather as cultural and political resources in themselves; a kind of 'symbolic capital'.'
> (Fontein 2008: 746)

From discussions with my Giriama informants, water is revealed to have played a quiet but key role in local narratives of the Giriama flight into Kenya's Coastal Province, and is illustrative of the way Giriama lives are tangled both physically and cosmologically with the substance. According to those I have spoken with, prior to departure, group leaders (elders and ritual practitioners) were concerned that, as a result of new influences, the journey could dilute the purity of the group's identity in transit. Seemingly to avoid a scattering of people and the possibility of losing a sense of collectivity, the group leaders created a protective medicine from local plants and water held in a *nyungu* (clay pot), called a *fingo* (Mutoro 1985).

Multiple accounts describe this *fingo* (Parkin 1991; Zeleza 1995). In some (I believe erroneously) the fingo is a stone talisman[29] (e.g.: Parkin 1991), in others it is simply described as a medicine (e.g.: Mutoro 1985; Zeleza 1995). For the locals of Boré Koromi, the *fingo* is always liquid never stone. They agree on the purpose of *fingo*. It was made to contain, protect and preserve authenticity of Giriama-ness both in transit

[29] Taylor (1891) draws comparisons between a *fingo* and a *kiraho*. Both terms are used to describe prohibitive watery oaths that are put in bottles and buried under the ground. "If you place a *kiraho* into your field the thief will not be able to steal from you – he will dither around or a snake will chase him away" (Julius Mwambire, May 2017 pers. comm.)

and on arrival (Parkin 1991). It was made by blending water with a selection of other secret materials, which in relationship produced the essence of being Giriama and demonstrates the connections between being Giriama and being material.

I have not found a text that details the recipes of Giriama medicines, but conversations affirm that typically medicines are liquid rather than powdered. River water is used as the base, which is then mixed with other materials (such as: hair, blood, leaves, ash). Indeed, Brantley (1979:126) talks of the Giriama using 'ritual water' to transmit cultural messages to wider spheres. Referring to the burial or placing of water medicines specifically, Brantley (1986) notes that water based medicines are able to affect everyone within the radius of their influence, because they seep into the water supply. Discussion also revealed that locals hold that watery medicines accumulate potency over time (see: Attala 2016a). This results from the behaviours of the relating materials mediated with ancestral spiritual relationships. Thus, the potency and agency of the medicines is due to three things: the activities of the spirits that the medicines are designed to attract (Alex Katana Mare, March 2015 and August 2016 pers. comm.); the ability of practitioners to permeate items with power through making oaths or uttering into the materials that are blending (Theophrastus Kithunga, August 2016 pers. comm.); and because as the ingredients blend or dissolve into each other the remaining liquid concentrates and intensifies (Freddy Mare, April 2013 and Sept. 2016 pers. comm.).

Carried throughout their flight, the potent liquid also came with a terrible price. The medicine, whilst able to keep misfortune away, also exerted a destructive power, which endangered those who physically handled it. Consequently, transportation of the potion was an act of sacrifice; each individual who volunteered to carry the potion died at the end of the day:

> "The original pot carried [a]… power – it was dangerous."
> (Theophrastus Kithunga, July 2016 pers. comm.)

> "The custom was to carry it. Carrying the medicine pot protected the people. The carrier dies each night to sacrifice for the group.
> The pot fell and broke into pieces with a sound. It made a noise *di-go*. Di is the noise. Go means finished. To show the past had finished. That pot it protected

> the people. With no pot to carry now how were the people to keep together? So the people spread."
> (Stephen Ngumbao, February 2013 pers. comm.)
>
> "The pot was galled Ngiriama. [Each] person who died, the place was named after him. The process ended with the digo. There a home was created."
> (James, February 2013 pers. comm.)

This set of circumstances hints not only at the coherence of the community and the significance of the blending of individuality, but also reveals that the group's collective identity is experienced as inextricably manifest with a range of materials other than land, of which water is one (cf. Fontein 2015a). According to my informants, it was accepted without complaint that one had to die each day for the benefit of the group. This chain of deaths continued until the pot was dropped smashing the container on the ground, and emptying its contents into the soil. Unable to travel any further, this spot was where the new Giriama world was built. Any further travel was prohibited by this incident because the material that embodied Giriama-ness and provided cultural protection was now absorbed into the land. It was here that the first *kaya* was built. This event – that is, the absorption of Giriama-ness in solution into the ground - presumably worked to imbue the surroundings with a genuine sense of who the Giriama are and enabled a feeling of home to be created in, what are purported to be, foreign lands[30]. Thus the *fingo* embodied, produced and perpetuates the Giriama.

It is hard to know how to use the word medicine. My informants use it, and therefore so do I. Modern usage of the term describes either a practice or preparation used to prevent or treat disease (Concise Medical Dictionary 2014). These decoctions are not created for such purposes exclusively. Rather than healing, medicines are used to evoke material changes other than those of the body, including bringing rain, love, employment and protection. The etymology of the word medicine stems from the ancient Indo-European root 'mad' or 'med', as in meditate, or to think with or about (Charen 1951: 215), and in concert with this, one needs to relate to Giriama medicines for them to be effective. Parkin (1991:151) uses the term 'oath medicine' to indicate

[30] This version contradicts Parkin's (1991) account that the *fingo* was buried but supports his notion that the *fingo* acts as a bridge to Giriama origins (Parkin 1991).

that the ingredients must be associated with words in order to work (also see Malinowski (2002) for a similar point with regards Trobriand magic). Citing Johnson (1976: 265), Parkin (1991:176) notes that, for the Giriama, medicines are deemed inactive until they are 'orally instructed to have their effect'. This characterisation suggests human agency and intention activate materials. However, as will be illustrated shortly in more detail, in contrast to Parkin (1991) and Malinowski (2002), Giriama oaths are rarely dry mutterings but are regularly said through water. Chiming with Stoller and Olkes' (1989: 88) account of the methods sorcerers use to activate medicines in Niger, that states one must 'spit [words] into the substance', the Giriama impress intentions and outcomes onto situations whilst either spitting water or speaking through the water they have put on their hands, a method that facilitates communication channels between the material and immaterial (see sections: *Mavingane* and Crying for Water).

Furthermore, medicines can be used in a number of ways. They can be consumed, buried in the ground or cut into one's flesh, scattered, daubed or burnt to have influence or be 'active' (to use the term Parkin (1991) uses above). Equally, they can be used immediately or left to strengthen by allowing the materials to mingle and cohere.

Parkin (1991: 151) provides some description of the ingredients used to create the very powerful and infamous *fisi* (hyena) oath stating that 'it consists of liquid made from leaves and /or roots and, according to accounts, kills unrepentant evildoers'. Other ingredients might include water that has washed the genitals of postmenopausal women from each clan (Parkin 1991:151). According to Brantley (1986), the *fisi* medicine was also used to deter any unnecessary and thoughtless water use in times of drought and acted to regulate community water practices, which demonstrates how diverse the uses of one medicine can be.

> 'When the medicine was buried, the entire water supply was considered to carry the medicine. Anyone who broke the terms of the oath and drank water was expected to die. During the famine of Maguiria in 1899/1900, all of the waterholes of Giriamaland were put under the protection of the *fisi* oath…the water used in the oaths was carried throughout Giriamaland by the women. They sprinkled it in the waterholes as the oath was repeated.'
> (Brantley 1986: 342)

Theophrastus explained the many ways you can use Giriama methods of projecting ideas or desires into materials to influence change. The explanation Theophrastus offered illustrates how medicines must blend people's ideas with the materiality of the landscape rather than simply as remedies that act on the body to heal. Thus, he shows that Giriama influences (thoughts, intentions and actions) can seep through the world by blending with other materials to do so.

> "To make a spell the practitioner will go to their special object and talk to their object saying what they want to happen. They will add their own words and then it will happen. If their object is a tree they will take leaves and roots and mix it with water. Or they could boil the roots and make a tea. They can take the root and leaves and burn them with other objects like snail shells, skins, snakes and then grind the ash to be smooth, like powder and then take a knife or razor blade and after making small cuts on the joints pack the cuts with the ash. The power now acts. If you want to create harm you talk to the root and leave it on the path – underground – say the name of the person who you want to harm and the harm will come. Knowledge travels from blood to blood but it is not hereditary. It is like writing, you have to learn it."
> (Theophrastus Kithunga, August 2016 pers. comm.)

Theophrastus is something of an enigma; I never felt that really got to know him even though I spent a lot of time with him. About 50 years old and on his 3rd wife, Theophrastus is a farmer like everyone else, but he also owns a donkey and cart that he hires out for haulage to earn an income. He claims to have chosen to lead a simple life and be an 'ordinary man', in contrast to his father who was initiated into an order of ritual practitioners powerful enough to be able to create the *fisi* oath. Theophrastus rejected that lifestyle (despite hereditary claims to it) maintaining that the power it is able to bring about entailed other obligations that he did not want. But he seems anything but ordinary. Wily and shrewd he used my presence in the area to get him access to different families in the hope of doing extra deals under the guise of chaperoning me, but equally when he knew of events he thought I might like to attend, he took me. Theophrastus is not everyone's cup of tea, he was regularly drunk and sometimes offensive but I enjoyed his company because it was colourful. He speaks excellent English and consequently helpfully explained some more esoteric aspects of Giriama life to me that others could not. His knowledge of magic, oaths and charms is extensive and detailed because of his father and not, as he was at pains to insist, because he is a practitioner. Theophrastus walked with me across much of the area

explaining how magic, spirits, oaths and prohibitions work, and kept the dried insides of a sheep's stomach and various other bits of body, with him so that he could break any curse a broken rule could activate. I am grateful for the pains he went to so as to ensure my understanding was nuanced and correct.

Connections between water, power and identity are evident in the oaths used and the fortified spaces that the Giriama constructed to protect their cultural authenticity. Concerns that flight from one location to another would dissolve the heart of Giriama-ness prompted those able to make a magical material representation of their essence using river water. This was achieved through an infusion of undisclosed substances in water, which then grew in potency as a result of containment. By carrying their essence in solution, the Giriama travellers were able to transport the substance to a new location. Enabling it to soak and thus penetrate into the soil where it forged a material connection between the past and the new land, thereby afforded the Giriama a sense of attachment to the place.

Fayers-Kerr (in press) explores how bodies are materially connected to the landscapes they dwell with in her account of the Mun of east Africa who engage with different materials to 'painstakingly cultivate relationships with various earthy substances'. Clay, amongst other substances, is used by the Mun to heal afflictions. Using Hsu's (1999, 2007) concept of the *body ecologic* as a framework to allow bodies to be environmentally situated (cf. Ingold 2000), Fayers-Kerr (in press) demonstrates how Mun social life and materials are eco-physically tangled. (Also see Rahmen (in press) for an example of how river water, sedimentation, tobacco and bodies are co-productive in Amazonia.) Similarly, Giriama relationships with water provide an example that illustrates not only that entities are materially blended, but that they also co-produce each other through engagement.

Water is obviously physical but also simultaneously ambiguous, somehow ephemeral, as a result of its fluidity. It shape-shifts, is amorphous and metamorphous, ungraspable but containable, but is equally mundane, unexceptional, understated, and everyday. Purpura (2009) reminds us of the tensions and potencies that are born when contradictions such as these blend together. Exploring Giriama medicinal substances particularly, she demonstrates how 'knowledge, memories, time and other…

intangibles' (Purpura 2009: 12) are materialised, or flow into items as a result of their impermanence and 'ambiguous ontological status' (Purpura 2009: 12). Water thus contains, carries and transmits identity, power and authenticity and in so doing demonstrates how relationality is materially enacted.

Makaya: Home from Home

According to Krijtenburg (2013) the word *kaya* simply means home (plural: *makaya,* meaning both homes or towns or village (Parkin 1991)[31]) but it is also used to described the fortified structures that the Mijikenda created deep in forested highlands that used to run along the eastern coast. This characterisation might be somewhat misleading as my experiences and discussions about *makaya* paint a quite different picture. For example, I have been told that only trained ritual practitioners and specific clan elders used the inner sections – and these were not always fortified. The bulk of the population simply lived around the outside the space in clearings without protection. Nevertheless, the *kaya* are presented as the first, safe homes for the Mijikenda after their move into Kenya (Krijtenburg 2013; Nyamweru et al 2008; Spear 1978). Constructed, perhaps as a response to the violence that originally propelled them to migrate, the *makaya*, according to Parkin (1991), represent the central heart of Giriama culture, their authenticity and power.

Today UNESCO preserves these spaces as signature Giriama settlement heritage sites. UNESCO documentation states there are 30 *kaya* centres positioned inland and within the ridge of forest that runs parallel to the Kenyan coast (UNESCO 2016). Held as examples of intangible heritage, justification for their protection stems from the sites' embodiment of 'metonymic significance for the Mijikenda [because they] are a fundamental source of Mijikenda's 'being-in-the-world' […] within the cultural landscape of contemporary Kenya' (UNESCO 2016). Kasungu Katana, an active advocate, campaigner and young Giriama from Marafa, has worked hard to revitalize traditional cultural spaces in the region. His work has contributed towards

[31] Taylor (1891: 45) describes the *kaya* simply, as something akin to secret 'club house' where groups of male elders (The *Kambi*, who he compares to the Masons in the UK) organise clan life.

demonstrating the continued contemporary socio-political significance of the *makaya* for the nine tribes of the Mijikenda.

A *kaya* could be designed to hold up to as many as 1000 people but some are also significantly smaller. According to the literature, *makaya* were constructed within clearings deep in areas of impenetrable forest surrounded by thorny bush. In design, the core or centre of the *kaya* is depicted as constructed in such a manner that entry is only possible through 2 long gated and defended pathways (Nyamweru et al 2008; Parkin 1991; UNESCO 2008; Waaijenberg 1994). Each entrance, served by a thin, guarded and triple gated route, is described as running typically from the east to the west having been cut into the thickly overgrown and thorny bush (UNESCO 2008). Their design and locations suggest a desire to simultaneously deter unwanted incomers, protect cultural purity and create a safe space in which to use Giriama powers. Indeed, authors writing about *makaya* imply this form functioned to inhibit intruders from entering (Parkin 1991; Wanza and Njuguna 2012), thereby restricting entrance into the social body of the Mijikenda (cf. Douglas 1966). However, from my experience, the depiction of these sites as constructed and fortified is misleading as they are not so much constructed as found. Each *kaya* uses the existing environmental forms (including trees) to provide the shape of the area. Rather than making the space to a design therefore, the space is made-with what is existent or present and the spaces emerge out of, and are produced by, a complexity of intersecting relationships with dreams, instruction from the spirits, Giriama customs and the placing of material as medicines.

Any sense of the enigmatic and mysterious is further amplified by the claims that buried within the walls of each *kaya* are medicinal substances of undisclosed ingredients – one of which, of course, is the potent *fingo* mentioned earlier*,* claimed to have been brought all the way from Shungwaya. The *fingo*, advertised as a secret recipe that manipulates a frighteningly forceful protective, and deadly if disturbed, sacred magic (Parkin 1991: 37) established an untouchable material 'core' of authentic Giriama-ness once within the soil (Wanza and Njuguna 2012), and presumably deterred unwanted visitors. Thus, the *kaya,* with limited and protected access, is claimed to function as a sheltered and distilled cultural 'umbilicus' from which Giriama-ness could be produced and its health and purity maintained (Parkin 1991:42). Today

the *makaya* are uninhabited but are still considered important and powerful places by all the Giriama I have talked with.

According to Donald and Julius from Hell's Kitchen in Marafa, (a conservation charity that aims to revive traditional beliefs set up by the activist Kasungu Katana cited earlier) and in contrast to other claims, the forest is as much the *kaya* as the 'internal' space. Contrary to other writings, their claims suggest that the construction of the space is less significant than the trees in the area because it is the trees that make the space and give it its power. Therefore a *kaya* is formed with the trees, and it is only on finding the right trees that you can create a *kaya.* The trees looked for are the baobab (*Adansonia digitata L*), tamarind (*Tamarindus indica*) and fig (*ficus moraceae*, local name: *mugandi*) because not only are the leaves and bark useful as medicine, but also they are home to the *m'pepo* (the spirits that control and can hide water in trees). Rather than piping water into homes, as is the custom in other areas of the world, relationships with the local *m'pepo* are instrumental in ensuring a regular water supply. Donald and Julius maintain that the spirits one can engage with today are the same entities that came from the original Shungwaya. As the same entities they provide a temporal connection with Giriama origins and the water that physically circulates through their lives. (A longer discussion about spirits follows this section. See section: Water Beings –M'pepo)

I visited the *Kaya Singwaya* situated a few kilometres on the other side of Garashi southwest of Boré on the road to Baricho in 2017. Now protected as a national monument by The National Museums of Kenya it has a manager to oversee it, a Mr Emanuel Nyoka (*nyoka* means snake) who kindly took the time one day to show me around.

Figure 6: Sign declaring *Kaya Singwaya* a national monument.

Mr Nyoka, born in 1934 was 83 years old when we met. He had a wealth of historical knowledge about Giriama history to offer. He spoke to me in his own eclectic mix of English, Kiswahili and Giriama, and lived directly adjacent to the *kaya.* His connection to the place meant that he felt compelled to represent and protect it in the hope, he explained, that people in the future would understand more about Mijikenda culture and history. Before I could go into the space he wanted to explain a few things to me and so we sat down in the shade together while he talked at length about the history and purpose of this monument. Four stout elderly women (perhaps his wives) joined us, but they said nothing.

His depiction of this *kaya* supported the explanations given by Donald and Julius previously, but could be considered at odds with other portrayals. Nevertheless, my time with him brought the meaning of *kaya* to life for me. It helped me visualise a living or animated picture of how these spaces functioned when they were used in the past, rather than as an ancient monument woefully devoid of people or purpose, as other accounts tend to be. Mr Nyoka (May 2017 pers. comm.) said:

> "*Kaya* is forest. *Kaya* is the home. It means home for the Kauma [one of the Mijikenda, and the group held responsible for this *kaya*.]. All *makaya* use the same system, but they are used by different tribes. Originally, the original ones, travelled with the medicine [*di-go*]. When travelling with the medicine, the medicine did not allow pregnant women to cross the river."

He is referring to heavily pregnant women, those who are just about to give birth and the concerns about crossing the water are linked to the powers of the water *m'pepo.* The medicine was designed to protect the travellers but its potency was also able to kill them. According to Mr Nyoka, the medicine needed to be placed up off the earth each night away from the soil to ensure its potency, protection and survival. This part

of the story was unclear, but there seemed to be an anxiety and anticipation with the watery medicine returning into the earth and the journey's ability to continue. In contradiction to other *fingo* that must be buried to create influence, the journeying pot of medicine should avoid this. As I understood it, if it were to be put on the earth it would alter, just as it does at the end of the story, but I am speculating. I imagine that by being up in the trees any absorption processes would be restricted. In addition, the link to pregnancy was never fully explained, other than through my knowledge that the Giriama have numerous restrictions for pregnant women around water (See section: Water Beings). He continued:

> "Shungwaya is in the northeast. They came out of the land because of the quarrelling. Each time they came to a river, the pregnant women had to give birth before crossing. But the journey did not stop; the medicine guided them. When they reached a sleeping place the medicine had to be put high not on the ground. No bad animal or danger could come. The medicine was a protector. They came to [the time of] *pokomo* - *pokomo* means mature pregnant person[32] – because women by nature are thought to be dangerous (because they can run away and they are weaker) it [the medicine] had been given some words [about women] which meant it wouldn't allow them to cross. The spirits of the water were the problem for the pregnant women. The old men made the medicine to protect them all."
> (Emanuel Nyoka, May 2017 pers. comm.)

As the breaking of foetal waters is a strong indicator of an imminent birth, it appears there could be a connection made between concerns associated with spilling the medicine water and the life changing events that the release of waters late in pregnancy herald. Therefore those who stopped in Singwaya did so because of advanced pregnancies and the restrictions being pregnant caused for crossing the Sabaki River[33]. According to Mr Nyoka, five families stayed behind on this spot – he tries to name them – but finds it difficult to remember all of their names. He says it was a big village with five families, and from that set of circumstances the *Kaya Singwaya* was formed. (Five families, of course, does not mean five couples and their children but refers to a much wider group.)

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[32] Pokomo translates as 'those who come to their end' or 'those who finish' by Prins in 1952 (Prins 2017), which chimes indirectly with Mr Nyoka's translation of the word, that I had not heard before. Pokomo is also the name given to a group of riverine people who live in the Tana Valley, north of Baricho. As a group they are linked to the movement away from the mythical city of Shungwaya but they are not one of the nine *Mijikenda*. There is a lot of confusion about their origins too.

[33] There are 4 other *makaya* declared as monuments under the 1997 Antiquities and Monuments Act on this side of the Sabaki River (Ntimama, 1997: 915).

Figure 7: Mr Nyoka on the path.

Figure 8: Pathway stones embedded at certain points along the route.

Figure 9: The pile of stones that denote the final *kaya* gateway.

Neatly following the descriptions from other texts, this *kaya* is situated in dense forest and had 2 entry and exit pathways. According to Mr Nyoka, in the past this was a bigger forest with more substantial trees. Today, despite recognition of significance for cultural heritage, most of the area has been deforested. It takes 2 hours to walk the circumference[34], which constitutes a well-formed dusty roadway wide enough for cars to drive along as opposed to the usual thin paths that snake through the bush. At a certain point, we move into the undergrowth. There is no real discernable path and we get lost almost immediately. Getting lost is a bad thing and something that spirits can create if they are not pleased with your presence on their patch, Mr Nyoka informs us. This comment spooks Pendo and she begins to worry. Mr Nyoka decides it is better to take another path – the correct path – this had been his attempt at a short cut and it had proved problematic. We retrace our steps and walk some long way further to the actual entry point. To an untrained eye the path looks like any other, but Mr Nyoka points out the signs that indicate we are moving into the *kaya* proper. The path is not straight but winds continually without reason

[34] The *Kaya Singwaya* forest is listed as covering just over 47 hectares in 1997 (Ntimama 1997), but 20 hectares in 2000 (El fasi and Hrbek 2000).

and appears to branch with intersections regularly. Only small piles of easily overlooked stones indicated that we are on the right track.

A previous conversation some days before had given me a description of *m'pepo* as being like butterflies. Butterflies can appear as dancing clouds of colour at the right time of year in this area. At the time of this visit the butterflies were developing but were still at the caterpillar stage of their life cycle, grubbing around in the undergrowth. There were lots of them in the *shamba* and on the verges of the roads, but no butterflies, yet. Moreover, everything was very dry; we were all still waiting for the rains. Walking along the path both Pendo and myself are struck by a small flock of butterflies with almost translucent, shiny rainbow wings that shimmered like oil spilt on water. We pointed and laughed, reminded of what had previously been said. Strangely, my attention was taken away in that moment, and I forgot to take a picture. Pendo, who thought she was recording on her phone, found out later that she was not. Thus, we have no record of these creatures fluttering together near the ground. Further zoological investigation has been unable to uncover the type of butterfly and so I am unable to provide a species name. Furthermore, as there was no water around – no puddle, no nearby stream or pond – it is hard to account for their presence using the methods offered by 'science' (see Hurn 2012: introduction). Mr Nyoka said that he did not see them. For Pendo, this set of circumstances indicate that they were spirit butterflies, as yet uncategorised zoologically but nevertheless real in the world of the Giriama (see Hurn 2012). Other people I asked had no name for these butterflies as butterflies, but, equally, they were not surprised that the spirits had shown up. While encounters with spirits are not generally encouraged or sought (due to their unpredictable characters), they are to be expected, are unquestioningly real and utterly normalised. I was regularly teased that my questions about them would have consequences. Just as Alex told me to stop talking about snakes after a run of interactions with snakes in unexpected places because: "it brings them to you", so too does talking about other entities (see, Hurn 2012). Seeing these 'butterflies' was attributed simply to that, coupled with the fact that we were in the *kaya* space. This again provides another example of the blurred intersections and porosity between thought, words and matter.

In contrast to accounts that *makaya* are fortified with wooden walls, this *kaya* did not have a constructed boundary, instead relying on the density of the organic growth to insulate the centre. The centre of this *kaya* is now somewhat overgrown and the crucial principal tree that created the *moromi* or circle of shade in which "old men sit and discuss and give blessings to awaken god" (Emanuel Nyoka, May 2017 pers. comm.) has now gone. In its place are four opened and discarded condom packets that disrupt the mystery and change the secret of the space from home of traditional knowledge to one of clandestine amorous liaisons out of sight of others.

Before we left, the conversation reverted to the lack of rain. I said that many people I had spoken with were wondering if they needed to pray for rain[35] in the *kaya* again, just as the Giriama once had. Mr Nyoka told me not to worry; they had done it already. "It will come", said Mr Nyoka (May 2018 pers. comm.). And sure enough, two days later it did come – with force.

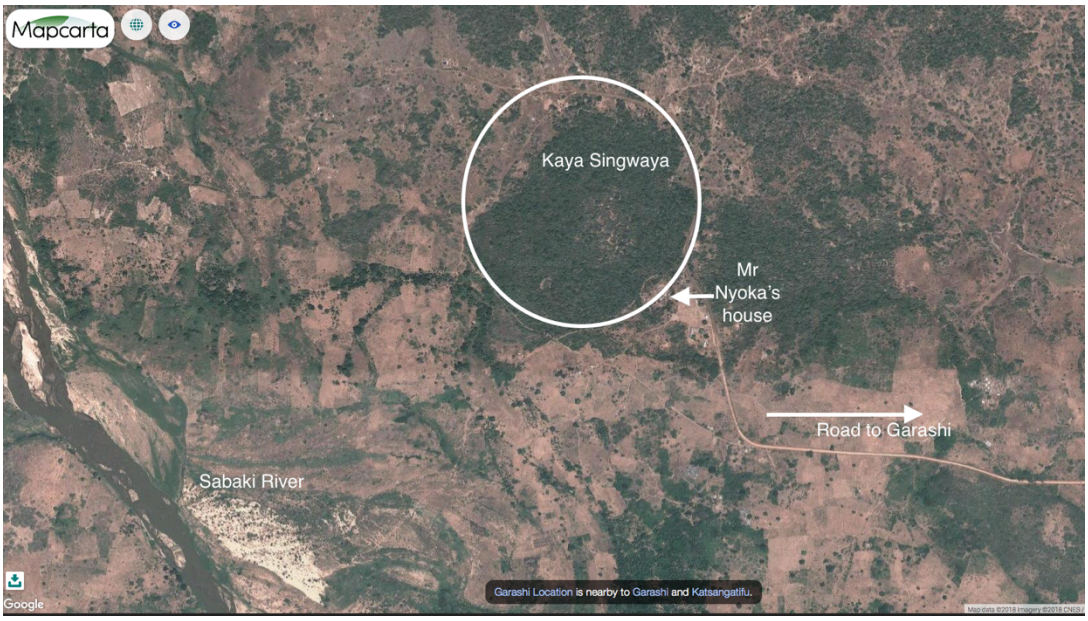

Figure 9: Satellite image of *Kaya Singwaya*

This image shows the *kaya's* size, location and proximity to the Sabaki River. The less overgrown central heart of the *kaya* is visible (Google maps 2016).

[35] A full description of how to pray for rain is provided later. See section: Crying for Hiding Water and Help from Other Than Human Agents

In the past it was in the *makaya* that relationships with water were regularly enacted through sacrifice and other rain-making rituals (Parkin 1991; Zeleza 1995). According to the people I lived and talked with, communal ritual practices were surprisingly effective in 'calling' water to the people as and when necessary. These exercises, organised and enacted by trained elders, were performed to assist the crops and support livelihood security for the collective, not the individual. Through a process of symbolic sacrificial negotiation with the *m'pepo* (that hold the water hidden from human bodies in the form of the bodies of big trees of the forest) the performances were designed to liberate water to fill the river basins, or fall as rain. It is only through these specific methods of communication that the *m'pepo* would be persuaded to "bring the water from the big trees to the nearby sources of water" (Alex Katana Mare, July 2016, pers. comm.). However, calling water was not the exclusive domain of the trained elders. It is also possible to make private 'calls' for water by the use of personal sacrifice (chickens or goats depending on quantities of water requested) in smaller forest ritual settings named *kiza* (plural, *visa*) (Champion 1967; Freddy Mare, August 2016, pers. comm.).

The word *kiza* is translated as 'house of spirits' (UNESCO 2008) by much of the documentation, but the direct translation from Giriama is 'darkness', a word that aptly describes their settings[36]. They are typically located 'under very tall trees by a river or spring' (UNESCO 2008) where the water is held in a forest. *Visa* are sometimes within the confines of a *kaya* fortress but not always. Their locations were received through dreaming (Daniel Kalume Muvondi Nydura, July 2016 pers. comm.). As spaces in the landscape they are very difficult to distinguish from the rest of the forest, being unassuming and ill defined to the untrained eye. Nonetheless, for some they remain active communication points to call for water until very recently (see section: Water Beings).

The *Kaya Fungo* is just one of 9 *makaya* acknowledged as a world heritage site by UNESCO in 2008 (UNESCO 2008). The *Kaya Fungo*, principally associated with the

[36] Occasionally locals name these areas *mizimu,* which translates as 'shrine. Taylor (1891) translates *kiza* as 'shrine' in contradiction with local terms.

Giriama above any other tribes of the Mijikenda (Koinante 2011), is positioned considerably south of Boré and has 4 key *viza* identified within it. (This is not the case with the other primary *makaya* documented by UNESCO (2008).)

The *visa* identified at *Kaya Fungo* are documented as specifically concerned with water and what water can do:

- *Zia ra Ache* functioned to wash the spirits of death away;
- *Kiza cha Mvula* was used for rain prayer ceremonies in which half-buried pots filled with water brought rains;
- *Mbari Tandahu* was a women's *kiza* in which they used oil to bring rains[37], and, finally,
- *Mtsafa wa Kaya* was a permanent water point where rain, and the peace it brings, was honoured
  (UNESCO 2008)

This abundance of water-designated *viza* found in the *kaya* suggests that historically the Giriama afforded their relationships with water a place of strategic, cultural and spiritual significance. This is substantiated in elders' accounts that equate bringing rain with wealth (Krijtenburg 2013).

Moreover, from data collected in the field since 2010, this has continued to be the case for the Giriama in Boré up until 2016. Despite the virtual wholesale adoption of Baptist theology in this area, locals still regularly used the local *viza* to encourage the trees to liberate the water as rain for them. According to a local minister, what is surprising is that "they get what they asked for" (Stephen Ngumbao 2013, pers. comm.).

The Giriama today do not use the *makaya* as they previously did. According to Waaijenberg (1994 and also see Parkin 1991) the transition from a traditionally structured *kaya* to what they call sub-*makaya* started as early as the 17th century. Brantley (1981) to some extent corroborates this with her claim that the Giriama moved into the Marafa district (near Boré) around 1830 where, she contends, they have been suffering from and negotiating drought conditions ever since. Any physical move away from the protected isolation of the *kaya* may have reduced any cultural, political and economic distinction between the coastal populations and the forest dwelling Giriama.

[37] See section: Crying for Water, for a detailed description of this ritual.

However, despite clear changes emerging from this physical move, Waaijenburg (1994) maintains the Giriama to be strident traditionalists who refuse to alter their methods. He cites characterisations of the Giriama as stubborn to develop and reluctant to embrace change. His quote below refers to agricultural methods specifically but is illustrative of the outsider's ideas associated with being Giriama:

> 'The Giriama] are considered traditional, as hanging on to outdated approaches to life in general and agriculture in particular. If only they would improve their attitude and more readily accept new cultivars, breeds, tools, input and techniques, things would soon become much better…*"The most striking example of this is to be found where a Nyamwezi and a Giriama have neighbouring shambas. In spite of the fact that the Giriama must be conscious of the better results obtained by the Mnyamwezi, he* [sic] *will continue to follow his old methods and trust in Providence."* (KNA 1940a)'
> (Waaijenburg 1994: 24)

Furthermore, non-Giriama living in the relatively cosmopolitan town of Marafa 10 km from Boré Koromi today, speak similarly of the Giriama as a group and state that their lack of adaptation and resistance to modernity and industry results from their tenacious attachment to their past. Regardless of these rather irritable claims concerning Giriama resistance to development or the appropriation of new practices, other accounts cite Giriama resistance as powerful and extraordinary. As the only tribal group that successfully, albeit temporarily, resisted the British administration in the early 1900s, their stubborn refusal to adopt other methods is considered with pride as a defining strength (Brantley 1981). The Giriama resistance (led by the highly-acclaimed Me Katilili Wa Menza – a Giriama prophetess who inspired the men to boycott and ignore the demands of the British in 1914) attempted to defy the march of capitalism and the notion of wage labour brought by the colonial authorities (Brantley 1981). Unfortunately, the success of the rebellion was short lived, due in part to drought that forced families to seek wages for subsistence. Thus, by the 1940s most of the original ritual spaces were all but abandoned as populations spread out from the forests in search of sustenance. This move resulted in smaller personal ritual spaces or *visa* being instituted across the landscape in replacement of the *kaya*.

> ‘Into the same river you could not step twice, for other… waters are flowing’ (Heraclitus (*Fragments* V 13, 10) 2013: 10)

The quote from Heraclitus is more commonly translated as ‘one cannot stand in the same river twice’ - a statement that in referencing the behaviour of water manages to aptly evoke the material character of the substance. In essence, this quote reminds one that change is paradoxically a constant with water, despite appearances of material consistency or any stillness. The physical characteristics and capabilities of a material (or substance) make it what it is. Water is one of the worldly materials that exemplify transformational abilities (Ball 2002). In consequence, the way water is structured determines its behaviours, which in turn regulate how it can have relationships with other materials – including the amalgam of materials held together as bodies (Barad 2003, 2007; Neimanis 2012, 2017; Vokes 2012). In this case, water’s ability (in the form of the *fingo* and other medicines) to take in, hold on to, transport, hide and carry other substances allows it to become the most effective material for the job of successfully transferring a group essence from one district to another safely. Thus, water is *the solution* that embraces, conveys and preserves Giriama identity and power. Furthermore, water, as a fluid, materially expresses a collective in which individuality dissolves and where powers (in this case, various other forest materials – specifically, leaves) can be subsumed and blended together into an amorphous, shifting but coherent unit that is (like other hyperobjects (cf. Morton 2010) or superpositions in quantum physics) everywhere (dis)similarly together (*fu ha mwenga*). On first inspection this presents as symbolic action, however any symbolism is enacted materially and emerges from what water can do. Consequently, any symbolic associations are relational and do not emerge in cerebral isolation but are informed by what the materials used do and are capable of.

As Daniel Kalume Muvondi Nydura explained to me when I asked ‘why water?’

> “Because water is where humans are made. Water is powerful because it comes from God – even if it is in the river, it comes from above. That is why the water can heal by pouring it. The water comes from above. Water represents togetherness, water is powerful because everything is made of it…The

> Mijikenda are 9 but also 1 – one but many – *fu ha mwenga*. God hears people who are gathered… *mwenga!*"
> (Daniel Kalume Muvondi Nydura, May 2017 pers. comm.)

Daniel repeats the word '*mwenga*' with emphasis sounding slightly weary of having to spell this out. In short, his explanation demonstrates that gathering and unity should be understood as synonymous and similar to water. This is not just a useful metaphor, enacting *fu ha mwenga* is informed by how water flows through things. It was with Daniel that I started to get a clearer idea of the synergies between the materiality of water and the behavioural expectations and social organisation of the community. His emphasis on gathering was reiterated by many other people particularly the elderly. In the past, more than today, the people needed to behave like the water and re-gather regularly to realise their unity, to cleanse and purify together. The lack of such gatherings today was judged as contributory in the current problems with a dearth of water. Moreover, many made predictions that the drought was expected to increase because of the failures to enact these past practices.

To align bodies and personhood with substances, for example: water and fire (Abrams 1996; Harvey 2005; Vokes 2012), but also wood/phyto-matter (Kohn 2013; Narby 1998; Parkin 1991; Purpura 2009; Turnbull 1987) is a recurring ethnographic premise. Analysis has typically translated these practices as rooted in symbolism or totemic attachments. However, more recent approaches have shied away from, what is considered to be, the damage of translation in favour of posthuman methodologies and analysis that allow multiple perspectives or ontologies (Kohn 2015) to simultaneously exist – as if alongside or in relationship with each other (also see Attala and Steel in press). Using this approach, ideas do not have to make sense or be sensible, but rather *make one able to sense* (Attala 2016b) the world of another – in this case, a world where being a personal and social body is determined by the abilities of engaging materials.

As bodies are composites that form through the exchange of worldly materials Vokes (2012), it follows that thinking is a materially informed mechanism (Tegmark 2015). In association, ideas and meaning-making are also material entities produced and processed from/with the overall flux of physiological chemistry. This forms a co-

generative production associated between the abilities of materials to impact, inspire, suggest, influence and phenomenologically shape our responses with it. Neimanis (2017) also blurs the physical boundaries erected around bodies and the landscape by using water to illustrate how flesh and other bodies are connected by its flows. Malafouris (2013) similarly attends to material connectivities. Malafouris (2013) adopts the notion of the extended mind (cf. Sheldrake 2004), to suggest that thoughts are not confined to the flesh but seep out across an extensive landscape[38]. In association, any notion of understanding, and subsequently any knowledge produced, results from the materially rooted manner of being. This perspective embraces the role materials play in articulating, mobilising and influencing symbolic and other outcomes (Drazin and Küchler 2015). Iovino and Oppermann (2014:13) also see life as embedded in 'narratives of matter' and remind us that 'the creative entanglements of agencies […should not be thought of as] only ways of world mirroring but [are] coemerging ways of world making' (2014:14).

The co-constituency of identity and place is well established (Cresswell 2004; Massey 2005). Obtaining permission or gaining the authority to reside in an area typically draws together both concepts with one used to validate and support the other. Moreover, using place to authenticate or negate identity claims is a recurring theme historically, politically and ethnographically; indeed, this lens on identity and nationality is particularly potent in current affairs today. For self-proclaimed, territorially ambiguous migrators, (as the Giriama appear to be) attachment to land is awkward and equivocal, as their place in a fixed, continuous and persistent landscape cannot be established. Without clear, unambiguous claims to an earthy material home, it appears that the Giriama use water as a physical connection and material constant that joins them to the past, their authentic selves, each other and also the land simultaneously. Thus, the wet rather than the dry (in contrast to Dundes (1981) whose work focuses on the value of the dry) forms the penetrating, infiltrating unity between Giriama bodies of yesterday and today with the rest of the material world. When the *fingo* pot smashed and the medicinal liquid soaked into the earth the Giriama bound their concentrated collective identity to that place and thereby, through the joining of

[38] Based on some eye-watering equations, far too complicated for me to understand, Tegmark, an MIT physicist, theorises that consciousness may be conceived of a state of matter based on the properties of matter as determined by physics. He names this substance: 'Perceptronium' (Tegmark 2015).

materials (Purpura 2009) provided a claim to a particular piece of geography and history. Furthermore, water's behaviour is mirrored in the Giriama narrative about their heritage. Water is material in flux. It moves, through travel forms its own pathways, has one name but has many faces, soaks into the ground it settles on and hides only to reappear in a different location later – just as the Giriama have done.

In the Beginning and Watery Beings

Prior to current developments the Giriama relied exclusively on relationships with the *m'pepo* and environmental conditions for their water supply. As is often the case in cosmologies[39], the local creation story states water was the initial material from which everything else was possible.

> "The whole world was filled with water until *Mulungu* (God) separated water to one side and left open grounds."
> (Alex Katana Mare, March 2015 pers. comm.)

Water, as a generative and primary substance, is a regular feature in origin stories (Beilo 2015; also see Bernard 2013, 2016; Ereira 1992; Palmer 2015; Strang 2011, 2015; Vokes 2012; Wagner 2013). A distinction between the dry firmament as order and the wet as creative, fluid potential or chaos as water is often made in ethnographic cosmologies that mention water at the beginning of time (Chen et al 2013; Ereira 1992, Wagner 2013). Indeed, the differentiation between wet as dangerous and dry as safe is well documented by Dundes (1981). Presenting oppositionals (such as wet and dry) in a structural framework is critiqued as both rooted in schematics that objectify, and as a simplistic tool that through using inaccurate abstractions become a simplistic habit to think with (Appadurai and Breckenridge 2009), and that fails to helpfully depict the material complexities of life. Depictions of water as amorphous potentiality chime with its physicality and its constantly shifting materiality. As has been shown, in material

[39] For example, the Hindu Hymn of Creation (*nasadiya sukta*) states that before anything there was limitless dark water as an inconsistent cosmic ocean, similarly according to Islamic cosmology form emerged from a submerged position out of a cosmic sea, and Christianity also claims that the firmament was created to separate the original formless mass of water. In addition, the Chinese creation myth uses an egg swirling liquid that held with everything within it as its initiating form.

terms, water is never empty or simply water; water is a solvent that holds multiple organisms, minerals and more in solution. Nor is it wet or simply liquid as mud and ice aptly demonstrate. Dry seeds burst into life on contact with water and harmful entities lurk unseen in its transparency. Water is the obvious material to use.

As with other cosmological accounts that focus on water as the progenitor, water, for the Giriama, is described as potent but dangerous, full of invisible powers, and thus is not an empty liquid sporting just hydrogen and oxygen molecules. Similarly, water is not presented as a benign, inert resource modestly materially available – or materially necessary - but is depicted with a hint of anxiety, as harbouring other agencies, as fickle and as a material imbued with life-threatening forces.

> "The water has germs and so it is dangerous. Water *m'pepo* are especially true here. If *m'pepo* strike, you can die."
> (Kache Gona, July 2016 pers. comm.)

> "The water is dangerous because it can make you sick."
> (Kabibi Wanje, July 2016 pers. comm.)

> "Sometimes I get problems [from the water] but I have done it all my life. I go by the grace of God. God understands my problems."
> (Mary Katana, July 2016 pers. comm.)

The above quotes come from three women who regularly collect water from *Mtsanganyiko*, a water basin that is used by approximately 50 families. Their words serve to illustrate some of the conflicting ambiguities and personal conclusions that permeate relationships with water in the region. Each quote demonstrates awareness that water can be dangerous. However, despite acknowledgement of water's potential to harm, most women simply fail to display much emotion or concern about the gamble they explain they are taking each time they collect it – perhaps because they have little choice in using it. However, in contrast, there are some women who did not make a link between the water and sickness. For example, in contrast to Kache, Kabibi and Mary, Furaha and Kadzo Karisa, and Mercy Samuel Kahaso (neighbours to the women quoted above) claim they (and their children) never get sick from the water. While, none of the above women took the time to boil their water or use other means (filtration or chemicals) to ensure safe consumption, a few of the women told me that they might take the time to clean the water if they can be bothered. Consequently,

knowledge about what water can do and how it might affect you is not always obviously or similarly associated but appears to be based on one's personal experiences with the liquid.

As noted earlier, water is rarely simply water. Its transparency is paradoxical and deceptive, even when free from debris or not opaque with mud it is able to hide potentially harmful entities from view. Consequently, relationships with water are as complicated as its chemical manifestation, which means that people must negotiate a tight-wire continuum or spin a roulette wheel between vitality and mortality when they engage with water. Water, therefore, is not exclusively life-enhancing, as is misleadingly advertised by water bottling companies, and therefore may not always be trusted – a conclusion that hinges on water's material ability to secrete and nurture the invisible within it. Any apprehension of water from the population of Boré Koromi is directed pointedly at water that has stopped moving.

> 'Most of the Giriamas believed that water was life. When one had sin then they used to go any moving water like streams and rivers to wash seven times for seven days. After all this then people believed to be free and safe. When women were pregnance [sic], they used centre water from lakes and drink continuously for at least eight months then this was believed to get no problems during deliverance. Although Giriama believed water to be life still they believed that stagnant water was shelter to demons. Especially lakes and wells. Those such places pregnant women were not allowed to reach or step around. And when they happen to reach to such places then the water used to change into blood for around four hours. When that happened then all Giriamas believed that the new born baby to have been cursed. Although the Giriama know that water come from rains, they also believed the water to come from big trees and from their ancestors. That's why up to now when there heavy drought elders go to big trees and graves to ask for rains. It surprises that they used to get what they ask for. Some Giriama know and believe that water come from big forest and mountains.'
> (Alex Katana Mare, March 2015, verbatim transcript from email correspondence)

For this group of Giriama the potency of water is not symbolic. It circles around, and emerges as a result of, water's material behaviours and abilities. Thus, water supports life but also can be dangerous when it is stilled, contained and left to stagnate. Consequently, because water creates relationships with different kinds of entities when it is subdued, water is more likely to become dangerous when it is restricted and impeded. Of specific note is its ability to shelter others in its body and its appeal to

others when it lingers. The Giriama are aware that the water that fills the river basins slowed on its journey to the sea enables them to collect it, but that it collects others too. This is responsible for how relationships with water have been constituted. Thus, inhibiting water is cautioned against and should be avoided for any length of time. In the account of creation told earlier, life began when the land rose up out of the water causing the water to divide. This process of separation forced patches of water to be held apart in basins where it was temporally restricted in movement (Attala 2016a) mirroring the practice of the seasonal river that produces their water supply. It is this process - that is: the landscape arresting water's ability to flow - that causes it to become what it is for the Giriama: containable, consumable, and a mechanism for communication with a variety of otherthanhuman beings[40].

Contaminated water troubles millions of people worldwide. 'Eighty per cent of all diseases and one third of the deaths in developing countries are the result of contaminated water…and [as] standing bodies of water can harbour the carriers of dengue fever and the larvae of mosquitoes' (Ball 2002: 315-6), it is easy to see why still water is cautioned against as dangerous. In addition to the numerous types of mosquitoes and the different diseases they can bring, water in this region also harbours jiggers (ectoparasites that bore into the skin), leptospirosis, bilharzia, cholera, dysentery, typhoid and filial worms which cause elephantiasis of the legs and scrotum (hydrocele) – to name a few. Unsurprisingly then, there are multiple taboos associated with water that does not move (such as the water in wells and lakes), which, if transgressed, might temporarily spoil the water by 'turning it into blood'. However, Kacha Gona's quote earlier makes a clear differentiation between germs and *m'pepo,* demonstrating that there is a difference between certain afflictions and illness.

Encouraging rain to fall and the safe achievement of other water collection practices flows along with Giriama cosmology.

> "In the beginning there was only water and it needed to part to allow the land to be. The water stilled and in so doing land was formed; the water was up and

[40] This characterisation of water chimes with Bernard's (2013) explanation of Nguni-speaking diviners who need "living water", that is, water that has not been obstructed for their rituals.

> the land was down. When the water stopped moving and flowing then the land became available."
> (Esther Kombe, July 2016 pers. comm.)

For both Alex and Esther, a local Baptist pastor, land formed as a result of the worldly waters stilling. Esther's creation story (and, to some extent, the earlier account cited by Alex) mimics what should occur annually when the river valley floods from the rains falling on the higher ground, and thereby reflects the centrality of, but insecurity associated with, water in Giriama lives. For Esther, water represents the first material. It existed before the land (the wet before the dry, movement before the still, fluid before the static) and as the original, primordial, authentic substance the materiality of water acts as a reminder of beginnings, but also creativity and continuity. However, water also has a tendency to be capricious, to hide (in trees or underground), to make one beg for it and to bring or cause diseases and other misfortunes without warning, and therefore must be treated with caution like the familiar stranger that you find you must *be together* with. Therefore, water is held to be a recurring danger, as much as it is necessary. 'There we go by the grace of God' is a regular refrain heard spoken by women collecting water from the basins.

In addition, water acts as a material reminder of the role it played in cosmological origins and Giriama identity. This is evident in the names of the water points scattered around the location. Nearly every geographical spot that holds or stores water is named with a cosmologically significant tag. This significance is particularly clear with regards the water basins serving the area. Each basin is named and in association its name is designated for a particular activity to ensure that the water remains safe. The names of the basins can be seen as simply locational but through virtue of what they reference also act as reminders of Giriama order, cosmology and mythology. For example, the well-used water point named *Zimbwini*, that lies oddly slightly adjacent, and at an angle, to the main river flow, is named as such because of the activities of a giant demon – a big, heavy hippo-like entity – named *Mwamthyika,* that lived at the beginning of time. Legend states that during the original floods the weight of *Mwamthyika* formed the depression when it lay down to rest after rampaging in the waters. According to locals, it is the depth of the depression that shows *Mwamthyika* is responsible for creating it, as nothing else could have produced such a deep basin. The interplay between demon and water in this account not only offers explanations

for the zoomorphic shape of the landscape[41] but also draws the material and immaterial together as a geographical feature and reminder.

Equally, the water basin *Kadzumba kwaMulungu* (trans. The House of God) indicates that the area is adjacent to a spiritual 'crying' area (*kiza* – see earlier in this chapter for more information) of the same name, and reminds water collectors that they are close to a spiritually charged spot. Both are nominated drinking water collection points and therefore swimming/bathing, washing and livestock are strictly forbidden from these basins, whereas the basin named *KwaKuzunga Mutangi* (trans. near Kuzunga's house) is only used for livestock or fishing and never human drinking water.
Transgression of water rules and taboos are seriously frowned upon as the following quote from Brantley shows[42]:

> 'A Giriama named Abimomo …buried medicine…at the waterhole at Kabanini, an important southern Giriama trade route. Water was short, and people who were bathing there made the water unfit to drink. According to the oath, anyone who touched the waterhole with any part of his body other than his hands would die in the following twenty-four hours.'
> (Brantley 1979: 118)

While the river is flowing these rules make little sense – not least because *KwaKuzunga Mutangi* is upstream from *Kadzumba kwaMulungu.* However, as water levels drop the basins separate and the collection restrictions start to make sense. Dropping water levels mean that the water points separate as the water stops flowing and cleaning itself. In addition, as the water stills and the depth reduces, rises in temperature create the perfect environment for water borne diseases to thrive, thereby making restrictions in usage more significant and valuable.

Consequently, as the lives of people, spirits and water materially blend with each other, accounts about water's behaviour have shaped Giriama water taboos (Bernard 2013; Shaw and Francis 2014). Through the recognition that stagnant water can be

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[41] Another example of zoomorphic form is evident in Iroquois mythology. Here a giant serpent similarly landing heavily on the land formed the riverine pathways (Aburrow 2012). The theme of serpent as river or waterway is a commonly recurring leitmotif of water in Amazonia. Also see, Strang (2010) on Dreamtime mythology, water and the landscape.
[42] More detail on taboos is given later in this chapter. See section: *Mavingane – Spitting Water*

hazardous, cultural restrictions on water practices protect the group from contaminating their water supplies. Water, the original location, produces, houses and attracts all types of life. Consequently, Giriama relationships with this material recognise that water is physically potent with possibility and peril simultaneously.

Water Beings – M'pepo

Echoing themes from other African ethnographies (Last 2010, 2011), Giriama cosmology states that *m'pepo*[43] (sing. *pepo*, also translates as 'wind') live in the places such as in the dark of the forest and along the river. It further maintains that the water conditions cited above (i.e.: warming and stillness) are particularly attractive to the *m'pepo*. Consequently, when these conditions present themselves, *m'pepo* are liable to enter the water or even one's body while near the water. Not all *m'pepo* are to be found by water, but some are. In conversation I have been regularly told that as the level of the water in the basin drops the chances of encountering spirits greatly increase, and thus, water sources can be fraught with concern even for the most robust individual.

Cool trees are attractive to a variety of other than human entities or beings such as: *m'pepo* and *djinns,* the dead and certain ancestors (*koma*) and *Mulungu* because of the drop in temperature their shade offers. Thus, persons other than living humans are very likely to inhabit or frequent these areas. The term *djinns* (according to Ciekawy (2016) inherited from Arabic neighbours on the coast) is used interchangeably with the term *pepo*, and refers to a group of often petulant, troublesome, jealous but imperceptible characters that invisibly patrol Giriama lives. However, accounts of their manifestations are individualistic, complex and changeable. For example, I have been

[43] *M'pepo* is a problematic term to translate. Locals use the term 'demon' in translation. The word 'demon' implies a negative being, but this is not strictly the case with *m'pepo*. Depending on your beliefs, *m'pepo* can be very helpful to a person, and so do not exclusively function negatively. However, for some of the Baptist community, *m'pepo* lie outside of the Christian belief system and therefore must be demonic. As I was told, if you believe in them, then they are very powerful and useful to your life, but if you believe in God then they will be demons for you. This explanation illustrates the concerns of translation but also underscores how Giriama understand belief.

told that djinns cannot be seen other than as sparkling lights in the night sky over in the *nyari* (canyon/depression) but *m'pepo* can manifest as children; fire; smells; sounds like those that chickens make; very tall, thin, white people and, indeed, anything interpreted as untoward. *Mulungu,* on the other hand, is the Bantu term used to describe the ultimate 'god-head' (McIntosh, 2016: 199), and is quite distinct from the diversity and capriciousness of *m'pepo*. *M'pepo* and *koma* alike can have tempers and need to be appeased with either sacrifice or regular attention. However, according to Theophrastus, *koma* describes only those dead that in life learned how to manipulate the material world using medicines or oaths, and thereby continue to have the ability to alter the physical laws while dead.[44] With regards, *koma* specifically, attention to the dead person is required to ensure that they continue to 'shade' you in life. *Koma* is translated equally as 'shade' and 'shadow', and therefore also refers to those types of dead people who are both shadowy and can cast shade over people from the after life. Not all people become *koma* on dying; therefore, most are recycled back into being people. Shade is obviously desirable in a hot climate and appears to stand as a metaphor for comfort and protection. After death, the *koma* remains materially with the family as a basic wooden sculpture that is fed and attended to as one of the living. However, they are not always helpful as the following demonstrates:

> ' "E'oma [koma] ya ngaiiva K'aifwaha kamare, idaogonya vit'u na nganya vaholere"
> The shade of so-and-so's father is of no use at all; it has finished up his property, and yet so-and-so is no better', said one Giryama to another about the result of a series of sacrifices a man had made to his paternal shade with the object of regaining health.'
> (Taylor 1891:82)

Taylor links *m'pepo* with disease when he states that the name of the millet sprite *pep'o ya muhama (nyama)*, 'is a euphemistical name for small pox' (1891:32). In conversation the word 'demon' is typically used to collectively describe those entities that inhabit the areas of forest riverbanks, but I have heard all terms cited above used in conversation. Reliance on the word 'demon' is, I think, a measure of my lack of fluency in Giriama (combined with Christian influences of those that speak English

[44] Also see Champion (1967: 28-9), who acknowledges that it is sometimes difficult to differentiate between the various entities in Giriama lives, and similarly, McIntosh (2009b).

well), rather than a good or accurate translation. As a result, I continue with the word *m'pepo* in the vernacular.

Despite the blending of the boundaries between definitions of these characters, each has powers that can alter the material world dramatically when requested or even if unexpectedly or mistakenly irritated. Additionally, they are capable of banding forces together for positive and negative outcomes (Champion 1967: 29). Consequently, it is advisable to tread carefully when engaging or negotiating with them and therefore communicating with these beings is typically left up to those with the requisite expertise and training.

Kakala Katana, 36 (her name means 'hard to live'), shakes as if she has Parkinson's disease. One day, while we are collecting water from the river she tells me that she is possessed by *m'pepo*. She is not sure when they came to live in her but "there are many," she says, "some came out when a preacher did his work but not all of them. They remain in me. They live in my chest and heart. I would like them to go. They speak" (May 2017 pers. comm.). Kakala lives alone with at least five children because her husband failed to pay the instalments of brideprice required of him. The oldest child, a daughter, is 18. She manages to feed her children by selling charcoal.
The Giriama, regardless of religious affiliation, appear resigned to live alongside a variety of different kinds of otherthanhuman entities. Dialogue with practicing Christians – including local pastors – explain that *m'pepo* exist irrespective of what the Bible preaches. This is explained through an understanding of belief and faith.

> "If I believe that drinking milk will make me sick, then I will become sick. It is my faith."
> (Esther Kombe, July 2016, pers. comm.)

As Loice (August 2016 pers. comm.), a devout practicing Christian explains, "the word faith is not translated as one might expect". According to this ontology, faith and belief do not concern ideas about life or the mind making sense of experience, but rather are materially *of the body* and exist without much personal control. Thus, as Loice explained, they are linked to concepts I might use, such as: intuition, awareness, and, even, preference, but, in contrast to how I understand 'belief', what one believes is not an intellectually rooted choice that can be explained or rationalised. Rather, belief, for

the Giriama, is what you involuntarily feel about life. It is the predilection of your flesh. Believing, therefore, occurs physically from the conditions of one's materiality. Therefore, articulating a philosophy of belief comparable to the core tenets that proponents of the ontological turn espouse about truth/s (e.g.: Holbraad 2009), the Giriama do not challenge, contest or judge the validity of other people's beliefs because the reality of another person's beliefs is *their* truth. Consequently, what one believes *is* one's reality, and so therefore is both true for them and may simultaneously be untrue for you. Just as you cannot deny another person's experience, one cannot negate another's beliefs. As a result, the Giriama adhere to divergent ideas that could appear contradictory but are not because they are considered to be materially and personally formed. Consequently, there appears to be no incongruity in adhering to Christian ideals whilst simultaneously believing in *m'pepo* - because whatever you believe is true.

And, to validate this, there are plenty of examples of individuals – regardless of religious affiliation - struck down with random, unexplainable ailments, such as: transformation into goats, temporary sex swap or made unable to speak without obvious cause, to corroborate the claims that *m'pepo* exist and can alter the material world at a whim. Most people had stories of extraordinary events to recount. Alex had seen people change into various different non-human animals, stating that in an instant these individuals went from biped to quadruped ruminant. Likewise, Pendo had seen a healthy baby turn into a snake when it was taken into a church carried on the back of its mother. The mother was left with an empty *kanga*[45] hanging off her as the snake disappeared out of the building. I also had indirect contact with some people who were thought to have been affected. For example, I saw a picture doing the rounds on WhatsApp that was causing a lot of discussion. It showed the naked torso of a man with very obvious breasts accompanied by a warning that *m'pepo* had done this to him as punishment for an affair. I judged the picture to have been altered with Photoshop, but others scoffed at my naivety. More dramatically perhaps, I also saw a

[45] A *kanga* is a piece of brightly coloured cloth used daily. It can be equated to a multipurpose apron. Every woman wears a *kanga* over her clothes to protect them, or on her head when carrying water, as a blanket or to carry her belongings including babies. The material, more often than not, has a message written on it. Women choose their *kanga* in association with its message and their mood. I was told that sometimes they are chosen to communicate a message to a specific person.

man turn himself into a lion temporarily by calling on a friendly *m'pepo* to meld with his flesh. The individual was a brother to a local *muganga* (ritual practitioner) called Ali Tumba. They both had close associations with a number of *m'pepo* because of Ali's line of work. He was happy to transform himself, to show me how this worked. I had asked so many questions about how I might see the *m'pepo* that he suggested he do this. They recommended that perhaps I should transform, but despite being attracted to the idea, I was simply too scared. There was a chance, they said, that things could go wrong and I could get 'stuck' if I didn't know how to separate after the blending. As I had no idea how to detach (or even attach!) I wasn't prepared to take the risk at that time, but still somehow regret my choice. I think he chose to show me in part to allay any of my doubts about the reality of these spiritual-material events, but also to demonstrate the special relationship he had with these other agencies. I watched his transformation as the *pepo* became-with him. The request for the blending occurred alongside a complicated ritual that required mixing an assortment of different substances or medicines and the input of a number of other individuals to draw the *pepo* in. His body twisted and contorted as the *pepo* joined with his flesh. He started sweating, his voice and movements changed. The muscles in his arms became prominent and buckled and he twisted on all fours. Shining with the sweat running down him, he made noises of pain as all of the muscles in his body started to twitch. The *pepo*, talking through him and sounding angry, enquired why this was happening. His brother explained why they had called for this material change to take place. He explained they were just showing me, and thanked the entity calling it 'Baba' (father). Raising his head slightly to look at me the lion-man growled, sounding irritated with being bothered and the triviality of the situation. The transformation process subsided. Ali's brother was clearly in pain from the changes and needed to rest after the exertions. He walked off into the shade to relax. I was worried about him, but was assured that he was fine. During the process he did not develop fur and become a lion in the zoological sense. However, he altered and became something that he was not before. As Hurn (2012) outlines in her introduction to *Cryptozoology and Anthropology*, exclusively using the metrics of science to measure circumstances that are problematic to explain may inhibit understandings and do damage to the ontologies that other people live with. In keeping with the writing that articulates the ideas of the ontological turn, I do not want to translate this event away with explanations. Pendo said it was a trick and he was just performing. That certainly could be a conclusion

one can reach. However, I am not so certain. This was not the only time that I was minded of Edith Turner's (1992) experiences in Zambia and Stoller and Olkes (1989) in Niger. Spending time with Ali Tumba's troupe of healers offered me numerous occasions where my ontology was challenged and shaken, and where it felt important to be open to alternative possibilities.

Mavingane – Spitting Water to Remove a Curse

> "Giriama use water [for blessing] because the blessings are invisible but the water makes it visible. Also, *fu ha mwenga* applies here. Water is many, so it is like one as many."
> (Stephen Ngumbao, May 2017 pers. comm.)

> "Water is always used in situations of tension. In these moments we spit water 3 times at each other's heart. Unexplained illness needs to be cured with water. Water is used to break the curse. Water can be clean and dirty but it is also always good because it looks after itself."
> (Alex Katana Mare, May 2017 pers. comm.)

Alex goes on to try and further explain the ins and outs of a purification ritual done to reduce the disruption experienced by a local family. Disruption or a lack of expected order can be attributed to the transgression of social rules. Displaying similarities to Azande explanations of misfortune (Evans-Pritchard 1976) and the Semai notion of '*patud* and *punun*' (or natural order) (Knox Dentan 1979) any breaking of order transfers to and upsets other people in the extended family rather than the instigator. Therefore, if you transgressed a social rule, harm is unlikely to fall on you but will affect others, often the most vulnerable (i.e.: children) seem to be the target of broken prohibitions. In short, someone else will be hurt if you break the rules. When children are suffering without obvious cause, it is assumed that someone is behaving badly in some way – even unknown to them - thereby causing an upset to the social order. Consequently, actions that seep across the boundaries of acceptable social behaviour could be either consciously conceived with intended maleficence or may be unconsciously motivated due to hidden rejections or jealousies acting almost under the radar. Regardless, not behaving as expected creates a ripple in the social fabric or field. This is called a curse. In addition, incestuous or inappropriate sexual activities, approaching a homestead incorrectly or greeting badly can activate the need to ritually

spit at each other. Spitting at another's heart is a sign that you care for them. It demands a kind of intimacy and mutual subservience that only close people can comfortably enact. The person demonstrating their care has to fill their mouth with water, while the recipient must bare their naked chest (heart region between and above the breasts) for them to spit on. This is done in full view of the public, sitting on the floor in such a way that demands people get very close to each other. Watching this happen is equally comical and moving, and visibly reminds people of their connection, proximity and social dependence. Mothers spit on their daughters' hearts 3 times so that they can leave home and become married. In this case, spitting demonstrates the parent's are willing to let her go and have no ill feelings towards the girl's departure. As Stephen's quote above explains, water is used to allow blessings - that would otherwise be concealed - to be seen.

The *mavingane* ritual is used by families to deactivate curses or 'take off the dirty" (Donald Safari Mpe, May 2017 pers. comm.)[46]. When Theophrastus and his wife Elina were worried about her pregnancy they called the family to do *mavingane.* Elina was about four or five months pregnant with her third child when she began threatening to miscarry by losing water and blood. As the doctors could find nothing wrong, Theophrastus suggested that this was caused by a curse. *Mavingane*, he said, could remove that curse. In this case, he explained, the curse had become active because the original bride price paid had not been shared out between her uncles. As uncles may have to look after daughters in the event of the father's death, they are considered entitled to some of the bride price (Again, a practice that strengthens and enacts the tenets of *fu ha mwenga*.). Apparently, her father had held all of the money for himself and thus the curse had now become active and was harming their baby. The ritual, Theophrastus claimed, is the equivalent of saying sorry and ensures that any bad feeling is removed. Nobody is angry with the father, because as Theophrastus (April 2017 pers. comm.) rather cryptically explains, "Money is money, but when it comes into your hand it changes colour and becomes white. White things are very precious and you want to keep them". Pendo helped me to understand by expanding. Her explanation conveyed themes very similar to Mauss's (2011) explanation of the *hau!*.

[46] Some people that say they do not believe in it will perform *Mavingane*. One might speculate that to refuse would cause extra problems, thereby suggesting that it is prudent to spit when asked to.

> “If a father receives bride price and doesn’t share then the uncles and aunts can curse the daughter. The curse is from a feeling in her [Read: their. Pendo is not referring to the bride… the word ‘her’ is often used mistakenly for ‘their’] heart and can cause problems in her marriage. The feeling is not jealousy. They feel bad because they count the child as their own because they are the same blood. The father is the owner of the child so the curse goes to the child. All relatives should be included in the decisions about children. The people are crossed [this is used to suggest both anger but also gives a sense of their path has been obstacle – hand actions show a ‘T’ shape, like a road being blocked]. Often you don’t know you are cursing. Children cannot make a curse. A curse is not visible. Only the actions of the curse are visible.”
> (Pendo Ngumbao, April 2017 pers. comm.)

To remove the curse Elina’s uncle must spit at her and her sister, because, I am told by Pendo (April 2017 pers. comm.), they are “the same” and “must share”. This was done in a doorway because a doorway is the place where people receive things from each other publically but are still at home. Sitting in a doorway allows others to see what you have received. If the ritual is completed indoors people might be concerned because they won’t be able to see what has happened. To progress the ritual, the participants must chant, “The sickness must go” and then those afflicted ask for blessings by saying, “Today they are removing the curse”. Before spitting at this niece, Elina’s uncle hovered briefly above the two girls as they sat in the doorway. Keeping everything informal, he says how grateful he is that the curse has brought the girls to him. He explains that when they were children he saw them all the time. “Now,” he says, “It takes a curse to bring us together again.” Laughing, he then takes water from the cup he is holding and spits twice on their chests around the heart area, then twice on the upper central back and finally once on each foot.

Figure 10: *Mavingane* ritual, spitting water.

The water spat is used to visibilise the connection between them, but it is also used to cool things down: “The water and the saliva are important in the spitting. The water is an agent of mixing and the sending of things. It cools things” (Theophrastus Kitsunga, May 2017 pers. comm.). In discussions after the ritual, Alex and Theophrastus attempted to further explain to me how cursing works.

The ritual is serious but when I was present it was done with a sense of enormous jollity and slight embarrassment. This may have been brought on by the fact that all the men are drunk – palm wine being an abundant ingredient to the proceedings that day. According to Theophrastus, palm wine is a relaxant that helps everyone tell the truth. Moreover, “Palm wine stops someone thinking more” (Theophrastus Kitsungu, May 2017 pers. comm.). “Is thinking a problem?” I ask. “Yes,” he says, “If you drink a lot people relax. People need to relax.” His words seem to chime with a Giriama prayer said when alcohol is fed to the ancestors. Recorded by Taylor (1891:81-2) the incantation suggests people should be left to drink so that through intoxication quarrelling will be inhibited. Theophrastus attempts to explain the complexities of curses and how they manifest.

> “It is one way of retreating that curse. If someone does bad it can only be removed this way. It is like saying sorry. If someone says sorry then how do

> you feel? Better? For certain situations if I have anger in my life, if I quarrel with my father, everything will be a failure. That is how a curse disturbs someone. Everyone is depending on luck. If you are not blessed by the parent you will be out of luck. Parents bless you through the water and that removes the block. If there is no peace with your parents the problems will follow you. Peace travels like water – there is a need for all to be peaceful. Your behaviour affects others. Curse is something like network - a phone signal or Wi-Fi. It may start here but if I direct it to you it will not come. My signal goes to the booster and the booster sends it on[47],… [pausing to point his phone at me]… just like sending an email. If you don't get help from me like you expect and I don't have much then the curse won't work. But if I have lots and I am not sharing and I should, the curse will work."
> (Theophrastus Kithunga, May 2017 pers. comm.)

In contrast to Evans-Pritchard's writings of the Azande (1976) here one does not have to be a witch to cause misfortune. Simply transgressing social rules is enough to activate a curse. As a result, rule breaking is synonymous with killing children; a serious punishment for acting out of the order originally set in the *fingo* by the ancestors. Thus, it follows that there is a right way to do things, a method that is almost depicted like a natural order to things. "There is a right way to be a baboon, there is a right way to be Giriama," says Alex (Katana Mare, May 2017 pers. comm.).

And as for water:

> "Water is the connection between them. If a house is on fire, water cools it down. Because the father took the money heat comes, water cools that heat. The water cools the spirit and the water mixes, so it is the solution"
> (Theophrastus Kithunga, May 2017 pers. comm.)

The rules of sharing as articulated by Theophrastus produce a series of mechanisms that merge relatives and spread wealth between those in the group. Ownership and identities become interestingly fluid and communal concepts. Many assume shared ownership rights and responsibilities over children, land, and even skill sets as a result of the blurred, porous boundaries of being a relative. Echoing the materiality of water, this ethos of sharing means daily life is organised by multiple reminders that *fu ha*

[47] This statement accounts for the lag on the curse. I was unable to grasp why the curse had only become active on her 3rd pregnancy. For booster, read: satellite.

mwenga. When these duties are not enacted water is one of the ingredients used for challenging and restoring the order of communality.

A month later I met Theophrastus and his wife at a funeral and asked how the pregnancy was fairing. “Was it a curse?” I asked. Elina replies “After the blessings, all as well”, but in slight contradiction Theophrastus says, “Somehow she is getting better, but,” he continues, “mixing the saliva still has to be done. The uncle will spit in her mouth. This still has to be done because the blessings aren’t finished” (June 2017 pers. comm.). I am not sure if this happened but nevertheless some months late Elina gave birth to a healthy baby.

When Rain Falls: Roofs, Rivers and Basins

In ASAL areas where sourcing water overtly occupies (and therefore shapes) daily life, water collecting methodologies are of central importance. Rain falling on the fields offers important ground water for crops but water falling on other surfaces such as roofs also offers a chance to collect and use it before it continues on its path. Traditionally, the Giriama thatch the roofs of their single room homes with mats or tiles woven from a type of palm called *mkuti*. Nowadays, however, families aspire to covering their homes with corrugated iron sheets instead of *mkuti*. This change in practice is also functional as a metal roof enables more successful rainwater collection. In addition, it also acts to visibilise affluence. A shining roof can be seen for miles in the sunlight and signals that the family has both the finances and ability to improve their conditions. However, covering your home with metal sheets comes with other consequences, not all of which are positive. It raises the internal temperature of the room significantly making the accommodation uncomfortable both day and night throughout the year. Furthermore, it adds terrific, sometimes distressing level of noise when the rain does fall. But, these downsides are weighed up against and countered by the fact that it is durable, lasting considerably longer than thatch and, importantly, enables rainwater to be collected.

Collecting water from the roof does not only demand the purchase, transportation and fitting of heavy, unwieldy sheets on wattle and daub walls without machinery it also requires guttering, downpipe and a sizeable container with a tap for storing and accessing the water. For those with only roofing sheets and no gutter, collecting water relies on placing buckets around the roof in the hope that one might collect even a small amount. Unfortunately, this strategy has limited success. From my experience, buckets placed in this manner are more about hope than effectiveness, and certainly do not represent a serious method of water acquisition. It is unusual to collect more than a cup full of water but this is dependent on the length and strength of the downpour. Indeed, looking into the buckets after a rain shower reveals a water level that generally only just manages to cover the bottom of the container. Roof water in useful quantities, therefore, is only available to the wealthy at certain times of year, and even the wealthy are restricted by the quantity of rain that falls.

River Water and Water Basins

Direct rainfall is not the only source of water available to the population. The seasonal river – the Koromi - serves the area as well. The origin of any seasonal river is notoriously difficult to locate but locals say that the Koromi is fed from the desert upland streams such as the Bulfaji stream and the Midu waterhole that lie north east of the Lali Hills. Both sources sit at an elevation of between 110 and 140m above sea level and are approximately 20 - 35 kms away from Boré at only 46m above sea level. As the name suggests, the flow of a seasonal river is intermittent and, in this case, relies directly on rainfall in this area and to the northwest in the higher lands. Thus, the land alongside a seasonal river floods when the rains first come, but, as the flood water soaks down along the riverbank, the stream abates and leaves a series of disconnected depressions or basins of water along the river line. The population relies on these basins for their domestic water, using it for their livestock, cooking, washing and drinking.

Headcarrying – Water Shaping Gendered Bodies

Collecting water is considered to be women's work. Literature shows that 'domestic load-carrying, as a low-status activity, is regarded culturally as a 'female' activity in most African societies… The burden, in time and effort, thus falls disproportionately on women and children' (Porter et al 2013: 90). This is quite assertively stated by men and recalcitrantly acknowledged by women.

Musa explains that the ancestors established water collection as women's work because "they thought that the women were lower than us" (Musa Safari Mare, May 2017 pers. comm.). This notion is coupled to the fact that women are bought into households with the bridewealth payment system, from which men then assume the role of owner and their wives that of property. This practice is deeply rooted in the past where women, power and wealth were socially intertwined. For example, Cashmore (1961) claims that, women were bought and sold as slaves amongst the Giriama, even used as collateral in times of economic stress. Despite changes in practice with regards overt slavery, the purchase of women remains not only an organising principle of gender relations for the Giriama, but is also driven and enmeshed by water. When prompted to consider what might happen if people did not pay for their wives, who would collect water was raised as an issue.

> "Oh! That's difficult, because no one would have the power over the other! It is a shame for the man to collect water."
> (Musa Safari Mare, Sept 2016 pers. comm.)
> ['It is a shame' translates as this brings shame on him.]

Buying women is formalised through the marriage ceremony, after which the phrase: '*Umepata jiko'* (trans. 'you have found a stove' or 'kitchen') is used by men to describe the relationship. As the phrase suggests, women are expected to make the man's life easier by taking over all of the daily activities that life demands, one of which is collecting water.

However, to claim that water collection is the sole domain of women is inaccurate. Unmarried men and boys carry their own water until they have the benefit of a 'kitchen'. There are, however, restrictions for everyone on how to carry the water. Males must

not use their heads for the task and are expected to use their backs, donkeys or bicycles instead. Women jokingly state that it must be that men do not have the right head shape for the task - a statement that manages to highlight male failings so as to embrace their inevitable responsibilities.

To bring water to the household, women usually wake and start their journey to the nearest river basin before first light each day. The walk to the water can be achieved relatively quickly without a load but it can still take some of the women in this area over an hour to get to the water depending on where one lives. The aim is to bring water back for breakfast and washing before the sun gets too hot or the children are awake. Thus, leaving at around 5 am to collect water is normal for many women.

Women can only carry one 20 litre jerrycan per trip, but a family needs a lot more water per day. Consequently, after breakfast and after setting the cleaned children off to school, the women must return to the water source to get more. The number of trips depends on family size. The average is 4 round trips per day equating, for some, to over 4 hours haulage often with a baby strapped to one's back, and simultaneously carrying another in utero (Porter et al 2013). As the last trip of the day is done with the children (after their return from school), more than 20l can be collected in that final evening journey. With water collection occurring when the day is at its coolest, women are able to work in their gardens (*shamba*) and complete other tasks, such as collecting firewood, making charcoal, washing, construction, repairs and preparing food, in the heat of the day.

The time spent carrying water acts on and shapes women's lives, as much as the weight of the water they carry. For some this means that they can do little else in the day. Furthermore, as nearly all activities demand water, women's bodies reflect the relationships they have it. In contrast to the few Kambe women in the area who can carry water by strapping it on to their backs, Giriama women must carry the water they collect on their heads. Both methods leave women's hands free, a method not only useful for those with small children but also allows water collection journeys to double up for other purposes. The body strength needed to carry 20 l of water by hand for even a 5 minute walk causes immense strain and effort. On the head however, is an entirely different matter. Carrying water (and other heavy items) on the head centres

the weight of the object down through the core of the body rather than allowing the item to draw the carrier to one side or the other thereby twisting the spine and adding strain (Heglund et al 1995). Furthermore, research shows that 70% of a person's body weight can be moved using the head with only a small amount of extra exertion, if the person has been trained (Lloyd et al 2010), which offers an convincing explanation for headcarrying when other automated mechanisms of transportation are not available.

Despite the above, collecting water is undoubtedly arduous. Women talk of their legs hurting so much some days that they cannot bear to walk any more. Women in other studies also complain of neck pain each day after collecting water (Geere et al 2010 a and b). Lifting 20 l (that is equal to 20 kilos) up and on to one's head is beyond most people on their own. Lifting the water from ground level is difficult enough. Men and women similarly strain to shift a full jerrycan from the tap after it has been filled. They wrench the can away from the faucet and let it fall to the ground with a thump. They can do little else, as it is so heavy - their bodies pulled by the weight of the water sloshing around in the can. Each woman helps the other. Even nearby women who are not collecting will get up to help someone with their water. Thus, once the jerrycan is filled, assistance is needed to help raise the dense weight up above head height. For this the women must work together: the individual who is to carry the water first takes a scarf and coils it into a circular 'nest', which she then places on her head. Then, retaining a level head so as to not drop the coiled scarf from its position, she brings the container up as far as she can alone. She does this while slightly bending at the knees to reduce her height. This is when her companion steps in. Both heave, getting the can to waist level, together. Taking some of the weight of the water container in both arms one helps the other woman, who will carry the water, lifts it up onto her now lowered, but not tipped, head. Then, in one last heave, the container is pushed up to above head height together - with one woman taking most of the weight in the final moments, the woman who is to carry the can is served with the container on her head. Once raised the carrier stands taller taking the full weight of the water, which settles onto her head, cushioned by the scarf's coils. Using micro-neck muscle movements to keep the water steady, she now has to help her companion do the same – except now she also has to keep her own water container on her head at the same time.

Once on the head, the groaning weight of the water alters and miraculously appears to lessen. Now she looks gracefully able to carry the container without effort. The weight of the water now seemingly insubstantial is buoyantly maintained even while she picks up small children or other items that she will take on her journey. Heglund et al (1995:52) attribute this to the pendulum like gait maintained by the relationship between body and water, the swing of which 'maintain[s] the motion of a common centre of the body and load'. Indeed, watching and walking with women carrying water on their heads shows the steady flow of the body from the head down as they propel forwards whilst balancing the water. The load is physically unstable because of how water behaves and this is further problematized, according to Beaucave-Gauvreau et al (2011), because walking increases the instability of the load. From experimentation Beaucave-Gauvreau et al (2011) show that, women must compensate by minimizing upper body movement whilst moving forwards to achieve a successful relationship with the contained water. Consequently, they are obliged to use the neck and upper body to steady the bobbing contents. As has been shown, water in Africa makes the rural populations of women suffer from time poverty, but it has also been shown to affect their health detrimentally (Geere et al 2010a). Constant posture modification is thought to produce degenerative changes in the neck and spine (Echerri and Forriol, 2005). However, Beaucave-Gauvreau et al (2011) concede that load carrying may also be beneficial for bone density.

As can be seen from the above, women's subjugation is culturally and materially entwined with the need to collect water. Carrying water itself, coupled with the distances covered, means women are shackled to the process. Furthermore, any system that stops women from having to walk and collect water implies that women's time could be freed up – something which while desirable, does not seem to be suitable to some of the community. When women are asked to imagine a life without water collection as a part of it, they are unable to imagine themselves in alternative occupations having no frame of reference to draw on. Equally, men are verbal about the need for women to be occupied with tasks for the home as they do not want them straying.

Crying for Hiding Water and Help from Other Than Human Agents

The Giriama say that water has a tendency to hide. When this occurs (for example, during periods of drought) communication with the big trees and/or the ancestors is considered an effective method to bring water out of hiding because it is in the trees that the water is retained. However, this is not the case with all trees; certain trees are better at holding water.

> 'Coconut palms are also used to harvest rainwater: it is concentrated by the crown, flows downwards along the trunk and is guided into a vessel by a leaf tied to the trunk.'
> (Waaijenberg 1994: 278)

My time in the field corroborates Waaijenberg's claim, but in my experience this practice is atypical. People are aware of, and remember, that certain types of palm can hold fairly large amounts of water.

> "We have trees that bring water. [Pointing to a small palm locally called *Kitsapu*[48]] This tree is used for making baskets and it gives clean water. It collects the water, you make a funnel out of the leaves and the water can be collected."
> (Joyce Kioko, August 2016 pers. comm.)

However, despite this knowledge, and a demonstration from Joyce that liberated lots of water pouring over us, people do not seem to use the trees to harvest water. Nevertheless, trees figure heavily in accounts of past practices and elders regularly name flora that they claim does not exist today, so in all likelihood, the practice probably was commonplace. For example, in the past nobody bought the ingredients for the chai tea that is regularly consumed in the mornings. Instead, the leaves of the *konzi*[49] tree were boiled to make beverages. Similarly, tree roots (of a tree I am yet to find the name of) were used during the lean rainy season to replace the staple *ugali* (maize porridge) when stocks dwindled. The roots were ground up to make something akin to *kinolo* (banana bread) and saw the Giriama through times of stress. In addition,

[48] *Kitsapu* is the Giriama name for *Encephaiartos hildebrandtii* an African cycad from the family Zamiaceace (see Worldagroforestry.org n.d: 218-9)
[49] The *konzi* tree is undocumented and I have yet to identify it.

this tree acted ‘like a sign’ indicating when the rains were coming “because it would sprout from the tuber when the rains were on their way.” (Kasungu Mare, August 2016 pers. comm.) Consequently, engaging and communicating with the environment, particularly with, and through, the forest trees to find or relate to water has produced a series of important communal and personal ritual practices that afford the Giriama a method by which to affect or influence the water out of the bodies of trees and into their own.

In association with the above physical solutions to water acquisition the community also cite the ability of ritual practitioners (*muganga*) to control the weather and cry (read: call or pray) for rain when necessary. Stories of the need to walk miles to collect water in times of stress are regularly counterbalanced by accounts of how the *muganga* of the past were able to call for rain when the community needed it during times of severe drought. However, crying for water in this way can only be successfully achieved if members of all Giriama clans enact a highly structured ritual gathering together – something that, Daniel tells me, a modern lifestyle has constrained.

Daniel Kalume Muvondi Nydura, 82, and still working despite being almost blind in both eyes as a result of a combination of cataracts and damage after a roofing accident, states there are very few able practitioners left to cry for the community as was done in the past. Daniel is one of the few remaining individuals who not only remembers the rituals, but also acknowledges taking part in them. He is a stern, almost dour, man who looks straight ahead rather than turning directly to you when talking, perhaps as a result of his failing sight. He pontificates, talks over others when they are talking and seems intent on leading. When I first met him, he was dressed in his finest attire in honour of my visit but the following visits he did not make that effort. I don’t think Daniel liked me, or perhaps the problem was my questions, nevertheless he still made time for me.

Coming away from discussions it was unclear if Daniel was trained as a *muganga* or not. During our conversations he managed to offer answers that were unfailingly ambiguous. However, other community members talk of the last local practitioner as someone who is struggling to practice as a result of recently going blind. At the time it seemed likely, therefore, that Daniel was the last practitioner who used these old

methods in the local *kiza*. Later, my suspicions were confirmed when Kasungu directly named Daniel and accounted for his accident as a punishment from the *m'pepo* he had stopped working with.

According to Daniel, to successfully cry for rain it is necessary to draw together a community committee with one representative from each of the seven clans[50] in attendance - something that Daniel explains is not easy these days. This is not only a simple consequence of drifting populations or modernity but also hinges on the systematic rejection and destruction of the practices by those Giriama in the area inspired by the Christian message. Daniel describes how, when he was younger, practitioners – derogatorily described as pagans by the Church – were regularly persecuted for their beliefs, and thus, in concern for their safety, increasingly performed in secret, if at all. Despite the ritual setting for crying for water (the *kiza*) being near Daniel's family land, he remembers the fear he felt for his grandfather and how he endeavored to persuade him to stop when the persecution was at its height and some local people were killed for their practices. Again, with echoes of the work of Evans-Pritchard in Nuerland and the persecution of the prophets by the Anglo-Egyptian coalition (1940), Brantley (1979) and Parkin (1991) link the demands and paranoia of the British administration, and post-independence movements, to the decline of the traditional practitioners that Daniel describes (Parkin (1968: 433) cites an 'anti-sorcery movement of 1966' as a threat to elder control). Brantley's (1979:119) account, however, explains that the British associated (what she calls) 'witchcraft', with their lack of 'administrative success' and hence began a campaign to stop these practices. Parkin (1991:150) supports this position when he cites the political effectiveness of the oaths of the hyena (*Kiraho cha fisi*) as of specific concern to the then colonial government. To substantiate this point, locals attribute the success of the famous Giriama female freedom fighter, Me Katilili wa Menza in evading the British Administration stemmed from harnessing ritual practitioners' knowledge so that the British got lost, confused and could not find her (Nelson Jefa, June 2017 pers. comm.). Moreover, it is also written that the people's strength to resist the British came from

[50] The seven clans of this area are called: Amwabayawaro, Akiza, Amwakithi, Amilulu, Amwamweri, Amwandundu and Amwakombe. According to my informants Amwandundu started the kiza. These clan names are quite different from those documented by Parkin who worked with Giriama who lived at the southern part of Giriama land on the coastal strip.

muganga who, at Me Katilili's request, added medicine to the water supply, which bound drinkers to the oath that had infused into it. The oath gave them the force to stand up to the British (Okoth 2000).

However, despite the instrumental role of water and magic in their resistance, such practitioners today are invariably feared and avoided. In Boré, locals make the distinction between different uses of the same power, and between fact and fiction. All agree that supernatural powers are provided by relationships with *m'pepo*, and that once in receipt of them they can be used for good or bad. If you use them maleficently then you are called a wizard (*mtsai*) and fall into a different category from a witch (*muganga*) who uses their power to heal as a physician would. Alex explains, but also encourages me to take this with a pinch of salt:

> "Wizards are considered bad. Cheats. People don't like them. If things go bad people blame them. He [the wizard] doesn't harm his family; he spares them. A wizard is just a thief, breaking the rules, a dangerous person. People are not born bad but jealousy makes them this way. They learn how to kill or to inhibit people's progress so that they can't succeed. These people are bad. They abuse children and are incestuous.
> But, these are just 'cultural stories'. They are not true so we don't tell them to our children because that is – somehow – cheating. Here," he continues, "we are full of the bible stories – and the bible stories are true – these old stories are just creative."
> (Alex Katana Mare, May 2017 pers. comm.)

Regardless of the comment above, Alex still demonstrated caution around, and admitted to fears of, local people considered to be *mtsai.* Thus, the legacy of the paranoia and misunderstandings of the British with regards cultural practices manifests today as prejudice against those judged as being 'a witchcraft', as it was regularly expressed. These concerns are not only locally evident but reverberate right across Kenya with murders of individuals accused of having supernatural powers given by their spirit helpers regularly reported in gossip, through social media channels and by the Press. The force that the concern exerts is tremendous, to the point that killings are legitimized as the only route to protect the community from the evil damage *mtsai* can produce, which accounts for Daniel's reticence to show or admit to his abilities openly in discussion. This is not just with regards specific individuals either. Concerns seep into unexpected places. For example, an NGO named 'Magic Oxygen'

raised funds to build classrooms in the local school. In appreciation of the donation it was suggested that the logo of the NGO be painted on the side of the new school building. However, this idea was rejected because some members held that the word 'magic' was too closely linked to bad crafts.

Now, Daniel, and others, regret the dissipation of the practice and the secrecy that the few remaining genuine practitioners are shrouded in. Previously, crying for rain was a community pursuit that mobilised and activated the principle of *fu ha mwenga* and bound the clans in adversity to a common purpose. Moreover, it worked and, now, with the climate changing, the elderly are concerned about what the young (Christians) are constantly praying for.

> "In the past prayers were for problems. It wasn't something that you had to do regularly…prayers are not working or if this is what people are praying for – then I don't want any of it!"
> (Daniel Kalume Muvondi Nydura, July 2016 pers. comm.)

Drawing rain to an area not only requires a group of knowledgeable, skilled practitioners but also demands a specifically endorsed, spiritually charged area to enact the ritual. As has been shown, the Giriama have become known for their relationship to the forest and the construction of fortified encampments or *makaya* mentioned earlier. While the original *makaya* are now preserved, unused as heritage sites (UNESCO 2008) the smaller, unfortified forest locations are still used as they lie scattered around local cultivated fields that edge the river line. They are available to anyone who needs to cry for their desires to be provided by the local otherthanhuman population.

According to Alex, instructions for where *viza* should be located in Boré and how to use them initially came through the dreams of community members. Alex is very specific about the timing of these dreams, claiming they occurred in 1892. A time, he continues, of great stress in the form of severe drought that was followed by a number of diseases[51]. By 1893, as conditions had deteriorated to the point of causing the

[51] Spinage (2012) to some extent validates local claims concerning epidemics in the Coastal Province in the late 1800s citing various incidents perhaps caused by the movement of people along the trading routes from the bush to the coast and back.

community to fracture, the elders agreed that they should follow the information received in the dream and institute the *viza*. Once the *viza* were constructed and the first prayers said, "the diseases stopped and the rain came heavily" (Alex Katana Mare, July 2016 pers. comm.)[52].

One can expect a *kiza* to be situated next to a river. It is difficult to recognize with the untrained eye, as it is simply a small, circular clearing in the forest. To create a *kiza* one requires a "cool tree" (Alex Katana Mare, July 2016 pers. comm.) and direct access to the river through a clearing. Only a trained practitioner can identify a cool tree, but to the layperson it is one that provides dense shade and darkness. From discussion it became clear that cool trees tend to have had long lives, are described as 'heavy' and are commonly feared because they are powerful. An example of a cool tree is the *Mugandi* tree (*Ficus busii*), that according to botanical literature are able to conserve soil moisture and improve soil fertility (Gerhardt and Steiner 1986: 58). But, as Freddy explains, the *kiza* is not the ground or place in the forest but is actually the tree itself and the water within them.

> "The area around the tree is not the *kiza*. It is the tree. The tree has been made effective as a communicator with *Mulungu* [god] and the ancestors because it was made that way. The big trees are able to bring the rain if you appeal to them. It isn't a species that is important; it is just the size of the tree that counts" (Freddy Katana, Sept. 2016 pers. comm.)

Daniel describes the ritual that would have taken place in the *kiza* in great detail, telling me that as a child he saw many of these performances enacted and the rain following. The process is very structured – as with most things the Giriama do – there is a right way to do things and people should not deviate from the procedure to ensure success. Consequently, rain cannot just be made; a complicated carefully organize event must be planned to draw it to the community.

Rainmaking requires involvement from all clans. Only once the clans are together can a discussion that determines how to proceed begin. Once the clans agree on a schedule, a date was organized, and the people would be informed that the ritual

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[52] Bernard (2013) offers a fascinating account of the relevance and connections of dreams, spirits and water in S. Africa.

would be going ahead. In accordance with the agreed schedule, those participants who needed to adopt certain roles in the ritual would be chosen and readied. The rest of the community was instructed to go home and prepare for the rains[53].

The first stage of the ritual demanded the *kiza* site be swept free of undergrowth using a particular type of grass that could once be found on the river's edge. When a space of ground was cleared, the building party, comprised of members that represented each of the clans, was responsible for constructing the ritual structures. For rain, a small house with a bed and chimney hole in the roof was assembled and positioned in the cleared and cleaned ritual space (see Parkin 1991 for the significance of cleaning). Once the construction was complete, "a woman who had only slept with one man" (Daniel Kalume Muvondi Nydura, July 2016, pers. comm.) would take *Mbono* seeds (castor) to pound and then cook for oil. The oil she made would be placed in a pot in the *kiza*. Only after the oil was in place could one member of the *Akiza* clan enter the 'house of god'. Before entry the individual was covered head to toe in the traditional black cloth[54] and was expected to start singing the ritual refrain written below. The rest of the group then circles the house whilst repeating the chorus.

> '*Ziara mkanga rina malua, ziara mkanga rina malua'*
> trans: 'Water-basin reed grass has flowers, water-basin reed grass has flowers'

Once the house had been circled, the person inside the 'house of god' would wait until the group emptied seven containers of water into the small hole in the top of the roof thereby inundating the person on the inside. As the water poured and when the person in the house is drenched, the group ululates in celebration saying 'there is enough rain for both seasons' as they continue to circle. The whole performance is accompanied by drumming from the *muganga*.

Like many others in the community, Daniel is adamant that crying for rain is an effective method of water acquisition.

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[53] The date was arrived at using the Giriama calendar – a system of 7 x 4-day weeks to a month that synchronizes with the phases of the moon.
[54] Black is the colour for water and any ritual that hopes for water must use black.

> "After the ceremony the leader would address the people. During the address the people were told that whoever has to pass through a valley on the way home must now leave immediately because the rains are coming and it will flood. This was always true. It worked. Then the people would quickly disperse and the rain would fall heavily that very same day – always."
> (Daniel Kalume Muvondi Nydura, July 2016 pers. comm.)

Personal Cries

River water is cited as the key ingredient that attracts the attention of the otherthanhuman beings. *M'pepo* are comfortable around the shaded areas of the river or around certain 'cool' trees, and will only respond if called with the types of concoctions they favour. Furthermore, *m'pepo* are attracted to and respond to messages within stagnant water. Thus placing small containers of water (and other ingredients) in the *kiza* will attract the *m'pepo* to your message. Consequently, river water is the base ingredient in the creation of the decoctions or material requests that are placed half buried in containers at the base of the tree in the *kiza*[55]. Half burying the container is thought significant but as to why is not fully explained. However, the method echoes claims of buried medicines in the *kaya*. As the 'cool trees' are important – akin to conduits or antennae to transmit the message – the container must be proximal to its roots - effectively embedded within, and thus linked to, the roots of the tree. The water not only holds the message in solution but also functions to produce the connectivity between communicating materials. Therefore, the water acts not as a cleansing agent but as a cohering substance in which ingredients dissolve to form a potent new medium through which one's cries can be broadcast.

My first visit to a *kiza* in 2013 showed me a series of 'crying' places in the space. One consisted of half an empty coconut shell (*kaha* trans. container or basket) with a white chicken feather next to it, the other was a cleared area of forest floor with a circle of

[55] Using manufactured products like soaps, lotions or detergent discourages or obstructs *m'pepo* and so will keep them away, and, thus, should be avoided when communicating with them. I was told that if I was worried about spirits entering my body that I should use a lot of soap and/or perfume as they would recoil from it.

ash inscribed on it and the last was a plastic *CocaCola* bottle half buried at the roots of one of the larger trees[56]. The bottle was cut in half. The lower half embedded into the ground was filled with a very dark, thick liquid, which had developed green patches of algae around its level. The upper half of the bottle was cut in such a way that it could slip over the bottom half and acted like a lid both reducing evaporation and holding the fluid in but also allowing easy access to the substance by lifting it. Accessing the medicine in this way meant that the fluid remained surrounded by soil and was undisturbed from its position within the ground. Tied to the neck of the upper half of the bottle with a red rag was a black feather. The black feather signifying that the potion concerned water in some way.

In 2013 Freddy showed me how to cry for what you need using this liquid. It demanded putting the tips of your fingers into the fluid and then placing your wetted fingertips on to your lips while asking for what you want. Freddy demonstrated, getting down on his knees he dipped the first two fingers of both hands into the liquid. He then placed those wetted fingertips together onto his lips and spoke his desires through them.

Asking for what you want is not the entirety of the process. As Freddy (Feb. 2013 pers. comm.) explained, “You have to give things to this place. You request, but you don’t take anything”. Moreover, in asking you must also make a promise in return, which must be honoured once what you have asked for is received. This process chimes with classic texts that explore both reciprocity, and the notion of sacrifice or ritual violence, as a rebalancing of social order and a method of ensuring social cohesion (e.g.: Bloch 1992; Douglas 1966; Girard 1992; Hubert and Mauss 1964; Lienhardt 1961; Mauss 2011).

> “Cry for what you want and make a promise. Only once you get what you asked for you need to fulfil your promise. [Explaining that you might have pledged to sacrifice a goat] You go back to the *kiza* with the goat and kill it in there. Let the blood go on the ground around the tree and then take the meat back to share with everyone in your compound. If you don’t follow this process then misfortune can befall you.”
> (Freddy Katana Mare, Sept. 2016 pers. comm.)

[56] *Kiraho* describes a buried water potion, often used to protect against thieves.

In agreement with Mauss' notion of the spirit of the gift (2011), receiving what one has asked for activates the need to reciprocate, without which one's life is in danger. In this case, dangers are described as,

> "Unnatural things [that can] happen to your family, such as: a house burning with no fire, any accident, bees coming into your home and even the death of children"
> (Freddy Katana Mare, Feb. 2013 pers. comm.)

As such this process is not only economic and productive following Sahlins (1974), but is part of a wider circle of energies that must be rebalanced - to avoid causing the danger of disorder (Douglas 1966) through an exchange of materials (Bataille 1989). Bataille's almost ecological account of reciprocity is intensely material (1989). While Hubert and Mauss (1964) claimed sacrifice functions to draw the profane and the sacred together, using Bataille's ideas it is possible to exchange 'profane' and 'sacred' for 'material' and 'immaterial' and see sacrifice as a method that allows the material and the immaterial to blend together. Letting blood soak from the slaughtered goat into the ground responds to the *m'pepo* that have helped you and thereby the material rebalances any debts. However, as the quote above demonstrates, the giving does not stop with this interchange. The meat must then be shared with the rest of your group. This necessary step draws personal successes onto the social stage, which makes your request visible and shows that you have received what you wanted and also – quite simply – feeds your family. In addition, it guards against any potential loss of social cohesion (Girard 1992). Losing one item to gain another, and the obligations inherent in exchange is well documented in anthropological literature, and this offers another ethnographic example of how the power of the *hau* is enacted (Mauss 2011). Freddy is a young man with a new wife and very young baby. He regularly uses the *kiza* to get on in life, and considers *kiza* power more effective than other forms of appealing to otherthanhuman entities. Nevertheless, he is wary of the power of the *kiza* and cautions against poor use of it.

> "God is very slow. He makes you wait to test your faith. If you really believe you may get what you want, but more likely you will get what he thinks you need. I believe in the *kiza* power…it is quicker, really works but comes with risks of madness that Christianity does not give. It is very important to keep your promise. If you fail to do so then madness can come …if you want a car and get it but fail to honour your promise then you will crash the car."

(Freddy Katana Mare, Feb. 2013 pers. comm.)

For me, seeing a *CocaCola* bottle in a ritual space needed explanation; its placement jarred with previous comments about what the *m'pepo* relished (see earlier). The use of a plastic bottle was pragmatic and was not considered contradictory by the locals. Plastic water containers, used to transport water to the compound every day, are vital and precious property in Africa. Enclosing fluids and prohibiting their evaporation in a hot climate strengthens the potency of the medicine being 'brewed' inside the container. When asked to explain the role water played in this process, Alex said

> "The bottle, or whatever, was just containers but what matters was what was inside. The container content was, [river water and] baby urine, chicken blood, few hairs of a dead body and so many others which are dangerous when swallowed - even a pinch. When you swallow any, and maybe you tell someone that shall receive anything - might be good or bad - then it really happened... That's why they used to ask for rain and they really get rains. Even now if you try to swallow the water and tell someone that he is going to die then - must be dangerous - as it is likely to happen."
> (Alex Katana Mare, Sept. 2016 pers. comm.)

Viza, therefore, are considered to be spaces with "lots of signal and good reception" (Theophrastus Kithunga, May 2017 pers. comm.) where the spirit world will hear and answer your cries immediately and effectively. Decoction medicines using river water boost the signal and thus the efficacy of the communication.

This section outlined Giriama perspectives of water and offered a selection of experiences, methods and practices to illustrate the role water plays in shaping Giriama lives. Having demonstrated how water and the Giriama of this area engage with each other, the next section turns its attention to consideration of what water is by exploring how water behaves.

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 materially 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)[57]. 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 H_2O 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.

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.'

[57] 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).

(Wilkens 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 – teaming 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 bodies[58] 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

[58] 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. Dillion 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; Sahlins 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 way[59] for me. Consequently, there are reverberations or shadows

[59] 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.

similar 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 11: 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 12: 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 13: 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, muddied 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, oceans and glaciers.

Chapter Six:

Being Without Water: Climate, Scarcity and Changing Practices

This chapter demonstrates how a dearth of water not only shapes the environment, but also is instrumental in the formation of bodies, and acts as a pivotal driver around which physical actions circulate. Leading on from the previous chapter, this section aims to further uncover how the behaviours of materials determine both methods of engagement and conceptions of the environment, and thereby exert forces that govern how relationships can be structured in this setting. Therefore, with a clear eye on how water behaves, the way the Giriama perform, not just with water, but *because of water* is further unpacked. Thus, the brute material conditions, including the changing climatic patterns, the economic consequences of the changes, the developing infrastructure instituted to remedy and modernise access to water, and the new hydro-social relationships that are developing in the area are drawn into the picture to illustrate the role that the materiality of water plays in regulating Giriama cultural practices.

Drought and Changing Weather Patterns

Climate scientists and security analysts alike warn (Leary et al 2007) that altered rainfall patterns coupled perhaps with local deforestation activities (Santilli et al 2005; Moutinho and Schwartzman 2005) may be responsible for encouraging the march of creeping desertification increasingly afflicting the area. A persistent lack of rainfall not only contributes to regular crop failure but also alters the groundwater levels and therefore the amount of water in aquifers and the seasonal river basins that are the main source of water in the area. Both consequences trouble subsistence and, in turn, the politics of bio-security.

> ‘Rain and indeed drought are inherently political, not just in terms of water as an essential and often scarce 'natural resource', but also because of its place in a powerful symbolic order.’
> (Fontein 2008: 744)

As drought is contextual, a universally effective definition of drought is hard to achieve. Typically the term refers to an extended period of deficient rainfall but how this is measured varies. For example, measurements are not simply concerned with a perceived lack of precipitation alone but are quantified through calculations that involve soil moisture levels; hydrological data on the state of local water sources, such as lakes and rivers; and also relevant socio-economic information, such as that concerning the availability of drinking water.

One could say that Africa is axiomatically associated with drought and the ensuing famine that follows it is an uncomfortable trope of the continent. The framing of Africa as desiccated can be easily materially validated by the amount of drought the continent has endured over the last century. Lists show that between 1900-2013 there were a total of 642 drought events across the planet. Those events killed 12 million people but have affected over 2 billion people’s lives (Masih et al 2014); of the 642 global events nearly half - at 291 - occurred in Africa (Masih et al 2014). Consequently a claim that ‘the most prolonged and intense droughts occur in the Sahel and equatorial eastern Africa’ - where Kenya is situated – is not contentious or questionable (Masih et al 2014: 3635).

However, drought cycles in East Africa appear to be dramatically altering. Until approximately 50 years ago droughts were only experienced approximately every 10 years or more (Mateche 2011; and Gabriel, Feb. 2013 pers. comm.), a long enough cycle that allowed populations to recover from a lean year, if it manifest. Unfortunately, inspection of drought years suffered by Kenyans shows that the gap between periods has been considerably decreasing – incrementally shifting from the once typical 10 years that was expected by the local populations half a century ago, moving to 5 year cycles, until present day where drought can be expected every 2 or 3 years (Masih et al, 2014; Mateche 2011). This increased frequency and decreased time between stress periods is working significantly to pressure practice as the tighter, shorter periods with rain significantly inhibit recovery time for horticultural communities. These

series of factors are seriously impacting on community securities and, in consequence, are making past coping strategies progressively ineffective (Fontein 2008; Mateche 2011) despite a long history of water insecurities in this area.

> '... the water supplies are few and far between, and some of them speedily dry up, and remain dry for months. Geriama [*sic*] is worse of than any district. In the dry season the women leave their homes at early dawn to fetch water, and do not return till night. At the same time pools of salt water, temptingly clear, are to be found everywhere in Geriama and Duruma….Any diminution in the amount of rain is instantly felt, and a season of drought occasions a famine.'
> (New 1873: 81-82)

As the quote from New (1873) demonstrates, the Giriama territories are historically associated with water insecurity suggesting that subsisting on small amounts of water are culturally well established. Nearly 100 years later Parkin (1991) also found the distances women and children walk for their water remarkable. In this account he illustrates just how far women from different areas travel to collect water for their families before a stand-pipe was installed in Gotani, south of Boré in 1984.

> 'Before the Gotani source was installed, they had to seek water in Kaloleni. For Gotani women this source is twelve kilometres distant, while for those in Bamba it is much further: they would leave Bamba at 3 a.m., arriving at their destination at 8 a.m., and then return to Bamba before nightfall the same day. Even nowadays, with water available in Gotani, the journey from Bamba is twenty-seven kilometres.'
> (Parkin, 1991:99)

In 1994, Waaijenberg wrote of the Giriama covering comparable distances, and in 2018 the women and children of Boré still walk as far for water at certain times of year (6 hours plus for a round trip) carrying small amounts of water (20 litre jerrycans) on their heads back for consumption each day[60]. As a result these women's days and bodies are subjugated, and their life chances restricted, under the necessity of continuously going to where the water is available. Moreover, water collected from the landscape is typically "the full colour of the ground since animals would also step in the water" (Alex Katana Mare, Feb. 2013, pers. comm.), a state that results in recurring

[60] 140 million hours per day are dedicated by women and children to water collection (water.org 2015).

digestive health concerns, including fatalities (Jeremiah Mare, Feb. 2013, pers. comm.).

What is Rain?

Water journeys around the planet and to do so it circulates between the land, oceans and the sky. The sun's heat encourages water to evaporate from both land and the oceans where it accumulates and becomes visible in the form of clouds. Clouds are pushed by global airflow as a result of earth's spin allowing them to move with the currents to other locations where they can either dissipate through evaporation or the water falls to the ground as rain (precipitation). In a time of drought the cycle fails to bring clouds with enough water to precipitate onto the area.

Typically, East Africa relies on the Indian Ocean for its rainfall. In association with the rising sea temperatures and the lack of the forest that used to line the coast, scholars assert that the water cycle is failing to bring significant amounts of water inland (Marchant 2017). Thus, rain still falls but not as it used to. The rain is "rough" (Safari Nelson, July 2016 pers. comm.) but not penetrating or regular, as it used to be. It falls dramatically for a few hours with promise but once it stops a hand to the soil shows that the ground remains dry and sandy under the first few millimetres. Without prolonged rains the water evaporates almost immediately as the sun returns and heats the ground. Consequently, the type of rainfall that fails to saturate is not considered to be 'rain' because the water fails to percolate down into the soil. "Rain is the kind of water that soaks the ground to the point that if you dig down you will find water" (Esther Kombe, July 2016 pers. comm.).

Horticultural Processes and Shifting Rains

The consequence of water shortage for rural subsistence horticulturalists does not need explanation. Rain-fed horticulture relies directly on what the environment can deliver. Without any irrigation systems in place, planting into unsaturated soil in

temperatures as high as 24ºC means that plants are unlikely to survive to maturity. Indeed, the crops sown in hope by the weary population do shoot but without additional water wither and die rapidly. In addition, rain is now falling out of the periods commonly associated with it, and sometimes with destructive intensity. Thus, the arrival of rain can also be problematic. Fields are made ready for planting at certain times of year and crops are sown in anticipation. However, this process is always a gamble - if heavy rains come after the seedlings have cut the ground, crops can be washed away and destroyed. According to projections, things are not expected to improve for the farmers of Boré.

Predictions from the World Food Programme (WFP 2016), the Famine Early Warning System Network (FEWS NET 2016) and the National Disaster Management Agency of Kenya (National Drought Early Warning Bulletin, December 2016) predict that the subsistence farmers in this area will move from food insecure to crisis point in the coming years.

As is evident, this, alongside limited water storage facilities and the lack of piped water, means water needs to be sourced on a daily basis without which one's mortality is faced. It is hard (and perhaps not even relevant) to account definitively for the creeping desertification that is affecting their lives. Nonetheless, suggestions for these circumstances circle around 3 main themes: one, global climate change - brought on by the excesses of industrialised nations' consumption (Leary et al 2007); two, deforestation (Santilli et al 2005; Moutinho and Schwartzman 2005) – manifest in this area specifically by the locals' cumulative reliance on the income generating charcoal production; or, three, meteorological – because of a recurring weather pattern that produces drought on a cyclic basis (Gabriel, Feb. 2013 pers. comm.).

Global Solutions for Local Water Insecurity

In recognition of the developing and unabating gravity of the situation, a handful of globally focused, not-for-profit and non-governmental organisations (NGOs) have mobilised support. Initially encouraged by the pre 2015 Millennium Development Goals (MDG) (UN.org 2015a) and now directly reinforced by the explicit directives of

the Sustainable Development Goals (SDG) designed in association with the post-2015 Development Agenda, multiple local and international NGOs are being funded to, and are in the process of implementing, solutions to attain water security in the area (for example, World Vision, Action Aid, Red Cross, Rotary International and to name a few specifically active throughout Kilifi County. In addition, the United Nations Development Programme also actively supports projects in the region). Where the MDGs only indirectly approached water issues (see goal 7, (UN.org 2015a and b)), the SDGs now look at the problem of water head on with the inclusion of 2 goals specifically dedicated to ensuring actions that impact on water are sustainable and just (see goals 6 (clean water and sanitation) and 14 (life below water) of 17 to be achieved by 2030 (UN.org 2016)). In addition, 2018 is labeled by the United Nations as the *Decade for Action on Water for Sustainable Development* (UN.org 2018). In recognition that lives rise and fall in association with access to regular, clean water (WWAP 2018) and under the hashtag #everydropcounts (UN.org 2018), the decade is set to be one where individual access as well as water conservation and partnerships will be high on global agendas. March 22, 2018 saw the decade officially launched and in support UNESCO published a report entitled *The United Nations World Water Development Report 2018: Nature-Based Solutions for Water* (WWAP 2018), which explains and explores the value of implementing sustainable solutions for water management.

The call for 'nature-based solutions' is heartening and apposite. However unfortunately, current solutions, such as bringing piped water to rural locations, remain rooted in the models and methods that imitate those already developed in the global North. The designs are stimulating the construction of infrastructural networks, which in turn are promoting further social and economic changes (Cassidy 2012; Fontein 2008; Jones and Thornton 2008). External agencies are not alone in their engagement with this area. The Kenyan government, supported financially by the World Bank, can also be seen to have responded to development aspirations and the population's needs with regards to water provision.

Consequently, with a view to shift exclusive reliance on naturally occurring water supplies to a State controlled supply in this rural area, the government has presented a pipeline across the region from Baricho (approximately 70km inland) to Malindi on

the coast as the solution. Interestingly, the original inspiration for the pipeline was not a response to current climatic conditions but rather responded to significantly older development agendas. The idea of a pipeline and any necessary infrastructure for its success originated in 1963 alongside Kenyan independence and continued falteringly into the 1980s with financial support along the way from various European nations. Significant financial and expert support from an American Christian NGO finally made the water available to the public in the Boré Koromi area in 2015. As a result of this investment, the population is now able to purchase water from kiosk outlets along some of the few roads running through the area.

In regions where developing infrastructure and/or anthropogenic climate change is rapidly altering water supplies – as it is in this part of rural Kenya - attention to methods of adaptation and documentation of consequences to life-ways assumes significance. Documentation enables resiliencies, economic and cultural shifts to be collated, and thereby has the potential to support the creation of suitable frameworks that support environmental or material relationships to be sustainable (Cassidy 2012; Easterling et al 2007; Jones and Thornton 2008; Hastrup 2009; Hastrup and Rubow 2014). Clearly, the amalgamated factors of climate change, lack of rain and water supplied by the government impacts on traditional relationships with, and conceptions of, water. However, this research is not solely concerned with how people use resources *per se*.

In a time when information suggests that resources are stretched and global forces are said to be changing behaviours as a result of human activity, a fundamental shift in conduct is cited as the only hope to maintain the balance that supports life as it has come to be known (Morton 2010, 2013, 2016). This research aims to contribute in some small way to that shift. By using an approach that foregrounds the relationships people have with the materials that form them, I am drawing out and highlighting the material interdependencies that underpin sustainable co-existence. This research, therefore, focuses on the activities of water and humans specifically, but with a pointed material focus should also manage to move towards presenting the co-generative realities that human-materials have with the *other* materials and other beings.

Changes in local meteorological patterns are responsible for stimulating the need for a pipeline in this area (Afriwater.org 2015). This, of course, is not limited to this area; similar situations are mirrored across the world with increasing frequency. In addition, variable water behaviours are causing numerous compounding socio-environmental problems (e.g.: pollution, flooding, hurricanes, drought), which are drawing modern water management systems into criticism and reconsideration (AGWA 2018). Current recommendations state that novel creative models are now necessary to produce innovative solutions if we are to support sustainable, ecologically responsive and effective relationships with water (Mitsi and Nicol 2013; WWAP 2018). Moreover, I contend that this also demands for a dramatic reconsideration of the ideas held about being physical and how material relationships are enacted – that is: both in terms of what is considered to be a resource and in terms of 'material causality' – that is: how materiality produces itself. However, the role of this thesis is not to proffer pointed solutions to contingent changes but to contribute to the emerging body of literature that aims to reopen discussions that enable a 'radical reappraisal' (Coole and Frost 2010: 2) of materiality, so that conventional methods are disturbed and challenged with a view for improvement. Methods that fail to recognise the inherent materiality of relationships and that encourage the representation of people as separate from the material world are in danger of perpetuating a seriously perilous fallacy that, those who adhere to the notion that we now live in the Age of the Anthropocene maintain, is fundamentally incapable of effectively responding to our current predicament, and, therefore, is existentially damaging on multiple scales (see: Coole and Frost 2010; Iovino and Oppermann 2014; Morton 2016).

Where Can Water Come From Now?

> "Looking for water is Giriama. We do other things – children, goats, maize - but looking for water is being Giriama."
> (Kasungu Mare, May 2017 pers. comm.)

Many of the older people talk with distain and regret about the social changes that have taken hold in this area today. They lament the fact that the community lacks

individuals with the special knowledge necessary to bring rain, and they state that modern life and water practices are wasteful, inconsiderate and disconnected from the environment that their grandparents continuously worked with. Marking a distinction between generational practices, Kasungu said:

> "If the river runs dry, these people are in trouble. In the past because people could have to walk very far to get water, we would use it sparingly."
> (Kasungu Mare, August 2016 pers. comm.)

When asked if rainfall patterns had altered in recent years, invariably the answer was yes.

> "Yes, there is a difference. The climate has changed. The rain is not as it was. In the past, we had 2 seasons of harvest, but now getting even 1 harvest is a problem and you need to buy everything."
> (Kasungu Mare, August 2016 pers. comm.)

When asked to account for the change most were unable to offer an explanation but some stated that lifestyle was the cause.

> "Because of the lifestyle. People kill each other more…[there is] a lot of bloodshed and so the gods aren't happy. The gods are angry because humans are not happy amongst themselves. The spirits are punishing. People say these are the end of times; if people believe this they will experience it. In the past people used to pray to appease the spirits and rain would come. This was done with sprinkling water."
> (Kasungu Mare, August 2016 pers. comm.)

In an area regularly suffering from water shortages, the ability to draw rain is of obvious importance and should not be underestimated. According to the older people, past methods were both effective and also provided water equally across the landscape as the rain fell for everyone similarly. Thus, when the rain fell it would help everyone without discrimination. A situation that is quite different from the water system currently developing in the area with the installation of a pipeline of treated water.

> "A long time ago when the dry season came people would ask around to see where the rain was. If it was in Mombasa, they would pray in the *kiza* and the rain would come. It is difficult to get the people together who could do it now. No more expertise."
> (Kasungu Mare, August 2016 pers. comm.)

According to Champion (1967) lack of rain can be attributed to the actions of specific *m'pepo* who need to be appeased. His description of the ritual has similarities to the one recounted to me by Daniel but there are also clear differences. For example, Champion (1967: 32[61]) details how sacrifices of various animals are necessary to feed and cool the *peho,* but this was not communicated to me with regards rituals for rain. However, I was informed that sacrifice for other outcomes such as abating sickness, supported childbirth and finding love was common practice in the past.

Champion (1967: 32) explains in some detail that lack of rain could be attributed to the land being 'soiled' by transgressive actions such as murder. Failing rains therefore could be accounted for by angry *m'pepo* who have the power to withhold the rain unless social norms are rebalanced.

For the elderly in this region, water security has been a perennial problem regularly at the forefront of their minds. I do not know how old Kasungu Mare is, but he has a number of adult sons with their own families, and is now looked after by his daughter who has two small children but no husband of her own. As a result of his maturity and his sex, he has fewer tasks to complete each day and spends much of his time simply sitting with his sons around each of their separate houses or walking the boundaries of his fields. Men have much more time to simply talk. They often sit and discuss for many hours of the day, just waiting by their house for others to socialise with as they pass. Older men have even more time, which allows Kasungu plenty of time to talk with me regularly. As one of the oldest men at the top of the hierarchy of this homestead, I was, in some ways, there because of his good favour. The decision to allow me to stay with his family was a group decision but without his blessing I would not have been able to remain as I did. He was a quiet, seemingly shy man but during our conversations he often transformed into an animated individual full of stories from the past that he appeared to enjoy telling. A lot of what he said was tinged with nostalgia for better times.

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[61] Champion (1967) preferred to use this spelling with an'h' replacing the 'p' (*mpeho, peho*), possibly as a result of a phonetic approximation. Many Kigiriama words often rely on a nasal 'h' and locals are prone to truncating terms in sentences. However, *peho* today means 'gentle', while *pepo* describes a multitude of otherthanhuman beings and the wind.

When I asked him about living without water, he tells me how difficult it was before the tap water came to the area but also how the water provided by the tap has not solved the lack of rain. He talks about how in the past they tried to dig wells but only got salt water. He laments that the water level in the stream and river basins is so low and regularly shakes his head whilst looking down at the sandy floor in concern about the lack of rain for everyone. “There has been no rainwater for almost five years, and if it comes, it is too little”, he says (Kasungu Mare, June 2017 pers. comm.). For Kasungu and other people over 60, living without water has been their reality. However, they are all quick to say that things have got significantly worse in the last few years.

In the past, solutions for misfortunes, which include a lack of rain, involved purification in the *kiza* or could be achieved by enacting other personal practices that were done closer to home and in smaller groups. For example, Kasungu explains one everyday method that he remembers was helpful.

> “They would wash the entrance and the whole space…they would put water and ash at the entrance. The reason: it would push away the bad *pepo.* This would be done if a disease broke out or if there was a lack of rain, not everyday. Any water was used. It didn’t matter. They would mix ash with water into small balls and place them all around the place Normally the *muganga* told us to do this – sometimes it would be with a small hut with ash balls. The *muganga* were prophets, they would predict issues and help people prepare.”
> (Kasungu Mare, June 2017 pers. comm.)

Placing ash balls in certain areas functioned to either discourage or prohibit *m’pepo* access to the people living in the homestead, which reduced their ability to spread or perpetuate problems. However, this seemingly innocuous practice is avoided today, even if many consider it of value to do, because of the fear of the accusation of being *mtsai*. Today, therefore, lack of rainwater is attributed to the lack of individuals willing and able to successfully negotiate with, and appease, the *m’pepo*.

The population of effective practitioners remaining is dwindling; they are older and have not managed to pass on their knowledge. The fear and rejection of their methods initially instigated almost 100 years ago now has almost broken the chain of communication between people and *m’pepo*, according to those I spoke to. In

consequence, the *m'pepo* are not working with people as they used to. This does not mean that they are working against people, just simply that they cannot be called on for help as they were previously.

Rules and Regulations: Correct Practice with Water

> "*Kadzumba kwaMulungu* [The House of God river basin] never got dry because they followed the rules of water collection"
> (Daniel Kalume Muvondi Nydura, May 2017 pers. comm.)

Kasungu Thuva, a young man who has done a lot of work trying to revitalise cultural rituals in the area, helped me understand some of the water regulations, and the significance of acting appropriately around water. One day, sitting together with Alex in some shade at Hell's Kitchen, he informed me that water connects to the spirit world and that, therefore, all water ponds along the river are sacred. He was concerned that the relentless disregard for water's material (or inherent) connection with the other than human world will only continue to cause further problems for the Giriama.

> "Don't go into the water. Scoop it out with a long stick and a coconut. [He is describing a spoon fashioned by attaching half a coconut shell onto a long stick that is regularly used locally.] Going in contaminates it. Contaminate the water and you cannot connect with the spirits. If you break their restrictions, if you go against them, you will get lost. You will need to appease them. The spirits – you cannot see them. The connection between you and them is binding. If they are annoyed the pond will dry completely. It is as if the water fights back. At Bukolo pond, [He is referencing an area approximately 10 miles away, southeast towards the Sabaki River.] people destroyed that nature, and so no more water is in them. In Bukolo there were fish. People fished and then got lost. A sacred site is very peaceful. It really binds people with nature together. If you destroy nature then you destroy the regulations given by the elders. Western thinking, Christianity and education has eroded the custodianship of every site has left. The spirit of Bukolo was the snake[62]. Sacred sites have huge snakes. The snake is the spirit. To protect. Water is spiritually powerful so we use it for curses and blessings…unpiped water is better than piped because it is clean

[62] There is a theme of snakes, water and spirits that recurred during my fieldwork that needs attention in the future, but due to my limited space in this document, I cannot afford it the attention it deserves. However, the fact that snakes guard places of heritage value, and the fact that Mr Nyoka guarded the *Singwaya Kaya* should not go unnoticed, not least because I was told repeatedly that people might just be snakes spiritually reformed.

> [this is a reference to its spirituality]. The water is alive. The Shungwaya clay pot brought the regulations and restrictions contained in the water.'
> (Kasungu Thuva, May 2017 pers. comm.)

Alex, perhaps rightly assuming that I would not fully grasp with Kasungu was explaining, offered me further clarification. He said, 'The regulations were set into the water by speaking oaths into it'. His comment illustrated how the elder's words of the past still organised water's behaviour today. Nodding in agreement with Alex, Kasungu continued to reassert the importance of "revitalising" the spiritual places so as to allow the water to do what it needs to do. Despite any of the problems or concerns Kasungu outlined, he was sure the situation can be remedied because most of the medicinal trees are still to be found. The only things that people need to remember are that the trees and the water are "not just for people" and that "things need to rest" so that the environment can remain "intact" in the way that it needs to. "When the environment was intact the *Kadzumba kwaMulungu* never ran dry", he says - a claim that may not be strictly accurate but certainly could be the case in his lifetime.

In concert with Theophrastus who previously demonstrated how water is used ritually to restore order, Kasungu's words explain another dimension of water's role in producing and maintaining social and cultural stability. His explanation draws people, water and the landscape together as a complex material whole that recognises order as a shifting ecological harmony that is holistically enacted by all agents involved, and is not just a social or human domain.

Age is an important factor in the complexity of this situation because wealth and power is held with the elderly and in this current time of stress, those below in the hierarchy are being accused of pushing at those on the top for change, particularly with regards land ownership and trade, and the gaining of money that selling land can liberate. Unfortunately, the tension produced by the insecurities of little to no harvest has provoked individuals to tire of waiting for the old to die and, according to some, have taken things into their own hands. This has unfortunately resulted in a number of killings of 'white hairs' (local expression for the elderly) across Kilifi County in recent years. According to Pendo (May 2017 pers. comm.),

> "In Magarini in 2016 the news stated that the young people were killing the elderly. The white hairs were under suspicion of witchcraft, which was blocking their luck. Several people were killed because the old were said to be 'holding the rain."

A cursory glance at local online newspapers shows that age has been a rising factor in murders since 2014 and the beginning of the drought (Ahmed 2017; Masha 2015; Ngumbao 2017; Yaa 2017). The fact that land held by the white hairs is passed down to the next generation on their death is cited as causative by the Press. However, the locals I spoke with in Boré place allegations of witchcraft rather than inheritance as the articulating factor.

> "Old practices is rarely done. Practices being practiced in the olden days are few. Only a few old men and women are left. For now, not many people are practicing. Not many people practice because it is associated with witch crafting and people are worried about accusation of witch craft."
> (Julius Mwambire, May 2017 pers. comm.)

During the morning following another brutal butchering of a man accused of wizardry[63] that had taken place a few kilometres from Boré in Bukolo, I was informed by Nelson, that people had no choice when it comes to wizards. Chiming with Alex (Katana Mare, May 2017 pers. comm.) and Taylor (1891), he defines wizards as nothing more than thieves but unlike common thieves the law has no method to deal with them. Crimes committed by *mtsai* leave no evidence of the perpetrator; therefore, as the police have no power to arrest them, locals are forced to take these things into their own hands. As a middle-aged man named Nelson admits, he is a bit scared of wizards.

> "I am scared a bit, not too much. If you are scared too much, it is easy for him to catch you. When I was a child there was not too much killing like there is now. So I can see a difference. In the past there was not too much bad things. Wizards came for special people. If you were a wizard you can do bad things to people but a wizard had to do things for a reason. He would do bad things to you for a punishment – not just to be a thief. Nowadays that has changed because they are doing things to good people. They do it to the rich. If you have some money they will do bad things to you. That is why they are killed…. In the past they worshipped *koma* – prayed to them and they get what they need. The old lived a long life. Some lived to be more than 100. Alex's great grandfather

[63] Nelson used the word 'wizard' and so I have here.

> lived a very, very long life. He was not a Christian… I feel scared because if they finish the old mans, I am next."
> (Nelson Jefa, May 2017 pers. comm.)

Consequently, for those 'white hairs' living in and around Boré any accusation of being able to liaise with *m'pepo* is deadly serious. For some of the older people I talked with, the lack of rain depends not on any notion as abstract as atmospheric carbon or climate change, but lies with the inability of the community to communicate both together and with the other entities in the environment, as was done in the past. Kasungu Mare was clear that the lack of rain could be attributed to the killings, as the following quote shows.

> "This is because of the shedding of blood. It is not good. The old people with white hair – when the young people think they are witches they cut them with a panga.
> I am scared. In the old days when people got cut by pangas there was a long purification by an old man. They had to buy a sheep. Nowadays, they are told it is witchcraft so they are more scared about it. If purification was done the rain would come back [Purification means a *kiza* ritual.]… purification, it doesn't matter if the water is clean or dirty – water is water - if a house is burning down, any water will settle it. But because the old people have been killed and died, nobody does it. God is punishing them because they don't do it."
> (Kasungu Mare, May 2017 pers. comm.)

After saying the above Kasungu appeared troubled. He looked down to the floor whilst shaking his head. However, after a few contemplative moments he looked up and with a dramatic shift in his emotional demeanour, and as if to ensure no hint of a belief in these practices gets out, he quickly added, "I give thanks for the tap. It is very near."(Kasungu Mare, May 2017 pers. comm.).

I asked him why he does not do the rituals. He said that if he did, he is sure he would be killed. When I asked, what if we could do it together? His reply: "Will you be here every day?" said with a smile, was a final jovial response that nevertheless implied he would need protection every day. After laughing he went on to add with sincerity that lots of people from all of the clans are needed to do the ritual[64].

[64] Also see Werbner (1991) who similarly describes how drought is produced by the pollution from violence in Matabeleland, and Bernard (2013) who makes a link between a lack of rituals and drought.

During the same conversation Bibi (Kasungu's wife) added, "These days things are good; diseases are down" (Bibi Kasungu, May 2017 pers. comm.). Her contribution suggested that there is no need for rituals 'these days' as the clean water available through the tap is having alternative beneficial effects, but I wondered if the purpose behind her words was similar to Kasungu's final comment.

Similarly Daniel and his wife made links between the lack of rain and the killings. He told me on more than one occasion that the rain never failed in the past.

> "It never failed. People pray for rain in different ways now. Now they cannot practice. They want to, but they are afraid. There is no rain because people kill each other."
> (Daniel Kalume Muvondi Nydura, May 2017 pers. comm.)

At this point in this conversation Daniel was interrupted by his wife, who, with a hint of incredulity and outrage in her voice, said in shrill tones: "People are killing each other like slaughtering goats. *We are* afraid."(Kadhaa Mweni, May 2017 pers. comm.). Daniel, with a dour expression and downturned mouth, poignantly finished the interchange with this statement:

> "The problem is – if someone has the power to bring the rain, they also have the power to stop it. These are the people who fear the old ones."
> (Daniel Kalume Muvondi Nydura, May 2017 pers. comm.)

On the other hand, some of the elderly look back and remember the spirit dancing and drumming parties they used to attend with great fondness.

> "There was plenty [of water] in the past; they had storage and plenty. I have no idea why things have changed. In the first, we worshipped and danced and prayed. Before, that was the tradition. We did not go to church. If we were troubled we danced certain dances"
> (Sidi Chivatsi, April 2017 pers. comm.)

Joseph Tangauko born in 1927 was 90 years old when I talked to him. Joseph enthused about dancing for rain and other problems. He told me that he missed all the dancing - even the dance called 'drilly' that had been a routine event at school. During his recollections, Joseph over pronounced the word 'drilly', emphasising the 'rilly' part

of the word as if to make it roll off his tongue. He demonstrated the drilly dance for me, which turned out to be a form of marching or drill inspired by the British colonial administration that had spent some time in the area. Joseph understood these movements as a dance. “These days there is no dancing because the men who danced those days have died”, he explained (Joseph Tangauko, April 2017 pers. comm.). Simiarly, Kenga Iha, 84 years old, looked back at those times with nostalgia. He remembered the days when the chief told the people to pray for rain. “He would insist they dance and pray to get rain. The last time was a long time ago, in 1974. The young don’t know how to do it. If you do it, you will be suspected of witchcraft” (Kenga Iha, May 2017 pers. comm.). Kenga Iha died early 2018 after years of poor harvests.

> “Now I feel hunger because of the drought. The drought is because of the shedding of blood”
> (Sidi Chivatsi, April 2017 pers. comm.)

This section illustrates some of the complexities and impacting factors associated with the production of drought in this area. It has demonstrated how multiple ecological agents are tangled together to produce a complex blend of simultaneously overlapping ontologies, causes and their effects. Viewed through the lens of science, climate change induced drought presents as a contestable anthropogenic geo-political global challenge. Using the same scientific framework, water security concerns are approached and addressed by redirecting water from one area to another with a view to bring water into areas for people to use. From the perspective of traditional Giriama ontology however, one must foster relationships with water (and other matters) to be able to work in partnership with it. Through various practices (ritual and otherwise) water not only comes to your life, but it does so in a way that allows it to be equally shared or distributed. Adopting an approach that presents matter and spirit as blended entities, what water does and how people behave are inseparably grounded together. However, even despite any fundamental differences associated with how water and people are conceived, bringing water in a pipeline does not successfully solve the water problems of the area.

Chapter Seven:

New Water, Tap Water

As a result of modern development-inspired ideologies and the ensuing global pressures to guarantee populations have clean, safe drinking water, this area has been provided with a single pipeline of chemically treated water, which is now available to the community for purchase. A new, clean water supply in the shape of a single pipeline served by a series of managed kiosks across the landscape has altered conceptions of water and is drawing a novel and dramatic, previously unheard of, economic component into notions of water. In the light of these coalescing and precipitating alterations, a pipeline delivering a clean water supply should be celebrated as a success; however, its entrance, while a dramatic positive for some members, is also dividing and reshaping communities. This results from its novel method of arrival coupled with the different abilities associated with access to water. The division produced by the pipeline circulates around a series of impacting themes, which include: gender; distance from the tap; economic capabilities to generate the finances necessary to purchase tap water; historical and current prohibitions associated with correct water practices (specifically the restriction of water use including for irrigation, but also concerning how relationships with water should be enacted); shifting conceptions and understandings of water's purpose and use; and who controls it. Consequently, this chapter reveals how water's behaviour and new method of arrival is co-creatively producing and shaping a series of material and economic challenges that are powerfully altering social groups and the manner in which lives are ecologically mediated.

Tap Water: System Design, Management and Cost

In recognition that global water supplies are unequally distributed, the Millennium Project included water security as part of one of its Millennium Development Goals (UN.org 2015b). Inspired to attain the goals, and supported to do so with development monies, numerous charity, not-for-profit and government agencies have made every

effort to make water security a reality for the many people suffering through lack of access to clean water across the planet. Despite efforts, in Kenya, provision of clean water to the rural areas of Coastal Province has experienced delays.

Brief Historical Overview of Water Provision in Magarini Constituency, Kenya

11 years after establishing independence in 1963, Kenya's administration declared their intention to serve the population with clean water under their 'Water for all in the year 2000' initiative in 1974. Despite the best of intentions, the government records from the 1980s show that getting water to this area has proved problematic. Nonetheless, with help from the Finnish and Swedish governments over the years, an ambitious water project named 'The Baricho Water Scheme' actioned the drilling and construction of a significant borehole just north of the small settlement of Baricho approximately 20 kilometres from Boré Koromi. It appears that notwithstanding the location being proximal to Boré and other local settlements in land from Malindi, Baricho water first served the population of Mombasa (Nyanchanga 2016:126) much further south. Despite any developments on the coast, Nyanchanga (2016) maintains that as late as 2005, apart from some water condensing plants, water supplies remained the same as in the 1900s.

Implementation and Inspiration

Probably inspired by the time-sensitive goals of the Millennium Project, World Vision, a charity whose mission is 'to follow our Lord and Savior Jesus Christ in working with the poor and oppressed to promote human transformation, seek justice, and bear witness to the good news of the Kingdom of God' (WorldVision.org 2018a) began a 15 year project based in and around the town of Marafa, a few kilometers from Boré Koromi. World Vision is an enormous operation. It has '42,000 staff in nearly 100 countries' (WorldVision.org 2018b), and managed an operating revenue of $1.044 billion (WorldVision.org 2018b). Part of their aim in bringing support to this area was to alter water practices by financially supporting the Kenyan government to bring piped water to this rural location (Joffe, July 2016 pers. comm.). As a result of World Vision's involvement in the area, water from the Baricho borehole now runs to Garashi on through Boré Koromi to Marafa to end up at the coast in Malindi in the pipeline that

they helped provide. To access the water running in the pipeline, World Vision designed, financed and stationed a series of kiosks at various locations along the main road.

Each kiosk represents a position on the pipeline where clean water can be bought. A kiosk is simply a very small room (approx: 4 x 6ft) built over the pipeline with a meter system to measure the amount of water drawn at each point. Some kiosks have been fitted with a 5000-litre storage tank on the roof above the kiosk; some have not. The kiosk offers a lockable room to the proprietor. It is constructed from concrete, not the naturally occurring materials typically used for local construction, opens with a metal door at the side and uses a metal stall window positioned over 3 external faucets, where passers-by can place their jerrycan to be filled, which can also be locked. The design presents as a water fortress in comparison to the vernacular architecture. It is not possible to secure a local wattle and daub construction in this way. Thus, the concrete and metal box signifies not only the value of the water but also heralds this new water as a commodity in a market economy hitherto unseen in this region.

The design and construction of a pipeline with regular kiosks is not novel. It is the method by which hundreds of thousands of people have access to water across much of sub-Saharan Africa. This appears to be the method of choice to ensure clean, safe water is provided to significant amounts of the population. This is not just for rural settings; many urban settings where personal household provision is non-existent or limited also use the kiosk system. An example of this is the infamous slum, Kibera in Nairobi, which houses a population of almost 200,000 people; water is supplied to the inhabitants in this way. Presented as a sustainable business solution for water provision to those living in low and abject poverty conditions, water experts explain that kiosks are simple to instigate and initiate water markets once these ‘water shops’ manage to educate people to understand their value and benefits (Gebauer and Saul 2014).

Management Methods and Initial Costs

A small selection of individuals, contracted by MAWASCO, the local coastal water

authority based in Malindi[65], assumes overall management of the system. An initial deposit of 5000ksh[66] is necessary to assume proprietorship and take responsibility of a kiosk, and a further 2500ksh connection fee is payable. Proceeding that a series of different tariff rates and on-costs are calculated to form a monthly rate before any water is sold. These are determined by and dependent on pipe diameter, meter flow, and type of use. Certain types of business are subsidised, with residential services coming in as the most expensive. After the above costs are disbursed, the manager of the kiosk is able to use the kiosk to both sell the water, and if personal capital allows, other household products such as flour, oil or soap. The kiosk manager is liable for penalties if accused of tampering and illegal use is detected, or if replacement of parts and leak detection services are called for. In 2016, MAWASCO reviewed its charges and agreed that 'for the period 2017/18 to 2019/20 as per section 72 (1) b of the Water Act 2016… in order to improve service delivery, operate sustainably and protect consumer interests' (Gakubia 2017:1) an upward tariff was justified.

Kiosk managers earn 1 shilling for every 20 litres of water sold, on top of that money it is possible to earn from selling other products out of the small space. Water is presented to the public at a cost of 2 Ksh per 20 litre; the water company determines the price and any deviation is frowned upon – with the potential to lose your kiosk if you are found to have raised the price. The price, advertised as significantly reduced compared to other areas of Kenya, is said to simply cover cost. Of the price, half goes directly to the manager, thereby potentially enabling individuals to make money from selling water, only after their initial fees of over 8000ksh are recouped. Thus, the manager of the kiosk does not receive a wage, but may be able to make a profit in the long term if they successfully sell enough of the water and other items.

There are only a handful of kiosks in the area, but their ownership is not particularly sought after due to the prohibitive outlay costs. The kiosk that serves Boré Koromi is situated at the mudtrack T-junction on the main road leading to Kundeni School. It was originally managed by a local wage earning schoolteacher who very soon after opening business closed up shop because of the time constraints exerted by his

[65] MAWASCO – Malindi Water and Sewerage Company Ltd
[66] 5000ksh is almost £40; 1 ksh is less than 1p.

employment. This resulted in the locals being unable to access any tap water. After some negotiation, he was willing to relinquish what had amounted to the burden of management over to the community after I paid the transfer and other fees. Once ownership was situated within a local family through me, discussion on how to proceed was necessary because of my imminent return to the UK. Community discussions proved sensitive and initially produced tensions. The problem concerned the possibility that one person could benefit financially from this development above others if they took over the day to day running of the stall. It was finally agreed that I would create an initiative to fund the water supply if the community would ensure the kiosk was kept in good condition. The water would therefore be free to all who wanted to collect it but the opening and maintenance of the kiosk was up to the collective to organise and ensure.

On my return to Wales, I initiated a campaign called #addwater through the university[67] whereby a consumer can donate 5p for every drink that they purchase on campus outlets. Each month the collected money is calculated and used to pay the community water bill through the *mpesa*[68] scheme. Consequently, the kiosk is now open and is serviced in rotation with whatever little extra proceeds accumulated going back into the community for improvement schemes (such as: water storage containers).

During discussion with World Vision employees in Marafa in 2017, I was informed that there are further funds available to construct additional kiosks, which has extended the initial period of the project from 2018 to 2020 on account of the remaining necessities. Having produced and instituted the system, World Vision handed it over to the local government office in Kilifi County during 2014/5 with the understanding that any further developments would be the government's responsibility. Now MAWASCO has an office in Marafa as a result. At the time of writing this chapter, any developments of the pipeline are cited as concerned with bringing more water to areas nearer the coast between Marafa and Malindi and with only a few nearby areas to be included in the network. Indeed bringing in extra kiosks or extending the pipeline

[67] University of Wales, Trinity Saint David, see http://www.uwtsd.ac.uk/news/press-releases/press-2017/uwtsd-is-proud-to-launch-addwater.html
[68] *Mpesa* is a mobile money transfer method for micro financing that moves money through the phone.

around the Boré Koromi- Garashi district are believed to not be cost effective due the poor expenditure/population ratio. Therefore, while the kiosks do offer access to clean water to a number of families, the reach of the kiosks is still limited as a result of the extensive distances between kiosks, as those who still had to walk long distances to collect water regularly reminded me. Consequently, the current system leaves significant portions of the local population reliant on traditional methods of water collection, as they do not have ready access to kiosk water.

However, Lampeter Rotary, in partnership with the branch of Kenya Rotarians based in Malindi are currently raising funds to create extensions of the pipeline that will leave the road and feed water to some of the families currently unsupported near and around Boré. They also have plans to add additional storage. The following image illustrates the intentions of the Rotary Club.

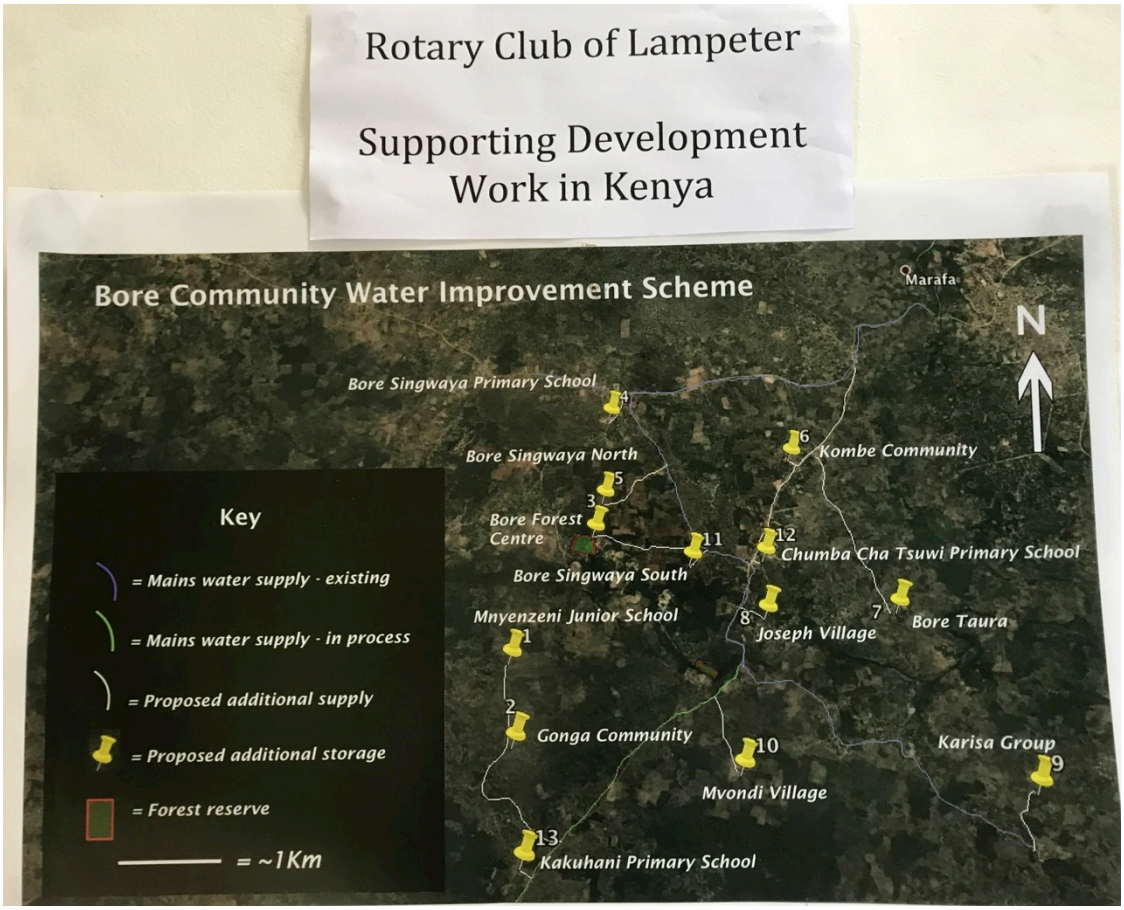

Figure 14: Rotary Club Plan outlining improvements to local water system, 2018

Management of a public kiosk offers an income generation activity that does not rely directly on horticulture or rainfall. There are very few income generating activities that exclude a reliance on rainfall in the area. Teaching and tailoring services are exceptions, but are only available to trained individuals. Other mechanisms such as temporary roadside *kibanda* (locally these businesses are erroneously translated into English as 'hotels' but they only serve food, such as chapattis, beans and chai tea) and other retail outlets, and the destructive practice of charcoal production, currently amount to what is realistically available to the population. Thus, kiosks represent not only new places for water acquisition but manifest as novel economic spaces in the landscape.

Consequently, the introduction of water kiosks presents a series of opportunities to certain members of the communities. In this location, the opportunities fell (with only one exception) to the more wealthy men of the community as a result of their ability to produce the necessary down payment. That initial exception at Kabeoni was a mixed gender (predominantly female) community group who banded together to take charge of the kiosk nearest to their homes. The women, active in the local school, had also instigated a tree nursery to increase their incomes. Assuming management of the kiosk not only supported their family incomes but also enabled the women to ensure the young trees in their nurseries survived. Other than this management group, and now the Boré Koromi collective, it is predominantly men who manage the kiosks. After taking responsibility for the operation, it is then handed it over to a female family member to serve the customers, thereby creating a gendered chain of command controlling the new water.

As has already been covered, water collection is a gendered activity and is culturally established as work for women and children. Thus, assuming management positions over water kiosks for men is culturally appropriate. That a woman should serve the water to other women for either the benefit of their husbands or as an employee of the "leader" (as Laurence (Charo, July 2016 pers. comm.) framed ownership of the kiosk) is also deemed appropriate.

The Economics of Collecting Water: From the River to the Tap and Back Again?

Changing the processes of water collection demands evaluation. The provision of tap water depends on the characterisation of kiosk water as abundant, safe and clean against river water being scarce, dirty and dangerous. It is these points that articulate and formulate the core of discussions around water provision, for understandable reasons, but these oppositionals are not the only points of consideration in the shift from one type of water to another. In this case, an equitable supply is also necessary, and one could argue, must be one of the keys to determining its value.

The Materiality of Collecting Water: Safe and Clean

Water collection from the river or water basin demands that rain has fallen to a significant level seasonally (and in the uplands) to produce a water source in this landscape. If this has occurred the water must travel down from the uplands to fill the local river basins. Then an individual must travel to where the water is located to collect it. As outlined earlier, this journey could take over an hour for most of the women in the community as the basins lie in the flood plains at a distance from most of the homes. Then, depending on the lay of the land at each basin, women must invariably enter the water, typically up to knee level, to be able to fill their jerrycans. Similarly, livestock wade into the water at their water points.

When the individual wades into the water, skin is brought in contact with the water and any matter being carried is introduced into the source. When a woman enters for the purpose of collecting water, her first task after entering the basin is to clean out the container, by rubbing the dirt off the sides and swilling out the contents or dregs at the bottom of it. This she throws out into the water in almost the same area that she then goes on to use to refill her container. Remember, for most of the season a river basin is not flowing. Thus, the process of cleaning out the container is illusory as she refills it with the same water that she has cleaned it with. Furthermore, as there are

numerous water restrictions that preclude individuals from using different points, each woman collects from the same path into the basin potentially distributing, adding and sharing contaminants each time. Depending on the water basin, the filled container may need to be hauled up the basin's slippery, sloping walls to the pathway after it is filled. With very steep slopes women tend to haul the containers up to the pathway before they place the water on their heads for transportation home and at some basins they must form a chain of people to receive and pass on each container as it is filled.

Therefore, to collect river water means one must come directly in contact with the water by immersing parts of one's body into it thereby amplifying hygiene, and for some spiritual, concerns. Furthermore, as already mentioned, water borne diseases that strike from physical contact with the water, such as bilharzia, are commonplace, alongside other issues from ingesting polluted water or *m'pepo* possession. However, the costs of time and health are offset against the lack of pecuniary charges. Any person can collect river water from the basins without having to pay per jerrycan.

Water collection from a kiosk, on the other hand, requires different means. For many, the distance is similar to the water basins, as the pipeline follows the road, which very few people live along. For some it may mean a reduction in distance, for others an increase, but for most people the method of transportation remains the same – 20 litres at a time on the head[69]. Filling the container using a tap comes with new methods and issues. The most significant of which concerns the need to pay. There is typically no credit at the kiosks; therefore, to fill a container means you must have money. To have money means you must have previously earned it. Without jobs, or incomes from other sources such as selling charcoal, vegetables, honey or from casual labour, there are many people who simply cannot buy the water, despite what is hailed as a very low price.

According to UNDP.org (2011), the price of the water offered to the consumer at the kiosks worryingly produces the concept of 'poverty penalty', whereby the poorest pay the highest amount for a product. They recognise that this kind of provision manages

[69] This is not the case if one has a donkey and cart, bicycle or motorbike.

to fill gaps and ensure a higher coverage, but are concerned that the 'perfectly inelastic demand' (UNDP.org 2011: 7) of water makes it a product that people have little choice but to buy, thereby worryingly holding people to ransom. In contrast to the business model cited earlier by Gebauer and Saul (2014) who hail kiosks as a sustainable method to be encouraged, the UNDP.org (2011) are worried about the cost, which in Kenya can be between 15 and 30 times higher than for water piped into homes in other locations. To put this injustice in context, my water bill shows that in the UK the amount of water I can buy for £1.50 would cost me £7 if I bought it from a kiosk in Kenya. Such an enormous relative cost is troublingly countered by the obvious positivity of the provision of necessary water.

In addition to the financial cost of water, there is a different kind of temporal cost. Filling up containers from a tap takes longer than submerging a container in the river. Consequently, tap water collection often adds time on to overall haulage budgets as people wait in long queues for their turn at the tap. Water collection from the tap creates something of a rush hour, as each customer is served in turn rather than simultaneously. Furthermore, the pressure of the water pouring from the tap can mean that this process is protracted. Consequently, it is typical to see long queues of yellow and orange containers snaking towards the kiosk, each representing a women's place in the line while the owner of the jerrycan attempts to complete other chores, or simply wait in some available shade.

Some women are able to use kiosk water for all household chores, but most will not. Washing clothes and bodies can use water a woman prefers not to carry home and therefore they wash at the river in river water and not at the kiosk using tap water. The river basins are situated within the forest and provide cover for washing one's body in private. Simply taking a bucket or two of water to pour into a wide, shallow bowl big enough to stand in, in a place restricted from view by the trees, allows one enough cover to take a nice 'bath'. Kiosks do not afford that sort of luxury, often constructed on the road in a cleared spot. Similarly, washing clothes requires considerable water for rinsing, thereby making the river an obvious choice above the kiosk. However, some women, who live nearer to the kiosk than the river, and have enough means, use tap water for everything.

Kanze Kasungu who had given birth to her second child 3 weeks earlier when I spoke to her, was enthusiastic about the tap water. Not only is it close to her but also she lists other benefits. Firstly, prior to the kiosk new mothers would have had to pay 15ksh per load for the donkey cart to bring water to them after a birth. Because of the kiosk's proximity this is no longer necessary for Kanze. She tells me that the change for her is tremendous and that she is very happy. Furthermore, her children are not sick. Even, she says, her skin is softer, plus the reduced distance and subsequent recuperation of time has allowed her to do other things such as work in the local *kibanda* and earn a few shillings. The little extra means she can now buy washing powder. She thanks God for the big improvements in her life.

On the other hand, others are not so accepting of the system and offer criticisms of it. Both Janet and Loice acknowledge that their lives have changed with the tap water, specifically with regards time-savings. However, they have questions about the upkeep of the pipeline infrastructure and are infuriated that the system is regularly broken and the supply cut off. They say there is no security in a system that, firstly, breaks down so often, and then, secondly, takes so long to be fixed. When the system breaks down again, Stella tells me that she is angry that she must use river water again. She likes the tap as: "in the time of using it people do not get sick like they used to" (Stella, May 2017 pers. comm.). She does not mind the cost. Indeed, she thinks it is worth the price. Stella's husband is a carpenter who has a regular wage. In addition she hawks *hambra* (a sweet deep fried doughy pocket) door to door when she can.

There are a number of reasons circulating the community about why the infrastructure so regularly fails. For example, corruption at initial stages that forced cheap, restricted diameter plastic piping to be used over wider, more robust metal pipes; insufficient depth to trenches that now, due to soil erosion from flooding, have exposed the pipe to the sun and other damage such as cattle traffic that crack the brittle pipes; vandalism as locals attempt to access water for free; failure of MAWASCO to pay its own bills (e.g.: electricity to pump the water into the system from the borehole at Baricho); a lack of staff to cover the amount of breakages; and a perceived lack of concern for this rural population. All of which cannot be written off to empty speculation exaggerated by gossip and rumours but emerges in correspondence to the numerous events that regularly obstruct the flow. The worst of which I experienced was an outage

of almost two weeks when the pipe split in seven places causing a lot of water to be lost. In a dry landscape that is responsive to even small amounts of water, it is easy to see where the water is escaping as it produces small oases of green in the otherwise dusty soils.

Moreover, they question the restrictions imposed on their water use. MAWASCO state that the kiosk water cannot be used for irrigation purposes, and should not be used for livestock, because of a lack of supply. Why they ask, if they pay, can they not use it as they want? - a valid question for a population that relies on harvests to subsist, and one that remains unanswered.

The kiosk managers have alternative opinions about the system. Christine runs the kiosk that is situated up the rise out from Boré Koromi in the direction of Marafa locally known as the Kitui kiosk due to its proximity to a locale of the same name, for her husband. She says she can earn between 50 to 100 ksh per day (equivalent of 35-70p, and insufficient to by 1kg of flour). She earns more if her customers use the water to wash their clothes. Christine wants the price of water to rise so that she could earn more. However, she realises that if the price did rise many would find the water unaffordable. She supplements her income by selling other products out of the kiosk, such as washing powder, soap, razors, oil, sugar and flour. She doesn't mind that the water is free at the kiosk on the Kundeni turning because her customers do not go down that far. She is at the top of a steep hill and no one wants to walk down to Kundeni only to return with water up that hill. She maintains that her customers use the tap water for everything including feeding the animals, despite directions to the contrary. She says that people are used to the water now and they do not think about using the river unless the water gets cut off; only "if the water stops, it gets difficult" (Christine, May 2017 pers. comm.).

Ponda Hinzona is one of the members of the group that manages the Kabeoni kiosk collectively. The Kabeoni kiosk is the next kiosk positioned along the road towards Marafa and away from Boré Koromi. His worries circulate around the irregularity of the supply provided by MAWASCO. He says that they are not selling much water today because of the rain that fell the night before. Everyone is using gutter water, he grumbles. However, he notes that even when they do come the supply has proven to

been woefully inadequate in the past due to both the regular cuts and the lack of storage that would provide a covering supply when the pipeline is disconnected. This kiosk has now had a new storage tank built alongside it to resolve the recurring problem. He acknowledges that this has made a difference, as has the fact that the village up the road now has their own kiosk. However, even with the extra storage the water still runs out. He seems weary of it all and bemoans the water system's irregularity and unreliability. He is angry that they are not given any warning to an outage, which leaves people unable to prepare. Moreover, he worries that the water will suddenly stop and that the system will be abandoned, as has occurred with other water systems across the region. The installation of more storage tanks could be an answer, but he is acutely aware that they are powerless to create lasting change, beholden, as they are, to an external faceless agent for their supply. Furthermore, he adds bitterly, "When *people* don't pay their electricity bill, others suffer" (Ponda Hinzona, May 2017 pers. comm.). He is making reference to the recent events of MAWASCO failing to pay their bill and the system being down for almost 5 days, draining the reserve tank at Baricho and causing untold concerns for the users who were relying on it. He thinks the water should be free, in contrast to many people I have talked to who think it is reasonable to pay, as the system must have cost a lot to implement and continues to cost to maintain. Consequently, when people struggle to pay, Ponda lets them take the water and pay later, because he thinks, "People should be able to drink without concern" (May 2017 pers. comm.). "But some people say that everyone should learn how to buy water. What do you think about that?" I ask. His reply is astute: "If it was free they could learn to plant trees. Trees attract rains and you can sell it [tree produce] to earn some money. That is a better way." (Ponda Hinzona, May 2017 pers. comm.).

Paths and Pipelines

As the above illustrates, the installation of the pipeline has failed to produce a regular, reliable source of water for the community, and in association the commodification of water that this type of system demands, has transformed water into a product thereby setting up a structure that precludes collective, equal access. Prior to the installation

of kiosks, water shortages were felt similarly regardless of economic status. Now, water relationships reflect affluence and financial ability, which, in turn, is made patently visible by one's water choices and the route one must take to collect it. Where once all would go to the river to collect the water, now only those without funds frequent the river basins where drinking water is permitted. New pathways to the kiosks and along the edge of the roads are being traced into the landscape, making one's economic means communally evident. Thus, those who walk along the paths that lead to the kiosks can pay, whereas those who do not, and go into the forest, cannot. Thus, if previously, water acted as a leveler that similarly shaped people's lives, it now acts to accentuate, express and confirm differences, something that Giriama life has been at pains to avoid historically, preferring unity and similarity to othering. Indeed, it is even creating judgement and constructing social hierarchies now as certain individuals with enough to afford water openly disapprove of those who must still rely on river water.

> "Pah, the cost is small. They just have to *learn* how to buy water."
> (Christine Kanini, Sept 2016 pers. comm.)

Chapter 8:

Synthesis and Conclusions

Analysis is used to suggest intense, careful scrutiny and it is valorised as a robust method that enables one to effectively explore a subject. The etymology of the word, however, shows that at root it employs a reductionist perspective – one that implies understanding follows the break down of a puzzle into simple elements, a loosening or division or cutting up of parts (Online Etymology Dictionary 2018), which is held to allow an unpacking of a problem. In keeping with the overarching perspective of this thesis, rather than presenting an analysis of the preceding information, this section acts to synthesise what has been covered – to draw (what may seem like) disparate threads together, to fuse and, in doing so, to visibilise the synergies, associations and correspondences that water creates. In particular, I am blending, uniting, coalescing experiences of water with approaches to water so as to illustrate the many ways that water actively co-produces social lives. That people and water are inextricably combined is a material truism that is taken unquestioningly through this synthesis. How this materiality functions is not of primary concern but how material correspondences activate and incite actions is.

Anthropological and philosophical approaches liberate water from the narrower confines of economics, technology and resource use to produce a diverse body of work that demonstrates a wider variety of ways to engage with and understand the cultural consequences of this vital fluid. Strang and others (cf. Strang 2013a in Chen et al 2013) - following Lévi Strauss' notion that humanity intellectually uses aspects of the world to produce meaning to live by (1964) - have shown how good water is to think with. By explicitly recognising and attending to how water's materiality or behaviours are enacted they show how water has inspired people to think about it. That is: people use its wateriness to symbolically and metaphorically explain and account for their own behaviours. Indeed the plethora of literature that explores how water is good to think with has itself been illustrative of how easy it is to soak the text with, and drown in, puns, such as these, as one babbles on about water. As a result there are extensive accounts that comprehensively illustrate the many ways that

people draw inspiration from water's physical presence and its behaviours (Strang 2004; Wagner 2013).

In conjunction, there is also a wealth of literature that shows the significance, and cultural shaping powers, of water (e.g. Ball 2002; Carse 2010; Carey 2010; Fishman 2011; Gleick 2014 a and b; Lansing 1987; Strang 2004, 2009, 2013 a and b, 2014, 2015; Wagner 2013), which adds a tremendous amount of information and demonstrates the variety of meanings associated with water. However, discussions that establish water as a culturally and symbolically significant material, without considering the many ways in which the material properties of water physically shape human actions and choices also tend to sidestep how the materiality of relationships shapes partnerships. In ignoring the humans-are-materials component of material relationships the perspective that water is a material that people use and think about rather than think-with (cf. Levi-Strauss 1964) is perpetuated.

Explicitly acknowledging the material connection between physical bodies and water means discussions are able to move away from the depiction of water as a contested, controlled resource to debates that attend to the part water plays in ordering human-hydrological relationships. This turns current conceptions on their heads. As a result, the separation between 'things' that traditional representations rely on is problematized and the inherent 'muddiness' and messiness of being human in a world of materials is allowed to rise to the surface. Taking inspiration from Lahiri-Dutt (2014) and Appadurai and Breckenridge's (2009) call for a new wet(ter) theory that 'softens' the 'hard edges' that dominate our thinking (2009: ix), this perspective recognises flux, flows, contingency and insecurities rather than seeking out firm boundaries, straight lines or dry land to stand on. Furthermore, just as wet theory is spongy and soaks up ideas from context, using this perspective foregrounds the point that people do not use water as is commonly misrepresented, but, rather, live in relationship with water as it runs through their bodies. As a result of this relational, co-productive, and interactive flow the false dichotomy commonly established between what is natural and what is cultural is also again challenged.

Debates concerning how to successfully use the terms nature and culture are too numerous to discuss here in any detail (for a comprehensive overview of how, when

and why a binary between nature and culture was established, and many of the issues associated with this perspective see: Descola 2013) but water's part in problematising distinctions between what is nature and what is culture does need to be attended to briefly here. The discussion of the fallacy of nature/culture divide has been extended to include the part water plays in the rhetoric and infrastructure of (post)modernity (Appadurai and Breckenridge 2009; Fontein 2008; Gandy 2014; Hughes 2006; Lahiri-Dutt 2014; Strang 2004, 2009, 2015; Swyngedouw 2015). For example, Strang uses water to illustrate how any division between nature and culture is simply conceptual (2015, 2016). Stating that humanity's relationship with water altered dramatically with the movement away from foraging to farming, she maintains that it was agriculture that motivated the development of 'intricate methods of managing hydrological flows' (Strang 2015:74). Not only did this produce different ways of relating to the environment, but it also encouraged new ways of thinking about materials and other species. Indeed, for Strang, early irrigation methods of relating to water therefore represent

> '…a quantum leap in human societies capacities to control their material environments…Indeed, it could reasonably be said that the control of water, more than anything else changed humankind's relationship with the other species on the Earth and asserted the primacy of human agency'
> (Strang 2015: 86)

It is difficult to know exactly what point or place in history Strang is describing, but nevertheless the activity of damming and holding water in position has regularly been interpreted as one of humanity actively demonstrating control over the environment. For Strang (2015) damming water is an obvious indicator of culture in action because it is assumed to be a human activity that overtly shapes the 'natural' or 'wild' water and harnesses it for human use. However, she also notes that water systems simultaneously problematise the arbitrarily placed divide between nature/culture because water's physically flows in and out of cultural spaces. From a New Materialities point of view however, it is not only that water can be dammed, but also how it behaves when it is, the consequences that follow damming, and how damming shapes both people's lives and water that are of interest. Rather than imagining that people use water, the New Materialities approach explores how water and people blend together and shape each other through the ways they can be together. By

adopting a relational approach the processes of damming water can be repositioned as one of the products and effects of the inherent possibilities of an eco-material relationship (which cannot be attributed to either cultural or natural behaviours effectively) between water and people, and is evidence that any intellectual division between where nature stops and culture starts is not only artificial but is also limited in meaning (Descola 2013).

How water behaves, therefore, affects how humanity behaves and vice versa. Giriama relationships with water are changing as a result of changes in water's behaviour. Using one ontological lens these changes are the results of global climate changes brought on by human activities, using another, they result from a different set of relationships and actions. Diverging ideas of cause may not be a problem. However, when conclusions and solutions to the problem diverge dramatically the results of the solutions need attention. For the Giriama, the physical and cultural consequences of the novel relationships with water brought about through the construction of a pipeline demonstrate that despite any technological changes and benefits that the pipeline may have brought, water continues to remain elusive and dangerous for some.

In the past the community in Boré designed and organised water practices for the benefit of a wider more-than-human collective. The processes used focused on equality of provision and recognised that human and other-than-human activities were meshed together. The method of delivery offered by the pipeline, however, sits at odds with past methods. It associates what is held as a communal material (or a material that holds the collective in it) with individuality and economic success, which appears as a contradiction to water's essential materiality of mobility, unprivileged solvency and connectivity.

> 'Set in postcolonial contexts of historical inequalities of access to water resources (which often reflect other dimensions of inequality such as land ownership) as well as international developmental concerns with accountable governance, stakeholder participation, and the sustainable use of scarce natural resources, ongoing contentions over national water strategies cut to the very heart of competing imaginations of 'stateness', citizenship and the form and functions of the postcolonial state.'
> (Fontein 2008: 742)

> ‘…there is a central tension between neo-liberal treatment of water as an 'economic good' and an 'internationalist' humanitarian principle that sees access to water as a human right, which is reflected in debates over reform of water governance.’
> (Fontein 2008: 21)

The above quotes illustrate some of the recurring themes associated with water development in Africa that Anthropology has drawn into discussion for consideration. Fontein (2015b) notes that because of the ubiquity and materiality of water to nourish, enliven, flood, and disappear, it inevitably comes with numerous claims to its power. Whilst outlining water practices and provision in Zimbabwe during times of drought, Fontein struggles to know to how to locate and understand water knowledge as it manifests in a vast shifting ecology of connections and contested conceptions simultaneously. Unsure if control lies with the State, meteorologists, God, local practitioners or the antics of the ‘njuzu water spirits [that] live in irrigation channels’ (Fontein 2008: 740; also see 2015), he decides that all water relationships are equal and have claims to authority and legitimacy in this complexity. Thus, ‘water acts as an *index of power’* (Fontein 2015b: 49 original emphasis), and therefore any alteration in methods of water acquisition inevitably reconfigure those indices, which redirects claims to legitimacy and authority. The inhabitants of Boré Koromi are wrestling with a similar tangled and tightened knot of problems, whereby control of water has shifted and continues to shift between similar agents to those mentioned above.

Tensions between, what might be characterised as, ‘traditionalist’ versus ‘modernist’ methods are well recognised, and the debates are well rehearsed. Routine calls for culturally sensitive development strategies have resulted, and projects that acknowledge the importance of culture are now accepted as the foundation of good practice for infrastructural expansion. Nevertheless, as the pipeline in Boré Koromi effortlessly illustrates, infrastructural developments and the implementation of new systems continue to emulate and appropriate methods from other locations in their designs. In association, utterly embedded within directives from global agencies, has been the almost colonial understanding that ‘to develop’ is essential and that, while cultural sensitivity is of utmost importance, how this is interpreted must not hinder the primary objectives of a project. Cultural sensitivity, therefore, never means the wholesale adoption or even revitalisation of traditional methods. Neither has a

synthesis of methods been on the table, but rather the re-education and the gentle creation of a climate that enables the absorption of methods commonly used in other locations becomes the direction of travel. The measurement of success, therefore, hinges on quantifying a community's ability to absorb the new methodology into their life way, and not the other way around. More troublingly, this method could be accused of validating the construction and implementation of systems that 'strive to ignore, denigrate and supersede existing practices' (Fontein 2008: 740).

The instigation of the pipeline in this area can be accused of being an example of the kinds of directives mentioned above. Bringing water into an area suffering from recurring drought should be hailed as a success. However, the design, ideology and implementation underpinning the system place it on unsure ecological footing, which function to question its efficacy and sustainability. Its purpose is to provide water security to the people of the area previously considered limited by regular lack. However, the system (including the materials and method of delivery) are the subject of an alternative set of complex and equally damaging relationships that manage to problematise the supply in unique ways. Moreover, the primary objective – that is, a secure supply of water - remains out of reach for many and previous tensions have not been alleviated, simply splintered and transferred.

The underpinning philosophy and ontology of this method of water supply utilises (and validates) engineering decisions that seek to deviate flows of water (in this case, from the bore hole in Baricho), to other locations for the pointed objective of human consumption. For this example, the underground and peripheral environmental effects may be insignificant and trivial, but are currently unknown. However, reminded of Lorenz's Butterfly Effect (1963) and critiques of cause and effect as too simplistic, and therefore an inadequate predictive mechanism of consequences, coupled with our current global eco-predicament, it does not take an enormous leap to see that this water supply was troubled from its conception. Urry (2005: 5) reminds us that we should not rely on the adage that 'the sum is greater than the size of its parts - but that there are system effects that are different from their parts' if designs are to be holistically sustainable. Krishna (2010: 56) queries the value of adhering to, and perpetuation of, singular methodologies when 'micro-level factors' can dramatically reorganise the outcomes expected or predicted. Citing an example in India he shows

how the same irrigation scheme tremendously helped one small-scale community but due to salinity caused serious health issues to the next village and their livestock. Consequently, what was simultaneously beneficial for one group was dangerously problematic to the next, an important material point to realise for a sustainable future. Therefore, by replicating the economic and human exceptionalist framework relied upon and recreated across other geographies as its model, the Baricho pipeline manages to do more than simply supply water to a region. It also restricts access to the water, moves water in novel ways and, as a result, is causing another overlooked dimension to water politics (as explored by Fontein 2015a and b and outlined above).

The politics of prohibiting small-scale irrigation is one aspect of this problematic knot of claims to water-power. The role of climatic water (rain and rivers) in producing and shaping daily life, and social and historical identities are other aspects that mean Giriama life is shifting as the water does. The inability of the community to use the water meaningfully for irrigation, for example, forces the hand of farmers to seek alternatives for subsistence, such as charcoal burning. These choices activate rapid cycles of environmental destruction because people now need money to buy water. In addition, the dark watery places where the hardwood trees, necessary for making charcoal, are threatened. Vital to and enjoyed by *m'pepo*, the trees have been important eco-storage units for water that both held the water *in situ* and created communication conduits between human and other-than-human agencies able to control water. Thus, these spaces are not only important for cultural identity and autonomy, but also in the claims of legitimacy to relationships of authority with water. To provoke shifts away from previous methods of water acquisition to the pipeline contributes to the modernist methods that move power from one group of agents to other agencies. Where water might have been summoned by rain through ritual communication in previous times, now irate phone calls to MAWASCO are people's only course of action.

The Giriama continue to seek for water as they always have done, but now, the authority and responsibility for producing a reliable water source has moved away from the ritual practitioners and their relationships with the climate through *m'pepo* towards another source: the local water board and assorted kiosk managers. As the local practitioners lose the authority to cry for rain, the water cannot puddle on their fields

and as a result they have no pools of power to dip into because they have dried up. Now, another different distant, impersonal and invisible, agent named MAWASCO has acquired the means to control provision. Thus, the claims to power-with water has moved from ritual practitioners, *m'pepo*, ancestors, trees, the inhabitants of the cool darkness, rain and the water itself to other methods including plastic pipes, taps, meters, metal doors, and money. Consequently, activities that previously secured water have transformed from collective ritual performances that reaffirmed *fu ha mwenga*, to the accumulation of cash to guarantee one's personal, individuated success and supply.

The pipeline is a mechanism that suggests humans can control water, just as - one might argue - ritual practices do. Both methods assume authority and maintain that the ability to influence emerges from human knowledge and capacities. However, while ritual practitioners negotiate with a broad set of ecological relationships to obtain water, the design of the pipeline uses the environment as a backdrop for human ideas and needs, and therefore sidesteps the role materials play in shaping environments.

The notion that other-than-human entities can be controlled, subdued or dominated derives from the anthropocentric schism perceived between matter and bodies, and the valorisation of human need over the needs of other. This material fallacy results in destructive methods that favour the human over other entities. In the time when hyperobjects (Morton 2010) have come to our attention and materials are transforming their behaviours, continuing to place people at the top of an illusory hierarchy requires contesting (cf. Coole and Frost 2010; Haraway 2016) People are not in control of water, any more than they are in control of the wind (despite the Age being labeled that of the Anthropocene) however, people can influence water. Similarly, water is also not in control, nothing is - and there is no need to think in terms of separate power systems but should be conceived as negotiations where the power-to-be emerges in relationship and therefore is shared, following the core idea of *fu ha mwenga*.

Standing in line waiting for treated water effortlessly illustrates the capitalist ideology articulating this kind of water provision and how people's relationships with other waters are being reshaped, alienated or disassociated from previous sources. The population is, now, able to consider and institute an intellectual distinction between

cultural and natural water as the methods used by the system encourage a schism from thinking-with water to thinking-about it. Previously water was able to manifest in different ways – as rain, as rivers, from flood water and trees – now water has another novel method: through pipes. People appreciate that accessing water has always been an economic activity. It is how that economic system manifests that is presenting fresh problems.

However, in contrast to wading into the river basin, the tap water in Kenya has thankfully allowed the recurring bouts of poor health to abate, thereby affording those who can use it respite from a number of medical conditions. But, unfortunately, this is replaced with the yoke of finding money and the different stresses that brings. The commodification of a material that once fell equally across the community is now rationed according to means and in terms of use. The forager is now the consumer.

For the Giriama, water's character cools and is flexible and accepting of others regardless. Its non-territoriality reflects their history, and its ability to hide, cause sickness and destruction, as well as revitalise, cleanse and purify orders Giriama lives. As a result, Giriama identity, authenticity and social practices are all materially connected to, and inspired by, how water behaves. All bodies are shaped by water. However, because the Giriama are utterly occupied with sourcing water, how water shapes them is more obvious and culturally evident. Water's materiality has taught and inspired the Giriama to enact an ethos of connectivity and assimilation. Being with water in Boré forces one to recognise the dividuality of being, the indivisible connection one has with the rest of the material world and, consequently, challenges the illusion of material distance and separation promoted by certain ways of being in the world.

Giriama cosmology understands water in terms of its physical behaviors and what it can do to bodies. In brief, this means that the ability of water to move – as a body, away from, and to, their lives - features as a key component of their relationship with it. Water is understood to be difficult to retain for long as its physicality urges it to continue to move – something that the experiences in the *Interactions with the Environment* course amply illustrated. Consequently, retaining water acts against its inherent methodology, which alters the manner by which it can be itself and bodies. Water not only moves through the landscape through time and into people's lives,

vertically and horizontally, through precipitation, transpiration, ingestion, assimilation and osmosis, but also it leaves areas because of these abilities. The philosophy of *fu ha mwenga* brings all of this to mind through the relentless flowing of people across spaces and times in the search for the ever-elusive water and the differences that are held in a fluid similarity.

As water shifts it patterns of behaviour, relationships with water are assuming greater significance. Unsurprisingly, as a result of its name, 'climate change' is perceived and characterised as being primarily concerned with the climate, but in fact, it is more about what water does than meteorology. Or, put another way, water *is* the climate - as the #climateiswater.org website (2016) and AGWA (Alliance for Global Waters) (2018) inform us. Moreover, 'water is the primary medium through which climate change is felt' (#climateiswater.org 2016). Hence, it is the way water is altering its routines - from hurricanes and tsunamis to lack of harvest - that is being experienced and increasing presented as a cause for concern. Consequently, national companies and multiple global agencies alike are focused on water activities and are recording what water is doing. There is generalised anxiety regarding predictions and that mechanisms for adaptation are not being designed or implemented with the necessary rapidity. Moreover, pleas to include water in talks aimed at addressing climate change are being heard with the view to create effective, sustainable solutions. As is evident, water, the medium that connects thinking, geographies, economics and geo-political agendas, is emerging as a primary agent of change on the current world stage.

The epistemological attitude of, or penchant towards, the objectification of materials is evident in the methods by which water is both represented and engaged with in a typical, modern town or city in the industrial global North. Looking at the infrastructure that manages water and allows it only checked and constrained passage into our homes illustrates the customs by which water is conceived. Here, water is corralled and guided into the very fabric of the buildings that have been designed so as to enable a regular supply for safe consumption and ingestion. Its passage, through specifically fabricated pipes secreted under floorboards and within walls, captures, retains, and then allows it to escape from multiple outlets in different areas of each dwelling at human command. Consequently, people are in a perpetual state of drawing water into

their lives – over and through their bodies - and, many live alongside a complicated web of submerged pipelines, that imperceptibly allows water to surround them, waiting in the pipes for its moment of engagement or flushing through our flesh on its route to corporeal release. Not unlike meat wrapped in cellophane in the supermarket is divorced from the animal it was, water arrives sanitised and processed to divert from other locations. This state of affairs allows water to be paradoxically invisibly ever-present – ready for use at the turn of a tap, plumping out our bodily cells, cleansing where it attends until it runs back down plugs and into pipes to begin the cycle again without a break in delivery. Even water outside of buildings is channelled away similarly, into drains and under-road piping to ensure that it cannot soak into that which people do not want to be wet offering an illusion of human control over water. And when there is a cut in supply consumers feel entitled to rage about infrastructural inefficiencies and their rights to water. Thus, many people expect water, but only in socially prescribed places.

However, in geographical locations where there are no taps, no municipal provision and where communities rely on the environment and direct meteorological activity for a supply of water, experiences with water diverge dramatically from the comfort of a continual, consistently available, clean allocation system outlined above (Moran 2008). In areas where water is labelled a 'limiting factor' (Moran 2008: 208), water does not always arrive with any regularity or certainty. Its appearance, rather than predicated on public services, occurs as a result of multiple, interacting global climatic factors that individuals have no control over – one month rampaging, the next trickling, and habitually abandoning areas for extended, life threatening, periods at a time. In these places, water not only leaves bodies rapidly but is also repeatedly sought for, carried across vast distances and is typically ingested sparingly as a result (Hastrup and Rubow 2014). Moreover, in locations described as suffering from a lack of water and where people must rely on stagnant possibly polluted or infected sources, water is not merely a bubbling, sparkling life-affirming fluid but rather can periodically transform into a necessary danger - filled with potentially lethal microbes (Chouin 2008) that can inveigle bodies both via ingestion and topically. In addition, as it disappears, water can bring further problems and, as a weighty subject to carry, transportation of water acts on the body as a backbreaking, energy and time intensive

process (Ashton 2002; Gleick 2000, 2006; Li 2013; Odgaard et al. 2007). In these settings, engaging with water demands a different kind of attention to what water does and where it goes.

By looking at how piped and climatic water are variously understood, interacted with and used, this thesis also offers an innovative perspective on development processes that recognises a link, and levels the ground, between the shared human and non-human worlds – a position that is considered to be of critical importance at this point in global history (van Dooren 2016; Tsing 2015; Witmore 2014). By centering on water in this way, I challenge the analytical distinction that situates water as separate from the (in this case, human) bodies that are primarily composed of it. Theorising water in this way not only elucidates water's behaviours and ubiquity, but also reveals that distinctions made between matters are unclear, experientially problematised, potentially inaccurate and detrimental. Moreover, in acknowledgement of the complexities of social life and that social life is material, this thesis offers an example of how intellectual boundaries constructed around entities not only inhibit material flows but also problematise how entities can be understood.

As global agencies recognise the need to reconsider human-environmental engagements generally (Friends of the Earth International nd; Greenpeace International 2016; UN.org 2016), further information about water use and the meanings it holds is considered to be of particular, contemporary significance (Fontein 2008). Currently, scholarship and global debates circling water typically focus attention on how humanity can most effectively use this common pool resource (Gliek 2014 a and b). Topics such as: water usage, sanitation, hygiene, health and security characteristically frame debates on water (Gliek 2014a and b). However, it could be argued that these traditional approaches to water mandate (and perpetuate) a human exceptionalist outlook. In addition, even studies that document culturally contingent meanings of water, and give consideration to the socially generative potential of materials as they move into human lives offer more nuanced understandings of water (see Blatter et al 2001; Wagner 2013), may not be enough. To simply demonstrate that cultures have different beliefs and behaviours around water is undoubtedly helpful and interesting, but at this time in global history, I suggest, a more inclusive approach is required – one that moves away from seeking methods to improve human lives to

one that seeks to improve the existence of all materials equally and together. In a time when information suggests that resources are stretched and physical forces are said to be dramatically transforming as a result of human activity, a fundamental shift in behaviours is cited as the only hope to maintain the balance that supports life as it has come to be known (Latour 2014b; Morton 2010, 2013, 2016). As is probably clear now, this thesis aims to contribute in some small way to that shift by using this alternative approach that foregrounds the relationships people have with the materials that co-productively form them. This thesis attends to certain activities of water and humans specifically, and with a pointed material focus should also manage to move towards presenting the co-generative realities that human-materials have with *other* materials and beings. However, this thesis could just as easily focus on people and other materials (cf. Attala and Steel in press) as every material is in a profoundly physical relationship with the other materials being associated with.

The New Materialities approach used in this thesis favours a bio-political stance that recognises bodies are produced and organised in association with the shared elemental vitality of materials. In connection, it expands what constitutes 'material' from its previously inert confines to include the materiality of people's and other bodies in its sights, and in so doing it aims to draw relationships and the porosity of materiality out for inspection. Thus, rather than framing materials as resources for harness and use by people, it accepts that all activity (including human activity) is a material arrangement that is circumscribed by virtue of the limitations and possibilities available to physical behaviours.

This perspective hopes to contribute to an ethically rooted synthesis that reimagines the world as a co-created material endeavour. Taking porosity – the notion that many imagined boundaries are leaky and that existence is comprised of blurred, blended, spongy, tangled interacting materials - as its starting point, this perspective encourages realisation that a regard for the 'culture', history and needs of other materials needs inclusion in discussions about what it means to be human if discussion are to be inclusive. Therefore, the term 'materiality' as it is used here denotes how things/entities/bodies are comprised of a convoluted series of simultaneously interacting substances bound in complex relationships (Barad 2003, 2007, 2010). It is not attending to the cultural significance of objects *per se* (as in

Material Culture studies), nor economics on human scales (as in: Marxist thinking). Rather, chiming with the ideas of subjectivity that the New Materialisms advocates, a New Materialities perspective questions the value of articulating difference between subject and object (and the notions of active and inert, associated with them) in favour of a re-consideration of how both categories regularly blend and escape the intellectual boundaries constructed to form them. In escaping their confines, as it were, and merging to create new forms, materials existentially contest the intellectual boundaries erected around them. To appreciate the fundamentality of the challenge this thesis brings the world of substances into view to illustrate how differences come into being only through melding together, or as a result of mingling and leaking into each other. The purpose of this perspective is not to simply acknowledge chemistry or biology but to draw attention towards materiality. Illuminating material connectivity allows material dependencies to be reconfigured, and in so doing has the potential to alter the structure and intentions of discussions concerned with development, change or progress.

References

Abrams, D. 1996 *The Spell of the Sensuous: Perceptions and Language in a More-than-Human World* New York: Vintage, Random House

Aburrow, Y. 2012 *A Little Book of Snakes* Oxford: Birdberry Books

Afriwater.org 2015 *Africa Water, Sanitation and Hygiene: In Search for Solutions to Africa's Development Challenges and Strengthening Capacities* [online] Available at http://www.afriwater.org/articles/125-coast-water-services-board

Agar, M. H. 1996 *The Professional Stranger: An Informal Introduction to Ethnography,* 2nd ed. London: Academic Press

Agutu, N. 2018 Climate Doom: Rising Seas, Submerged Hotels, Thousands Jobless, *The Star* [online] Available at https://www.the-star.co.ke/news/2018/01/31/climate-doom-rising-seas-submerged-hotels-thousands-jobless_c1705728

AGWA 2018 The Policy and Practice of Climate Change and Water, *Alliance for Global Water* [online] Available at http://alliance4water.org/climateiswater/

Ahmed, B. 2017 Young Kenyans are Murdering Elderly Relatives They Claim are Witches but it has Nothing to do with Magical Beliefs, *Quartz* [online] Available at https://qz.com/945296/young-kenyans-are-murdering-elderly-relatives-they-claim-are-witches-but-it-really-has-nothing-to-do-with-magical-beliefs/

Alexanderson, O. 1990 *Living Water: Viktor Schauberger and the Secrets of Natural Energy* Dublin: Gateway

Annandale, E. 1998 *The Sociology of Health and Medicine: A Critical Introduction* Oxford: Blackwell

Appadurai, A. (ed.) 1988 *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge Studies in Social and Cultural Anthropology) Cambridge: CUP

Appadurai, A., and Breckenridge, C. A. 2009 Foreword, in Mathur, A., and Da Cunha, D. *Soak: Mumbai in an Estuary* Rupa and Co: New Delhi pp. 1-3

ASA. 1997 American Society of Anthropologists, *Code of Ethics* [online] Available at http://www.asanet.org/sites/default/files/savvy/images/asa/docs/pdf/CodeofEthics.pdf

ASA. 2014 Association of Social Anthropologists of the UK and Commonwealth, *Ethical Guidelines for Good Research Practice* [online] Available at https://www.theasa.org/ethics/guidelines.shtml

Ashton, P. J. 2002 Avoiding Conflicts over Africa's Water Resources, *Ambio* 31: 3 pp. 236-42

Attala, L. 2016a Bodies of Water: Exploring Water Flows in Rural Kenya, in Steel, L., and Zinn, K. (eds.) *Exploring the Materiality of Food 'Stuffs': Transformations, Symbolic consumption and Embodiment* Oxon, New York: Routledge

Attala, L. 2016b Digesting 'Cryptid' Snakes: A Phenomenological Approach to the Mythic and Cosmologenetic Properties of Serpent Hallucinations, in Hurn, S (ed.) *Anthropology and Cryptozoology: Exploring Encounters with Mysterious Creatures* London, New York: Routledge

Attala, L. In press 'I am Apple': Relationships of the Flesh. Exploring the corporeal entanglements of eating plants in the Amazon, in Attala, L., and Steel, L., in *Body Matters* Cardiff: University of Wales Press

Attala, L., and Steel, L. In press *Body Matters* Cardiff: University of Wales Press

Ball, J. 2001 *Soil and Water Relationships,* The Samuel Roberts Noble Foundation [online] Available at http://www.noble.org/ag/soils/soilwaterrelationships/

Ball, P. 2002 *H2O: The Biography of Water* London: Orion Book

Barad, K. 2003 Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter, *Signs: Journal of Women in Culture and Society* 28: 3, pp. 801-31

Barad, K. 2007 *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* Durham (NC): Duke University Press Books

Barad, K. 2010 Quantum Entanglements and Hauntological Relations of Inheritance: Dis/continuities, SpaceTime Enfoldings, and Justice-to-Come, *Derrida Today* 3: 2 pp. 240–268 DOI: 10.3366/E1754850010000813 © Edinburgh University Press www.eupjournals.com/drt

Bartholomew, A. 2012 *Hidden Natures: The Startling Insights of Victor Schauberger* Edinburgh: Floris Books

Bataille, G. 1989 *The Accursed Share Vol. 1* New York: Zone Books

Bateson, G. 1973 *Steps Towards and Ecology of the Mind* St Albans: Paladin

BBC News. 2012 *Dolphins Deserve the Same Rights as Humans, Say Scientists* [online] Available at https://www.bbc.co.uk/news/world-17116882

Bear, C., and Eden, S. 2011 Thinking Like a Fish? Engaging with Nonhuman Difference Through Recreational Angling, *Environment and Planning D: Society and Space* 29: 2 pp. 336-52

Beaucage-Gauvreau, E., Dumas, G. A., and Lawani, M. 2011 Head Load Carriage and Pregnancy in West Africa, *Clinical Biomechanics* 26: 9 pp. 889–894 [online] Available at http://www.sciencedirect.com/science/journal/02680033/26/9

Beckloff, R. D. 2009 *Local Agricultural Knowledge Construction Among the Giriama People of Rural Coastal Kenya* unpublished PhD [online] Available at https://getd.libs.uga.edu/pdfs/beckloff_randall_d_200905_phd.pdf

Beilo, J. 2015 *The Anthropology of Religion* Oxon, New York: Routledge

Benveniste, J. 2017 Memory of Water, in *Essence of Water* [online] Available at http://essenceofwater.org/memory-of-water/

Bennett, J. 2010 *Vibrant Matter: A Political Ecology of Things* Duke University Press, Durham and London

Bernard, P. S. 2007 Re-Uniting the Kosmos, *Journal for the Study of Religion, Nature and Culture* 1.1 pp. 109-129

Bernard, P. S. 2013 "Living Water" in Nguni Healing Traditions, South Africa, *Worldviews: Global Religions, Culture and Ecology* 17:2 pp.138-149

Bernard, P. S. 2016 Suspending Disbelief and Experiencing the Extraordinary: How Radical Participation may Facilitate an Understanding of Aquatic Snake and Fish-tailed Beings in Southern Africa, in Hurn, S. (ed.) *Anthropology and Cryptozoology: Exploring Encounters with Mysterious Creatures, Multispecies Encounters* London, New York: Routledge pp. 139-157

Bertalanffy Von, L. 1968 *General Systems Theory: Foundations, Development, Applications* New York: George Brazillier

Bird David, N., and Naveh, D. 2008 Relational Epistemology, Immediacy, and Conservation: Or, What Do the Nayaka Try to Conserve? *Journal for the Study of Religion, Nature and Culture* 2:1, pp. 55-73

Blatter, J., and Ingram, H. 2001 *Reflections on Water: New Approaches to Transboundary Conflicts and Cooperation (American and Comparative Environmental Policy)* Cambridge, Massachusetts, London: MIT Press

Bloch 1992 *Prey to Hunter: The Politics of Religious Experience* Cambridge: Cambridge University Press

Boivin, C. 2008 *Material Cultures, Material Minds: The Impact of Things on Human Thought, Society, and Evolution*, Cambridge: Cambridge University Press

Bourdieu, P. 1977 *Outline of a Theory of Practice* Cambridge: Cambridge University Press

Brantley, C. 1979 An Historical Perspective of the Giriama and Witchcraft Control, *Africa:*

Journal of the International African Institute, 49: 2, pp. 112-133

Brantley, C. 1981 *The Giriama and Colonial Resistance in Kenya, 1800-1920* Berkley: University of California Press

Brantley, C. 1986 Mekatalili and the Role of Women in Giriama Resistance, in Crummey, D. (ed.) *Banditry, Rebellion and Protest in Africa* Suffolk, UK: James Currey Publishers pp. 333-351

Candea, M., and Col da, G. 2012 The Return to Hospitality, *Journal of the Royal Anthropological Institute,* 18: S1 pp. 1-19

Capra, F. 2002 *The Hidden Connections: A Science for Sustainable Living* London: Harper Collins

Capra, F. 2005 Complexity and Life *Theory, Culture & Society* London, Thousand Oaks and New Delhi: SAGE 22:5 pp. 33–44 DOI: 10.1177/0263276405057046

Capra, F., and Luisi, P. L. 2014 *The Systems View of Life: A Unifying Vision* Cambridge: Cambridge University Press

Carey, M. 2010 *In the Shadow of Melting Glaciers: Climate Change and Andean Society*: Oxford, New York: Oxford University Press

Carroll, K.E. and Mesman, J. 2011 Ethnographic Context meets Ethnographic Biography: A Challenge for the Mores of Doing Fieldwork, *International Journal of Multiple Research Approaches* 5:2 pp. 155-168

Carse, A. 2010 Water, *Cultural Anthropology* [online] Available at http://www.culanth.org/curated_collections/10-water

Carse, A. 2012 Nature as Infrastructure: Making and Managing the Panama Canal Watershed, *Social Studies of Science* 42:4 pp. 539–63

Carsten, J. 2008 *Cultures of Relatedness* Cambridge: Cambridge University Press

Carsten, J. (ed.) 2013a *The Blood will Out: Essays on Liquid Transfers and Flows* (Journal of the Royal Anthropological Institute Special Issue Book Series) MA, Oxford, Sussex: Wiley Blackwell

Carsten. J. 2013b What Kinship Does – and How, *HAU: Journal of Ethnographic Theory* 3: 2, pp. 245-251

Cashmore, T. R. E. 1961 A Note on the Chronology of the Wanyika, *Journal of Tanganyika Society* Tanganyika Notes and Records no. 57, Dar es Salaam: Government Printer, pp. 153-172

Cassidy, R. 2012 Lives With Others: Climate Change and Human-Animal Relations, *Annual Review of Anthropology* 41 pp.21-36

Castaing-Taylor, L., and Paravel, V. 2012 *Leviathan* [online] Available at http://www.arretetoncinema.org/leviathan/

Ciekawy, D. 2016 Distinction in the Imagination of Harm in Contemporary Mijikenda Thought: The Existential Challenge of Majini, In Olsen, W. E., Walter, E., and Van Beek, A. *Evil in Africa: Encounters with the Everyday* Indiana: Indiana University Press pp. 157-174

Champion, A. M. 1967 The Agiryama of Kenya *Royal Anthropological Institute Occasional Paper* No. 25 London: Royal Anthropological Institute of Great Britain and Ireland

Charen, T. 1951 *The Etymology of Medicine* [online] Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC195119/pdf/mlab00237-0040.pdf

Chen, C., MacLeod, J., and Neimanis, A. 2013 *Thinking with Water* Montreal and Kingston, London, Ithaca: McGill-Queen's University Press

Chomsky, N. 2007 *On Language* New York: The New Press

Chouin, G. 2008 Archaeological Perspectives on Sacred Groves in Ghana, in M.J. Sheridan, and Nyamweru, C. (eds.) *African Sacred Groves: Ecological Dynamics and Social Change* Oxford: James Curry pp.78-94

Clark, N. 2011 *Inhuman Nature: Sociable Life on a Dynamic Planet* London, California: Sage

Clifford, J., and Marcus, G. E. 2010 *Writing Culture: The Poetics and Politics of Ethnography* Berkeley: University of California Press

#climateiswater.org. 2016 [online] Available at http://www.climateiswater.org

Coard, R in press Dead and Dusted: Exploring the Mutable Boundaries of the Body, in Attala, L., and Steel, L. *Body Matters* Cardiff: University of Wales Press

Coats, C. 2001 *Living Energies: Viktor Schauberger's Brilliant Work with Natural Energy Explained* Dublin: Gill Books

Cohen, J. J., and Duckett, L. (eds.) 2015 *Elemental Ecocriticism: Thinking with Earth, Air, Fire and Water* Minnesota: Minnesota University Press

Concise Medical Dictionary. 2014 (8th ed) Oxford: Oxford University Press

Consiglia, P. 2008 *Water, Pure and Simple: The Infinite Wisdom of an Extraordinary Molecule* London: Watkins Publishing

Coole, D., and Frost, S. 2010 *New Materialisms: Ontology, Agency, and Politics* Durham: Duke Press

Cooley, H. 2006 Floods and Droughts, in Gleick, P. H. (ed.) *The World's Water 2006-7: The Biennial Report on Freshwater Resources* Washington, Covelo, London: Island Press pp. 91-117

Cresswell, T. 2004 *Place: A Short Introduction* Oxford: Blackwell

Cruz, T. 2014 The Political Equator, in Mathur, A., and Da Cuhna, D. (eds.) *Design in the Terrain of Water* University of Pennsylvania: Pennsylvania

Daily Nation. 2018 Kenya is Staring at Food Shortages Again in 2018, *Daily Nation* [online] Available at https://www.nation.co.ke/video/news/4146788-4311818-g01ebuz/index.html

De Landa, M. 1997 *A Thousand Years of Nonlinear History* New York: Swerve

De Landa, M. 2006 *A New Philosophy of Society: Assemblage Theory and Social Complexity* London, New York: Continuum

Deleuze, G., and Guattari, F. 1980 *Anti Oedipus* London: Continuum

Deleuze, G., and Guattari, F. 2004 *A Thousand Plateaus: Capitalism and Schizophrenia* (trans. B. Massumi) London: Continuum

Derman, B., Odgaard, R., and Sjaastad, E. (eds.) 2007 *Conflicts over Land and Water in Africa* Suffolk: James Curry Publishers

Derrida, J., and Dufourmantelle, A. 2000 *On Hospitality: Anne Dufourmantelle invites Jacques Derrida to Respond* (Cultural Memory in the Present) (trans. Bowlby, R.) Stanford, California: Stanford University Press

Descartes, R. 1985 *The Philosophical Writings of Descartes Vol. 1* (trans. Cottingham, J., Stoothoff, R., and Murdoch, D.) Cambridge: Cambridge University Press

Descola, P. 2013 *Beyond Nature and Culture* Chicago: Chicago University Press

De Vere Allen, J. 2005 *Swahili Origins: Swahili Culture and Shungwaya Phenomenon (East Africa Studies)* Ohio: Ohio University Press

Dillon, P., Gross, P., Irvine, R., Price, V. C. and Staddon, C. 2012 Thinking like a Wetland, *Journal of Arts and Communities* 4:1 pp. 100-126

Domonoske, C. 2012 Ecology, Language, and Water/Land: Ambiguous Fenlands and Challenged Dichotomies of Enlightenment in Graham Swift's Waterland *Papers & Publications: Interdisciplinary Journal of Undergraduate Research*: 1:7 [online] Available at: https://digitalcommons.northgeorgia.edu/papersandpubs/vol1/iss1/7

Douglas, M. 1966 *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* London: Routledge

Drazin, A., and Küchler, S. 2015 *The Social Life of Materials: Studies in Materials and Society* London, New Delhi, New York, Sydney: Bloomsbury

Dundes, A. 1981 Wet and Dry, The Evil Eye: An Essay in Indo-European and Semantic Worldview, in Dundes, A. *The Evil Eye: A Casebook* London, Winsconsin: University of Winsconsin Press pp.257-313

Easterling, W.E., Aggarwal, P.K., Batima, P., Brander, K.M., Erda, L., Howden, S.M., Kirilenko, A., Morton, J., Soussana, J-F., Schmidhuber, J., Tubiello, F.N. 2007. Food, Fibre and Forest Products, in Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J., Hanson, C.E., (eds.) *Climate Change 2007: Impacts, Adaptation and Vulnerability.* Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge, UK: Cambridge University Press pp. 273–313

Echarri, J., and Forriol, F. 2005 Influence of the Type of Load on the Cervical Spine: A Study on Congolese Bearers, *The Spine Journal* 5 pp. 291–296

Edgeworth, M. 2011 *Fluid Pasts: Archaeology of Flows (Debates in Archaeology)* London, Bristol Classical Press (Bloomsbury Academic)

Ellen, R. F. 1984 *Ethnographic Research: A Guide to General Conduct* (ASA Research Methods in Social Anthropology) London, New York, Boston, Sydney, Tokyo, Toronto: Academic Press, Harcourt Brace and Co, Publishers

El Fasi, M., and Hrbek, I. (eds.) 2000 *General History of Africa III: Africa from the Seventh to the Eleventh Century* Paris: UNESCO Publishing

Ereira, A. 1992 *The Heart of the World* London: Jonathon Cape

Evans-Pritchard, E. E. 1940 *African Political Systems* Oxford University Press: London

Evans-Pritchard, E. E. 1976 *Witchcraft, Magic and Oracles Among the Azande* Oxford: Clarendon Press

Everett, D. 2008 *Don't Sleep There are Snakes: Life and Language in the Amazonian Jungle* London: Profile Books

Fage, J. D., and Oliver, R. 1977 *The Cambridge History of Africa (Vol. 3),* Cambridge: Cambridge University Press

Falzon, MA. 2009 *Multi-Sited Ethnography: Theory, Praxis and Locality in Contemporary Research* London, New York: Routledge

Fayers-Kerr, K. in press Becoming a Community of Substance: The Mun, the Mud and the Therapeutic Art of Body Painting, in Attala, L., and Steel, L *Body Matters* Cardiff: University of Wales Press

Feuchtwang, S. 2013 What is Kinship? 2013 | *HAU: Journal of Ethnographic Theory* 3:2, p. 281–84

FEWS NET 2016 *Delayed Short Rains to Heighten Food Insecurity In Pastoral and Marginal Cropping Areas* [online] Available at http://www.fews.net/east-africa/kenya

Finney, J. L. 2004 Water? What's so Special About it? *Philosophical Transactions of the Royal Society Biological Sciences* 359: 1448, pp. 1145-1165

Fishman, C. 2011 *The Big Thirst: The Secret Life and Turbulent Future of Water*, New York: Simon and Schuster

Franklin, S. 2002 *Relative Values: Reconfiguring Kinship Studies* Durham: Duke Press

Fontein, J. 2006 We Want to Belong to our Roots and We Want to be Modern People: New Farmers, Old Claims Around Lake Mutirikwi, Southern Zimbabwe, *African Studies Quarterly* 10: 4 pp.1-35

Fontein, J. 2008 The Power of Water: Landscape, Water and the State in Southern and Eastern Africa: An Introduction, *Journal of Southern African Studies*, 34: 4 pp.737-756

Fontein, J. (ed.) 2015a *Remaking Mutirikwi: Landscape, Water and Belonging in Southern Zimbabwe* James Currey: East Africa Studies

Fontein, J. 2015b Rain, Uncertainty and Power in Southern Zimbabwe, *Critical African Studies* 8:1 pp. 47-74

Friends of the Earth International nd [online] Available at http://www.foei.org

Funk, C., Hoell, A., Shukla, S., Blade, I., Liebman, B., Roberts, J. B., Robertson, F. R., and Husak, G. 2014 Predicting East African Spring Droughts Using Pacific and Indian Ocean Sea Surface Temperature Indices, *Hydrology and Earth System Sciences* 18 pp. 4965-4978

Gakubia, R. 2017 *The Water Act (No. 43 of 2016) Malindi Water and Sewerage Company Limited* [online] Available at https://wasreb.go.ke/wp-content/uploads/2017/08/Notice-Malindi-Water-Water-Act-2016.pdf

Gandy, M. 2014 *The Fabric of Space: Water, Modernity, and the Urban Imagination* Cambridge MA: MIT Press

Gauger, E. M., Rieper, E., Morton, J.J.L., Benjamin, S. C., and Vedral, V. 2011 Sustained Quantum Coherence and Entanglement in the Avian Compass, *Physical Review Letters* 106 040503 pp.1-4

Geere, J. L., Hunter, P.R., and Jagals, P. 2010a Domestic Water Carrying and its Implications for Health: A Review and Mixed Methods Pilot Study in Limpopo Province, South Africa, *Environmental Health* 9:52 pp.1-13

Geere, J.L., Mokoena, M.M., Jagals, P., Poland, F., and Hartley, S. 2010b How do Children Perceive Health to be Affected by Domestic Water Carrying? Qualitative Findings from a Mixed Methods Study in Rural South Africa, *Childcare, Health and Development* 36: 6 pp.818-826

Geerhart, R., and Giles, L. (eds.) 2014 *Contesting Identities: The Mijikenda and Their Neighbours in Kenyan Coastal Society* Trenton NJ: Africa World Press

Gell, A. 2013 *Art and Agency: an Anthropological Theory* Oxford: Oxford University Press

Gebauer, H., and Saul, C. J. 2014 Business Model Innovation in the Water Sector in Developing Countries *Science of the Total Environment*, 488–489: 1, pp. 512–520 https://doi.org/10.1016/j.scitotenv.2014.02.046

Gerhardt, K., and Steiner, M. 1986 *A Guide to the Nature Trail in Gedi* [online] Available at http://www.kenyahs.com/wp-content/uploads/Gedi-new.pdf

Girard, R. 1992 *Violence and the Sacred* (trans. Gregory, P.) Baltimore: Johns Hopkins University Press

Gleick, P. H. (ed.) 2000 *The World's Water 2000-2001: The Biennial Report on Freshwater Resources* Covelo, CA: Island Press

Gleick, P.H. (ed.) 2006 *The World's Water 2006-2007: The Biennial Report on Freshwater Resources* Washington: Island Press

Gleick, P. H. 2014 a Water, Drought, Climate Change and Conflict in Syria, *American Meteorological Society* WCAS [online] available at http://journals.ametsoc.org/doi/full/10.1175/WCAS-D-13-00059.1

Gleick, P. H. (ed.) 2014 b *The World's Water Volume 8* Washington: Island Press

Global Alliance for the Rights of Nature. 2018 *Global Alliance for the Rights of Nature Home Page* [online] Available at https://therightsofnature.org

Gooley, T. 2016 *How to Read Water: Clues, Signs and Patterns from Puddles to the Sea* Great Britain: Sceptre (Hodder and Stoughton)

Government of Canada 2018 *Kenya* [online] Available at https://travel.gc.ca/destinations/kenya

Gov.UK. 2018 *Foreign Travel Advice: Kenya* [online] Available at https://www.gov.uk/foreign-travel-advice/kenya

Greenpeace International 2016 [online] Available at http://www.greenpeace.org/international/en/

Guterson J. 1997. Studying Up Revisited *Political and Legal Anthropology Review* (PoLAR) 21: 114-9

Hammersley, M. 2006 Ethnography: Problems and Prospects *Ethnography and Education* 1:1 pp. 3-14

Hammersley, M., and Atkinson, P. 2003 *Ethnography Principles and Practice* Oxford: Routledge

Hannerz U. 2003. Being there...and there...and there! Reflections on multi-site ethnography, *Ethnography* 4 pp. 201-16

Haraway, D. 2008 *When Species Meet* Minneapolis, London: University of Minnesota Press

Haraway, D. J. 2016 *Staying with the Trouble: Making Kin in the Chthulucene* Duke University Press

Harvey, G. 2005 *Animism: Respecting the Living World* Columbia: Columbia University Press

Hastrup, K. (ed.) 2009 *The Question of Resilience: Social Responses to Climate Change*, (Historisk-filosofiske Meddelelser No. 106) Copenhagen: The Royal Danish Academy of Sciences and Letters

Hastrup, K., and Rubow, C. (eds.) 2014 *Living with Environmental Change: Water Worlds* London and New York: Routledge

Hawken, P., Lovins, A. B., and Hunter Lovins, L. 1999 *Natural Capitalism: The Next Industrial Revolution* London, Washington: Earthscan

Hawkins, G., Potter, E., and Race, K. 2015 *Plastic Water: The Social and Material Life of Bottled Water* Massachusetts, London: MIT

Heglund, N. C., Williems, P. A., Penta, M., and Cavagna, G. A. 1995 Energy-saving Gait Mechanics Supported Loads, *Nature* 375 pp.52-54

Helm, R. 2004 Re-evaluating Traditional Histories on the Coast of Kenya: An Archaeological Perspective, in Reid, A. M., and Lane, P. J. (eds.) *African Historical Archaeologies* New York: Plenum Publishers pp.59-89

Helmreich, S. 2009 *Alien Ocean: Anthropological Voyages in Microbial Seas* Berkeley, Los Angeles, London: University of California Press

Heneise, M. 2017 The Naga Tiger Man and the Modern Assemblage of Myth, in Hurn, S. *Anthropology and Cryptozoology: Exploring Encounters with Mysterious Creatures (Multispecies Encounters)* London, New York: Routledge

Heraclitus 2017 *Fragments Attributed to Heraclitus* v. 13.10, Plutarch, Qu. nat. 2, p. 912. [online] Available at http://www.philaletheians.co.uk/study-notes/hellenic-and-hellenistic-papers/heraclitus%27-fragments.pdf

Herdt, G. 1987 *The Sambia: Ritual and Gender in New Guinea (Case Studies in Cultural Anthropology)* CA, U.S.A: Wadsworth Publishing

High, M. T. 2017 Human Predation and Animal Sociality: the Transformational agency of 'wolf People' in Mongolia, in Hurn, S. *Anthropology and Cryptozoology: Exploring Encounters with Mysterious Creatures (Multispecies Encounters)* London, New York: Routledge

Hildner, R., Brinks, D., Neider, J. B., Cogdell, R. J., and Hulst, N. F. 2013 Quantum Coherent Energy Transfer over Varying Pathways in Single Light-Harvesting Complexities, *Science* 340 pp. 1448-1451

Hill, C. 2015 Perspectives of 'Conflict' at the Wildlife-Agricultural Boundary: 10 Years on, *Human Dimensions of Wildlife An International Journal* 20: 4 pp. 296-301

Hinchliffe, A., and Bingham, N. 2008 People, Animals and Biosecurity in and through Cities, in Ali, S. H., and Keil, R (eds.) *Networked Disease: Emerging Infections in the Global City* Chichester: Wiley-Blackwell

Holbraad, M. 2009 Ontography and alterity: defining anthropological truth, *Social Analysis* 53, 80-93

Holbraad, M., and Axel Pedersen, M. 2017 *The Ontological Turn: An Anthropological Exposition (New Departures in Anthropology)* Cambridge: Cambridge University Press

Horst, H. and Miller, D. (eds.) 2012 *Digital Anthropology* London: Berg

Hsiao, E. C. 2012 New Zealand: Whanganui River Agreement - Indigenous Rights and Rights of Nature Environmental Policy and Law *Amsterdam* 42: 6, pp. 371-375

Hsu, E., 1999. *The Transmission of Chinese Medicine*. Cambridge: Cambridge University Press

Hsu, E., 2007 The Biological in the Culture: The Five Agents and the Body Ecologic in Chinese Medicine, In *Holistic Anthropology: Emergence and Convergence*, eds. D. Parkin and S. Ulijaszek. New York, NY and Oxford: Berghahn, pp. 91–126

Hubert, H., and Mauss, M. 1964 *Sacrifice: Its Nature and Function* Chicago: University of Chicago Press

Hughes, D. M. 2006 Hydrology of Hope: Farm Dams, Conservation, and Whiteness in Zimbabwe, *American Ethnologist* 33: 2 pp. 269-87

Hurn, S. 2012 *Humans and Other Animals: Human-Animal Interactions in Cross-Cultural Perspective* London: Pluto Press

Hurn, S. 2013 Confessions of a Vegan Anthropologist: Exploring the Trans-Biopolitics of Eating in the Field, in Abbots, EJ., and Lavis, A. (eds.) *Why we Eat, How we Eat: Contemporary Encounters Between Food and Bodies* NY, Oxon: Ashgate

Hurn, S. 2017 *Anthropology and Cryptozoology: Exploring Encounters with Mysterious*

Creatures (Multispecies Encounters) London, New York: Routledge

Hutchinson, S. E. 1996 *Nuer Dilemmas: Coping with Money, War, and the State* Berkeley, Los Angeles, London: University of California Press

Hymes, D. H. (ed.) 1964 *Language in Culture and Society: A Reader in Linguistics and Anthropology*. New York: Harper and Row

Ingold, T. 1992 Editorial, in *Man* New Series 27: 4 pp. 693-96

Ingold, T. 2000 *Perceptions of the Environment: Essays on Livelihood, Dwelling and Skill* London; New York: Routledge

Ingold, T. 2007 Earth, Sky, Wind and Weather, *Journal of the Royal Anthropological Institute* 13, s1 pp. S19-S38

Ingold, T. 2011 *Being Alive: Essays on Movement, Knowledge and Description* Routledge: London

Ingold, T., and Palsson, G. (eds) 2013 *Biosocial Becomings: Integrating Social and Biological Anthropology,* Cambridge University Press: Cambridge

Ingold, T. 2013a Prospect, in Ingold, T., and Palsson, G. (eds) 2013 *Biosocial Becomings: Integrating Social and Biological Anthropology,* Cambridge University Press: Cambridge

Ingold, T. 2013b *Making: Anthropology, Archaeology, Art and Architecture* London, New York: Routledge

Ingold, T. 2014 That's Enough about Ethnography!, *HAU: Journal of Ethnographic Theory* 4, no. 1: pp. 383-395

Iovino, S., and Opperman, S. (eds.) 2014 *Material Eco-criticism* Bloomington and Indianapolis: Indiana University Press

IUCN. 2017 Polceus Golandi, *The IUCN Red List of Threatened Species* [online] Available at http://www.iucnredlist.org/details/22718945/0

Jacobsen, M., Webster, M., and Vairavamoorthy, K. 2012 *The Future of Water in African Cities: Why Waste Water* [online] Available at http://water.worldbank.org/sites/water.worldbank.org/files/publication/iuwm-africa.pdf

Jones, P. G., and Thornton, P. K. 2008 Croppers to Livestock Keepers: Livelihood Transitions to 2050 in Africa due to Climate Change, *Environmental Science & Policy* 12:4 pp. 427–437

Jumaa, K. J. 2013 *The Contribution of the Church Missionary Society (CMS) to Education and Christianity in Kaloleni District, Kilifi County (1900-1963),* Department of History and Archaeology, University of Nairobi [online] Available at

http://erepository.uonbi.ac.ke/bitstream/handle/11295/62811/Kazungu_The%20contribution%20of%20the%20Church%20Missionary%20Society.pdf?sequence=3&isAllowed=y

The Kenyan Coast Map, 1973 *Malindi/Vanga, National Soil Maps* (EUDASM) Nairobi, Survey of Kenya [online] Available at https://esdac.jrc.ec.europa.eu/content/kenya-coast-map-and-guide-malindivanga-malindilamu-mombasa-island

Kibor, F. 2016 Losses for Kerio Valley Farmers as Baboons Invade Plantations, *Standard Digital* [online] Available at https://www.standardmedia.co.ke/article/2000212306/losses-for-kerio-valley-farmers-as-baboons-invade-plantations

Kirksey, S. E. (ed.) 2014 *The Multispecies Salon* Durham, London: Duke University Press

Kirksey, S. E., and Helmreich, S. 2010 The Emergence Of Multispecies Ethnography, *Cultural Anthropology Special Issue*: Multispecies Ethnography 25: 4, pp. 545–576, DOI: 10.1111/j.1548- 1360.2010.01069.x

Knox Dentan, R. 1979 *The Semai: A Nonviolent People of Malaysia* New York: Holt Rinehart and Wilson

Kohn, E. 2013 *How Forests Think: Toward an Anthropology Beyond the Human* Berkeley, Los Angeles and California: University of California

Kohn, E. 2015 Anthropology of Ontologies, *The Annual Review of Anthropology* 44:3 pp.11-27

Koinante, J. 2011 *Mukogodo, Mau and Kaya forests in Kenya*, International Expert Group Meeting: Indigenous Peoples and Forests, Department of Economic and Social Affairs [online] Available at www.un.org/esa/socdev/unpfii/documents/EGM_IPF_Koinante.doc

Kouwenhoven, L. 2016 *Quantum Europe 2016: A New Era of Technology* [online] Available at https://www.czelo.cz/files/Zapisy/QuantumEurope2016-report.pdf

Krapf, L. 1860 *Travels, Researches, and Missionary Labours, During an Eighteen Years' Residence in Eastern Africa* London: Trübner and Co

Krijtenburg, F. 2013 Keeping the Land Safe: Stakeholder conceptualisations of Protection in the Context of a Mijikenda (Kenya) World Heritage Site, in Evers, S., Seagle, C., and Krijtenburg, F. *Africa for Sale? Positioning the State, Land and Society in Foreign Large-Scale Land Acquisitions in Africa* Leiden; Boston: Brill NV pp. 275-301

KNAOR (Kenya National Assembly Official Record) 2007, *National Assembly Official Report* 13 June 2007 [online] Available at https://archive.org/details/bub_gb_rZ9enh3Y5ycC

KNBS (Kenya National Bureau of Statistics) 2018, *Kilifi County: Pulling Apart or Pooling Together* [online] Available at https://www.knbs.or.ke/download/kilifi-county-pdf/

Krause, F. 2016 "One Man's Flood Defense is Another Man's Flood": Relating Through Water Flows in Gloucestershire England, *Society and Natural Resources* 29:6 pp. 681-695

Krause, F., and Strang, V. 2016 Thinking Relationships Through Water, *Society and Natural Resources* 29:6 pp. 633-638

Krishna, A. 2010 *One Illness Away: Why Poor People Become Poor and How They Escape Poverty* Oxford, New York: Oxford University Press

Lahiri-Dutt, K. 2014 Beyond the Water-Land Binary in Geography: Water/Lands of Bengal Re-visioning Hybridity, *ACME: An International E-Journal for Critical Geographies.* 13: 3 pp. 505-529

Lamb, S. 2000 *White Saris and Sweet Mangoes: Aging, Gender and Body in North India* California: University of California Press

Lambert, N., Chen, Y.N., Cheng, Y.C., Li, CM., Chen, GY., and Nori, F. 2013 Quantum Biology, *Nature Physics* 9 pp.10-18

Lansing, S. 1987 Balinese 'Water Temples' and the Management of Irrigation, *American Anthropologist* 89: 2 pp. 326-341

Last, M. 2010 Ancient Labels and Categories: Exploring the 'Onomastics' of Kano, In *Being and Becoming Hausa*, eds. A. Haour and B. Rossi. Leiden: Brill, pp. 59–84

Last, M. 2011 Another Geography: Risks to Health as Perceived in a Deep-Rural Environment in Hausaland. *Anthropology and Medicine* 18, pp. 217–29

Latour, B. 1990 On Actor-Network Theory: A Few Clarifications Plus More Than a Few Complications, *Philosophia* 25: 3 and 4 pp.47-64

Latour, B. 1993 *We Have Never Been Modern* Harvard University Press: Harvard

Latour, B. 2014a Agency at the time of the Anthropocene, *New Literary History* 45 pp. 1-18

Latour, B. 2014b *Politics of Nature: How to Bring the Sciences into Democracy* Cambridge, Massachusetts: Harvard University Press

Law, J., and Lien, M. 2013 Slippery: Field Notes on Empirical Ontology, *Social Studies of Science* 43: 3 pp. 363-378

Leary, N., Adejuwon, J., Barros, V., Batimaa, P., Biagini, B., Burton, I. Chinvanno, S., Cruz, R., Dai, D., de Comarmond, A., Dougherty, B., Dube, P., Githeko, A., Abou,A., Hadid, A., Hellmuth, M., Kangalawe, R., Kulkarni, J., Kumar, M., Lasco, R., Mataki, M..,Medany,M., Mohsen, M., Nagy, G., Njie, M., Nkomo, J., Nyong,A.,O

sman, B., Sanjak, E., Seiler, R., Taylor, M., Travasso, M., von Maltitz, G., Wandiga, S., and Wehbe, M. 2007 *A Stitch in Time: Lessons for Climate Change Adaptation from the AIACC Project* AIACC working papers 48 [online] Available at http://www.aiaccproject.org/working_papers/Working%20Papers/AIACC_WP48_Leary_etal.pdf

Leslie, J. 2005 *Deep Water: The Epic Struggle over Dams, Displaced People, and the Environment* New York: Picador

Lévi-Strauss, C. 1962 *La Pensée Savage (The Savage Mind)* Oxford: Oxford University Press

Li, F. 2013 Contesting Equivalences: Controversies over Water and Mining in Peru and Chile, in Wagner, J. (ed.) *The Social Life of Water* New York, Oxford: Berghahn pp. 18-36

Lienhardt, G. 1961 *Divinity and Experience: The Religion on the Dinka* Oxford: Clarendon Press

Lloyd, R., Parr, B., Davies, S., Partridge, T., and Cooke, C. 2010 A Comparison of the Physiological Consequences of Head-loading and Back-loading for African and European Women, *European Journal of Applied Physiology* 109: 4 pp. 607–616

Locke, R. 2017 Elephants as Persons, Affective Apprenticeship, and Fieldwork with Nonhuman Informants in Nepal, *Hau: Journal of Ethnographic Theory* 7:1 pp. 353-376

Macdonald N, Phillips ID, Mayle G. 2010 Spatial and Temporal Variability of Flood Seasonality in Wales, *Hydrological Processes* 24: pp.1806–1820

Maghanga, B., Fungomeli, M., Muoria, P., Odera, G., Ng'weno, F., Mwamodenyi, M. J., Macharia, J. K., and Matiku, P. 2015 *Dakatcha Woodland Participatory Plan 2015-2019* Nature Kenya Publications [online] Available at https://issuu.com/nature_kenya/docs/dakatcha_woodland_participatory_man

Malafouris, L. 2013 *How Things Shape the Mind: A Theory of Material Engagement* Cambridge MA: MIT

Malinowski, B. 2002 [1922] *Argonauts of the Western Pacific* New York, Oxford: Routledge and Kegan Paul

Marchant, R. 2017 Dipole: The 'Indian Niño' that has Brought Devastating Drought to East Africa *The Conversation* [online] Available at http://theconversation.com/dipole-the-indian-nino-that-has-brought-devastating-drought-to-east-africa-74011

Marcus, G. E. 1995 Ethnography in/of the World System: The Emergence of Multi-sited Ethnography, *Annual Review of Anthropology* 24: pp. 95-117

Margulis, L. 1998 *The Symbiotic Planet: A New Look at Evolution* New York: Basic Books

Margulis, L., and Sagan, D. 2007 *Dazzle Gradually: Reflections on the Nature of Nature* Vermont: Chelsea Green Publishing

Masha, J. 2015 Police, 104, Suspected Witches Killed last Year in Kilifi, *Standard Media* [online] Available at http://www.standardmedia.co.ke/article/2000164513/police-104-suspected-witches-killed-last-year-in-kilifi

Massey, D. 2005 *For Space* London and Thousand Oaks, CA: SAGE

Masih, I., Maskey, S., Mussá, F. E. F., and Trambauer, P. 2014 A Review of Drought on the African Continent: a Geospatial and Long Term Perspective in Hydrology and Earth System Science, *Hydrological Earth Systems Science* 18 pp. 3635-3649 [online] Available at http://www.hydrol-earth-syst-sci.net/18/3635/2014/ doi:10.5194/hess-18-3635-2014

Mathur, A., and Da Cuhna, D. (eds.) 2014 *Design in the Terrain of Water* University of Pennsylvania: Pennsylvania

Mathur, A., and Da Cuhna, D. 2016 In the Terrain of Rain - Anuradha Mathur and Dilip da Cunha at Bengal Institute [online] Available at https://www.youtube.com/watch?v=I7A8Sz-yEWQ

Mateche, D. E. 2011 *Institute for Security Studies* [online] Available at https://www.issafrica.org/iss-today/the-cycle-of-drought-in-kenya-a-looming-humanitarian-crisis

Mauss, M. 2011 [1954] *The Gift: Forms and Functions of Exchange in Archaic Societies* US: Martino Fine Books

May, J. R., and Daly, E. 2015 *Global Environmental Constitutionalism* New York, Cambridge: Cambridge University Press

McCarthy, W. 2000a *Collapsium* New York: Bantum Books

McCarthy, W. 2000b Programmable Materials, *Nature: International Journal of Science* 407 p.569

McCarthy, W. 2003a *The Wellstone* New York: Bantam Doubleday Dell Publishing Group

McCarthy, W. 2003b Hacking Matter: *Levitating Chairs, Quantum Mirages, and the Infinite Weirdness of Programmable Atoms* New York: Basic Books

McIntosh, J. 2009a *The Edge of Islam: Power, Personhood, and Ethnoreligious Boundaries on the Kenya Coast* Duke Press

McIntosh, J. 2009b Elders and 'Frauds': Commodified Expertise and Politicized Authenticity among Mijikenda, *Africa: Journal of the International African Institute,* Vol. 79, No. 1,

Knowledge in Practice: Expertise and the Transmission of Knowledge (2009), pp. 35-52 Cambridge University Press on behalf of the International African Institute

McIntosh, J. 2016 *Unsettled: Denial and Belonging among White Kenyans* Oakland, CA: University of California Press

Meillassoux, C. 1981 *Maidens, Meal and Money: Capitalism and the Domestic* Community Cambridge: CUP

Metoffice.gov.uk 2018 Wales: Climate *Met Office* [online] Available at https://www.metoffice.gov.uk/climate/uk/regional-climates/wl

Ministry of Devolution and Planning, 2015 *National Policy for the Sustainable Development of Northern Kenya and other Arid Lands 'Unlocking Our Full Potential for Realization of the Kenya Vision 2030'* [online] Available at http://www.devolutionplanning.go.ke/wp-content/uploads/2015/04/DRAFT%20ASAL%20POLICY.pdf

Mitsi, S. and Nicol, A., 2013 *Good Practices in Water Development for Drylands* [online] Available at http://www.fao.org/fileadmin/user_upload/drought/docs/1_Good%20Practices%20in%20Water%20Development%20for%20Drylands_December%202013.pdf

Mol, A. 2008 I Eat an Apple. On Theorizing Subjectivities, *Subjectivity* 22 pp. 28–37

Moran, E. F. 2008 *Human Adaptability: An Introduction to Environmental Anthropology (3rd Ed.)* Philadelphia: WestView Press

Morton, F. R. 1977 New Evidence regarding the Shungwaya Myth of Miji Kenda Origins, *The International Journal of African Historical Studies* 10:4 pp. 628-643

Morton, T. 2010 *The Ecological Thought* Cambridge (MA); London: Harvard University Press

Morton, T. 2013 *Hyperobjects: Philosophy and Ecology after the End of the World* Minneapolis; London: University of Minnesota Press

Morton, T. 2016 *Dark Ecology: For a Logic of Future Coexistence* New York, Chichester: Columbia University press

Mosko, M. S. 1987 The Forest of "Symbols": A Structural Analysis of Mbuti Culture and Social Organization, *American Anthropologist* 89:4 pp. 896-913

Moutinho, P., and Schwartzman, S. (eds.) 2005 *Tropical Deforestation and Climate Change* Amazon Institute for Environmental Research Belém; Pará; Brazil: IPAM Instituto de Pesquisa Ambiental da Amazônia; Washington DC - USA : Environmental Defense

Mutoro, H.W. 1985 The Spatial Distribution of the Mijikenda Kaya Settlements on the

Hinterland Kenya Coast *TransAfrican Journal* 14, pp. 78-100

Narby, J. 1998 *The Cosmic Serpent: DNA and the Origins of Knowledge* New York: Putnam

Nation Team 2018 Death Toll Sources as Rains, Floods Leave a Trail of Destruction, *Kenya Daily Nation* [online] Available at https://www.nation.co.ke/counties/Rains-leave-more-pain/1107872-4536646-qn1o5dz/index.html

National Drought Early Warning Bulletin 2016 [online] Available at https://reliefweb.int/report/kenya/national-drought-early-warning-bulletin-december-2016

Neimanis, A. 2012 We Are All Bodies of Water, II: A Memoir. *Capricious: Water* 2: 13 New York: Capricious

Neimanis, A. 2017 *Bodies of Water: Posthuman Feminist Phenomenology* London, Oxford, New York: Bloomsbury

New, C. 1873 *Life, Wanderings and Labours in Eastern Africa*, 3rd edition London: Frank Cass and Company

Ngowa, N. J. 2016 Bring Back Vigango to their Rightful Locations, *Daily Nation* [online] Available at https://www.nation.co.ke/lifestyle/dn2/We-want-our-carvings-back/957860-3380422-3or9jl/index.html

Ngumbao, D. 2017 Police Launch Investigations into Killings over Witchcraft Allegations in Kilifi, *BarakaFM* [online] Available at http://barakafm.org/2017/06/09/police-launch-investigations-into-killings-over-witchcraft-allegations-in-kilifi/

Nguyen, P. Q., Botyanszki, Z., Tay, R. P.K., and Joshi, N. S. 2014 Programmable Biofilm-based Materials from Engineered Curli Nanofibre, *Nature Communications* 5: 4945 pp.1-10 [online] Available at https://www.nature.com/articles/ncomms5945

Nichols, W. J. 2014 *Blue Mind: How Water Makes You Happier, More Connected and Better at What You do* London: Little Brown

Nilsson, A. 2017 In Stockholm University Press Release *Water Exists as Two Different Liquids* [online] Available at https://www.su.se/english/about/news-and-events/press/press-releases/water-exists-as-two-different-liquids-1.338715

Ntimama, W. 1997 Declaration of Monuments under the Antiquities and Monuments Act 1997, Gazette Notice No.2444, *Kenya Gazette* Authority of the Republic of Kenya

Nyamweru, C., Kibet, S., Pakia, M., Cooke, J. A. 2008 The Kaya Forests of Coastal Kenya. "Remnant Patches" or "Dynamic Entities", in Sheridan, M.J., and Nyamweru, C. (eds.) *African Sacred Groves: Ecological Dynamics and Social Change* Oxford: James Curry pp. 63-86

Nyanchanga, N. E. 2016 *History of Water Supply and Governance in Kenya (1895-2005): Lessons and Futures* Tampere: Tampere University Press

Odgaard, R., Sjaastand, E., and Derman, B. (eds.) 2007 *Conflicts Over Land and Water in Africa*, Oxford: James Currey/East Lansing; Michigan State University Press, University of KawaZulu-Natal Press

Okoth, A. 2000 *A History of Africa: African Societies and the Establishment of Colonial Rule 1802-1915* Nairobi: East Africa Education Publishers

O'Leary, H. 2016 Between Stagnancy and Affluence: Reinterpreting Water Poverty and Domestic Flows in Delhi, India, *Society and Natural Resources* 29:6 pp.639-653

Online Etymology Dictionary 2018 Analysis (n) *Online Etymology Dictionary* [online] Available at https://www.etymonline.com/word/analysis

O'Reilly, E. J., and Olaya-Castro, A. 2014 Non-Classicality of the Molecular Vibrations Assisting Exciton Energy Transfer at Room Temperature, *Nature Communications* 5:3012 pp.1-10

Oxford Business Group 2018a *Oxford Business Group* [online] Available at https://oxfordbusinessgroup.com/about

Oxford Business Group 2018b Tourism Rises in Kenya Again, *Oxford Business Group* https://oxfordbusinessgroup.com/kenya-2017

Pakia, M. 1996 An Ethnobotany Survey of the Kaya Complex in Kwale District: a one year report (April 1995- January 1996) Nairobi, Coastal Forest Conservation Unit, National Museums of Kenya cited in Helm, R. 2004 Re-evaluating Traditional Histories on the Coast of Kenya: An Archaeological Perspective, in Reid, A. M., and Lane, P. J. (eds.) *African Historical Archaeologies* New York: Plenum Publishers pp. 59-89

Palmer, L. 2015 *Water Politics and Spiritual Ecology: Custom, Environmental Governance and Development* Routledge

Parkin, D. 1968 Medicines and Men of Influence, *Man* 3 pp. 424-39

Parkin, D. 1970 Politics of Ritual Syncretism: Islam Among the Non-Muslim Giriama of Kenya, *Africa* 40 pp.217– 33

Parkin, D. 1980 Kind Bridewealth and Hard Cash: Evening a Structure, In Comaroff, J. (ed.) *The Meaning of Marriage Payments* London and New York: Academic Press

Parkin, D. l982 Straightening the Paths from the Wilderness: Simultaneity and Sequencing in Divinatory Speech, *Paideuma* 28 pp.71-83

Parkin, D. l989 The Politics of Naming Among the Giriama, In Grillo, R. D. (ed.) *Social Anthropology and the Politics of Language* Sociological Review Monograph No. 36.

London and New York: Routledge

Parkin, D. 1991 *The Sacred Void: Spatial Images of Work and Ritual among the Giriama of Kenya* Cambridge and New York: Cambridge University Press

Parkin, D. 1995 Disputing Human Passion: The Negotiation of the Meaning of Love among the Giriama of Kenya, In Caplan, P. *Understanding Disputes: The Politics of Argument* Oxford: Berg

Petermatthews.org. n.d. *Artist Statement* [online] Available at http://petermatthews.org/about/

Pink, S. 2004 *Situating Everyday Life* LA, London, Washington, New Dehli, Singapore: Sage

Pink, S. 2015 *Doing Sensory Ethnography* (2nd ed) LA, London, Washington, New Dehli, Singapore: Sage

Pink, S., Horst, H., Postill, J. 2016 *Digital Ethnography: Principles and Practice* London: Sage

Pinker, S. 1994 *The Language Instinct* Harmondsworth: Penguin

Pitt-Rivers, J. 2012 The Law of Hospitality, *HAU: Journal of Ethnographic Theory* 2:1 pp. 501-517

Porter, D., Allen, B., and Thompson, G. 1991 *Development in Practice: Paved with Good Intentions* London: Routledge

Porter, G., Hampshire, K., Dunn, C. Hall, R., Levesley, M. Burton, B., Robson, S., Abane, A., Blell, M., and Panther, P. 2013 Health Impacts of Pedestrian Head-loading: A Review of the Evidence with Particular Reference to Women and Children in Sub-Saharan Africa, *Social Science & Medicine* 88 pp. 90–97

Povada, D. 2009 Parent and Ethnographer of Other Children, *Anthropology Matters* (SI) Vol 11:1 [online] Available at https://www.anthropologymatters.com/index.php/anth_matters/article/view/26/42

Prins, A. H. J. 2017 [1952] *The Coastal Tribes of the North Eastern Bantu: East Central Africa Part III. Ethnographic Survey of East Africa* New York, Oxon: Routledge

Purpura, A. 2009 Framing the Ephemeral, *African Arts*, Vol. 42, No. 3, Ephemeral Arts 1, pp. 11-1

Rahmen, E. in press Cooled, Cured and Sedimented: Reforming and Edifying the Hydrocentric Infants of North-western Amazonia, in Attala, L., and Steel, L. *Body Matters* Cardiff: University of Wales Press

Rainbird, P. 2007 *The Archaeology of Islands* Cambridge: Cambridge University Press

Rapport, N., and Overing, J. 2000 *Social and Cultural Anthropology: The Key Concepts*. New York, NY: Routledge

Rasmussen, M. B., and Orlove, B. 2018 Virtual Issue - Anthropologists Exploring Water in Social and Cultural Life: Introduction, *American Anthropologist* [online] Available at http://anthrosource.onlinelibrary.wiley.com/hub/journal/10.1111/(ISSN)1548-1433/exploring-water.html

Rawstern, R. 2003 Quantum Dots, Programmable Matter, and Wellstone: An Interview with Author Wil McCarthy, *Nanotechnology Now* [online] Available at http://www.nanotech-now.com/Wil-McCarthy-interview-06132003.htm

Reliefweb 2016 [online] Available at http://reliefweb.int/sites/reliefweb.int/files/resources/KE%20August%202016%20FSOU_Final_0.pdf

Reliefweb 2018 *UNICEF Kenya Humanitarian Situation Report*, 31 January 2018 [online] Available at https://reliefweb.int/report/kenya/unicef-kenya-humanitarian-situation-report-31-january-2018

Research Ethics Guidebook. N.d [online] Available at http://www.ethicsguidebook.ac.uk/Research-with-children-105

Reynolds, M. 2017 Why Should Work be a Baby-free zone?, *The Guardian* [online] Available at https://www.theguardian.com/commentisfree/2017/dec/01/work-baby-mothers-infants

Ritz, T., Adam, S., and Schutlen, K. 2000 A Model for Photoreceptor-based Magnetoreception in Birds, *Biophysical Journal* 78: 2 pp.707-718

Ritz, T., Thalau, P., Phillips, J. B., Wiltschko, R., and Wiltschkow, W. 2004 Resonance Effects Indicate a Radical Pair Mechanism for Avian Magnetic Compass, *Letters to Nature* 429 pp.177-180

Robben, A. C. G. M., and Sulka, J. A. (eds.) 2007 *Ethnographic Fieldwork: An Anthropological Reader* (2nd ed.) MA; Oxford; Victoria: Wiley Blackwell Publishing

Ruuska, E. 2013 Unsustainable Charcoal Production as a Contributing Factor to Woodland Fragmentation in Southeast Kenya, *Fennia* 191: 1 pp. 58-75

Sadoff, C. W., Borgomeo, E., and de Waal, D. 2018 *Turbulent Waters: Pursuing Water Security in Fragile Contexts,* Washington: World Bank Group [online] Available at http://documents.worldbank.org/curated/en/885171489432062054/pdf/113504-WP-P15770-PUBLIC-3-14-8am-W16005-eBook.pdf

Sagan, L. 1967 On the Origin of Mitoting Cells Journal of Theoretical Biology Vol. 14: 3 pp. 225-274, IN1-IN6

Sahlins, M. D. 1974 *Stone Age Economics* London, New York: Routledge

Sahlins, M. D. 2013 *What Kinship is ...and is Not* Chicago: University of Chicago Press

Santilli, M., Moutinho, P., Schwartzman, S., Nepstad, D., Curran, L., and Nobre, C. 2005 Tropical Deforestation and Kyoto Protocol, *Climatic Change*, 71: 3, pp. 267-76

Sapir, E. 1958 *Culture, Language and Personality* Berkeley: University of California Press

Schmidt, J. J. 2017 *Water: Abundance, Scarcity, and Security in the Age of Humanity* New York: New York University Press

Schneider, D. M. 1984 *A Critique of the Study of Kinship* Ann Arbor: University of Michigan Press

Schwenk, T. 1985 Das Wasser, Herausforderung an das Moderne Bewuβtsein [An Ethical Approach to Modern Thinking about Water] Sensibles Wasser 1 *Journal from the Insititue of Flow Sciences* [online] Available at https://stroemungsinstitut.de/schriftenreihe-sensibles-wasser/

Schwenk, T. 2014 *Sensitive Chaos: The Creation of Flowing Forms in Water and Air* Sussex: Sophia Books, Rudolf Steiner Press

Serres, M. 1992 Natural Contract *Critical Inquiry* Vol. 17: 3 pp.1-215

Shaw, S., and Francis, A. 2014 *Deep Blue: Critical Reflections on Nature, Religion and Water*. London: Routledge.

Sheldrake, R. 2004 *The Sense of Being Stared At: And Other Aspects of the Extended Mind* London: Random House, Arrow Books

de Silva, Y. P., and Ganegoda, G. U. 2016 New Trends of Digital Data Storage in DNA, *BioMed Research International* Article ID 8072463, pp.1-14

Simons, G. F., and Fennig, C. D. (eds.) 2014 *Ethnologue: Languages of the World, 21st edition* Dallas, Texas: SIL International [online] Available at www.ethnologue.com

Singh, N. 2006 Indigenous Water Management Systems: Interpreting Symbolic Dimensions in Common Property Resource Regimes, *Society and Natural Resources* 19:4 pp.357-366

Spear, T. T. 1977 Traditional Myths and Linguistic Analysis: Singwaya Revisited, In *History in Africa* 4 pp. 229-246

Spear, T. T. 1978 *The Kaya Complex: A History of the Mijikenda Peoples of the Kenya Coast to 1900* Nairobi: Kenya Literature Bureau.

Spiegal, J. B. 2013 Subterranean Flows: Water Contamination and the Politics of Visibility after the Bhopal Disaster, In Chen, C. MacLeod, J., and Neimanis, A. *Thinking with Water* Montreal and Kingston, London, Ithaca: McGill-Queen's University Press

Spinage, C. 2012 *The Changing Climate of Africa—Part I: Introduction and Eastern Africa. African Ecology—Benchmarks and Historical Perspectives*, Berlin; Heidelberg: Springer, pp. 57–141.

Stockholm University Press Release 2017 *Water Exists as Two Different Liquids* [online] Available at https://www.su.se/english/about/news-and-events/press/press-releases/water-exists-as-two-different-liquids-1.338715

Strang, V. 2004 *The Meaning of Water* Oxford, New York: Berg/Bloomsbury

Strang, V. 2005 Common Senses: Water, Sensory Experience and the Generation of Meaning, *Journal of Material Culture* 10:1 pp. 92-120

Strang, V. 2009 *Gardening the World: Agency, Identity and the Ownership of Water* New York, Oxford: Berghahn

Strang, V. 2010 The Summoning of Dragons: Ancestral Serpents and Indigenous Water Rights in Australia and New Zealand, *Anthropology News* 51:2 pp. 5-7

Strang, V. 2011 Representing Water: Visual Anthropology and Divergent Trajectories in Human Environmental Relations, *Anuário Antropológico* 11

Strang, V. 2013a Conceptual Relations: Water, Ideologies, and Theoretical Subversions, in Chen, C., Macleod, J., and Neimanis, A. *Thinking With Water* Montreal: McGill-Queens University Press pp. 185-211

Strang, V. 2013b Dam Nation: cubbie Station and the Waters of the Darling, in Wagner, J. *The Social Life of Water* Oxford, New York: Berghahn Books pp. 36-60

Strang, V. 2015 *Water: Nature and Culture* London: Reaktion Books/University of Chicago Press

Strathern, M. 1988 *Gender of the Gift: Problems with Women and Problems with Society in Melansia (Studies in Melansian Anthropology)* Berkley, LA, London: California University Press

Strathern, M. 1999 *Property, Substance and Effect: Anthropological Essays on Persons and Things*. London: Continuum.

Stoller, P., and Olkes, C. 1989 *In Sorcery's Shadow: A Memoir of Apprenticeship Among the Songhay of Niger* Chicago: Chicago University Press

Stone, L. 2001 *New Directions in Anthropological Kinship* Maryland: Rowman and Littlefield Publishers Inc

Stone, L. 2005 *Kinship and Gender*: *An Introduction* Boulder, Colorado: Westview Press

Swyngedouw. E. 2015 *Liquid Power: Contested Hydro-Modernities in Twentieth-Century Spain* Massachusetts, London: MIT

Taylor, W. E. (Rev.) 1891 *Giryama Vocabulary and Collections* London: Society for Promoting Christian Knowledge Northumberland Avenue WC

Taylor, W. E. (Rev.) 1891 *Giryama Vocabulary and Collections* London: Society for Promoting Christian Knowledge cited in Cashmore, T. R. E. 1961 A Note on the Chronology of the Wanyika, *Journal of Tanganyika Society,* Tanganyika Notes and Records no. 57, Dar es Salaam: Government Printer pp.153-172

Tao, H., Marelli, B., Yang, M., An, B., Onses, S., Rogers, J. A., Kaplan, D. L. and Omenetto, F. G. 2015 Inkjet Printing of Regenerated Silk Fibroin: From Printable Forms to Printable Functions, *Advanced Materials*. 27:29 pp.4273-9

Tegmark, M. 2015 Consciousness as Matter, *Chaos, Solitons and Fractals* 76 pp. 238-270

Thomas, W. 2013 *Hands Off Wales: Nationhood and Militancy* Llandysul: Gomer Press

Tibbits, S. 2017a *Self-Assembly Lab: Experiments in Programming Matter* New York: Routledge

Tibbits, S. 2017b *Active Matter* Cambridge MA/MIT Press

Tsing, A. L. 2015 *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* Princeton and Oxford: Princeton Books

Turnbull, T. 1987 *The Forest People* New York: Simon and Schuster

Turner, E. 1992 Experiencing Ritual: *A New Interpretation of African Healing* Pennsylvania: Univ of Pennsylvania Press

Tvedt, T., and Coopey, R. 2006 *A History of Water, Vol. 2: The Political Economy of Water* London: IB Tauris

UNDP.org 2011 Small-Scale Water Providers in Kenya: Predators or Providers? *Poverty Reduction and Environment and Energy*, *United Nations Development Programme* [online] Available at http://www.undp.org/content/dam/undp/library/Poverty%20Reduction/Inclusive%20development/Kenya%20paper(web).pdf

UNESCO. 2008 The World Heritage Convention Nomination Dossier for Inscription on the World Heritage List: *The Sacred Mijikenda Kaya Forests* (Kenya) [online] Available at http://whc.unesco.org/uploads/nominations/1231rev.pdf

UNESCO. 2016 *Sacred Mijikenda Kaya Forests* [online] Available at http://whc.unesco.org/en/list/1231

UN.org 2015a *Goal 7: Ensure Environmental Sustainability* [online] Available at http://www.un.org/millenniumgoals/environ.shtml

UN.org 2015b *The Millennium Development Goals Report 2015: Summary* [online] Available at http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20Summary%20web_english.pdf

UN.org 2016 [online] *Sustainable Development Goals: 17 Goals to Transform Our World* Available at http://www.un.org/sustainabledevelopment/sustainable-development-goals/

UN.org 2018 #EveryDrop Counts – A New Agenda and a Decade for Water Action [online] Available at https://www.un.org/development/desa/undesavoice/in-case-you-missed-it/2018/04/38941.html

UN-water 2014 [online] Available at http://www.unwater.org

Urry, J. 2005 The Complexity Turn *Theory, Culture & Society* SAGE 22:5 pp.1–14

US Department of State 2018 *Kenya Travel Advisory* [online] Available at https://travel.state.gov/content/travel/en/traveladvisories/traveladvisories/kenya-travel-advisory.html

Van der Tuin, I., and Dolphijn, R. 2010 'The Transversality of New Materialism'. *Women: A Cultural Review* 21.2: pp.153-71

Van Dooren, T. 2016 The Unwelcome Crows: Hospitality in the Anthropocene, *Angelaki: Journal of the Theoretical Humanities* 21:6 pp.193-212

Vedral, V. 2012 *Quantum Paradoxes* Physics and Philosophy: Arguments, Experiments and a few Things Inbetween, Department of Physics, Oxford University [online] Available at https://podcasts.ox.ac.uk/quantum-paradoxes

Vedral, V. 2013 *Living in a Quantum World* Wolfson College Podcasts, Wolfson College, Oxford University [online] Available at https://podcasts.ox.ac.uk/living-quantum-world

Vedral, V. 2015 *Living in a Quantum World* Oxford Martin School, Public Lectures and Seminars, Oxford University [online] Available at: https://podcasts.ox.ac.uk/living-quantum-world-0

Viveiros de Castro, E. 1998 Cosmological Deixis and Amerindian Perspectivism, *The Journal of the Royal Anthropological Institute* 4:3 pp. 469-488

Viveiros de Castro, Eduardo. 2012. Cosmological Perspectivism in Amazonia and Elsewhere. Masterclass Series 1. Manchester: *HAU Network of Ethnographic Theory*.

Vokes, R. (ed.) 2012 *Photography in Africa: Ethnographic Perspectives* Suffolk: James Currey

Waaijenberg, W. 1994 *Mijikenda Agriculture in Coast Province of Kenya: Peasants in Between Tradition, Ecology and Policy* [online] available at www.edepot.wur.nl/165798

Wagner, J. R. (ed.) 2013 *The Social Life of Water* New York, Oxford: Berghahn

Walsh, M. 1992 Mijikenda Origins: A Review of the Evidence, *Trans African Journal of History* Vol. 21, pp. 1-18

Wanza, C. N., and Njuguna, M. B. 2012 Designing for Sustainablity in Cultural Landscapes: The Kaya Kinodo Forest of the Mijikenda Community Kenya *Sustainable Futures: Architecture and Urbanism in the Global South* pp.159-166 [online] Available at http://sfc2012.org/wanza_njuguna.pdf

Warren, M. A. 2000 *Moral Status: Obligations to Persons and Other Living* Things Oxford: Oxford University Press

Water.org. 2015 [online] Available at http://water.org

Whatmore, S. 2002 *Hybrid Geographies: Natures Cultures Spaces* Sage, London

Whorf, B. L. 1940 Science and Linguistics *Technology Review* 35 pp.229-31

Weiner, A. 1988 *The Trobrianders of Papua New Guinea* Belmont, CA: Thompson-Wadsworth

Werbner, R. 1991 *Tears of the Dead: The Social Biography of an African Family* Edinburgh: Edinburgh University Press

West, H. G. 2007 *Ethnographic Sorcery* Chicago, London: University of Chicago Press

WFP.org 2016 *Food Security Analysis East Africa: The 2016 Season: Severe Drought in the Horn of Africa* [online] Available at http://reliefweb.int/sites/reliefweb.int/files/resources/wfp289530.pdf

Wilkens, A., Schwenk, W., and Jacobi, M. 2005 *Understanding Water: Developments from the Work of Theodore Schwenk* Edinburgh: Floris Books

Willis, J. 1993 *Mombasa, Swahili and the Making of the Mijikenda* Oxford: Clarendon Press

Willis, J. 1996 The Northern Kayas of the Mijikenda, *Azania: Archaeological Research in Africa* 31: 1 pp.75-98

Willis, J., and Gona, G. 2013 Tradition, Tribe and State in Kenya: The Mijikenda Uniion, 1945-1980 *Comparative Studies in Society and History,* 55:2 pp.448-473

Willis, J., and Miers, S. 1997 Becoming a Child of the House: Incorporation, Authority and Resistance in Giryama Society, *Journal of African History* 38 pp. 479-495

Witmore, C. 2014 Archaeology and the New Materialisms, *Journal of Contemporary Archaeology* 1 pp. 203-46

Worldagroforestry.org n.d. *Useful Trees and Shrubs for Kenya* [online] available at http://www.worldagroforestry.org/usefultrees/pdflib/Encephalartos_hildebrandtii_KEN.pdf

WorldVision.org. 2018a Mission and Values *World Vision* [online] Available at https://www.worldvision.org/about-us/mission-statement

WorldVision.org. 2018b 2017 Annual Report Brochure *World Vision* [online] Available at https://www.worldvision.org/wp-content/uploads/2018/01/2017-Annual-Report-Brochure.pdf

WWAP (United Nations World Water Assessment Programme). 2018 *The United Nations World Water Development Report 2018: Nature-Based Solutions.* Paris, UNESCO [online] Available at http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/wwdr/2018-nature-based-solutions/

Yaa, E. 2017 'Three People Killed in Kilifi on Witchcraft Claims' *The Star* [online] Available at http://www.the-star.co.ke/news/2017/06/07/three-people-killed-in-kilifi-on-witchcraft-claims_c1575303

Young, W. C. 2007 Arab Hospitality as a Rite of Incorporation: The Case of the Rashaayda Bedouin of Eastern Sudan, *Anthropos 102*:1 pp. 47-69

Zeleza, T. 1995 *Mijikenda* New York: Rosen Publishing Group