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HYDROLOGY OF THE POWERLESS

Ifor Duncan

Submitted To Goldsmiths, University Of London
As Required For The Degree Of Doctor Of Philosophy

Centre for Research Architecture
Department of Visual Cultures
Date: 30 September 2019

Declaration of Authorship

I _____ Ifor Duncan _____ hereby declare that this thesis and the work presented is largely my own but also contains research co-produced with colleague Stefanos Levidis, PhD Candidate (CRA). This is restricted to Part I: *Fluvial Frontier*. Where I have consulted the work of others, this is always clearly stated.

Signed: _____

_____ Date: 30/09/2019

Acknowledgements

Firstly, I want to thank my supervisors Susan Schuppli and Ayesha Hameed for their continued support and insight, and for the inspiration I take from their research and profound practices. I would also like to thank Astrid Schmetterling, with whom I started this process, for her generosity and kindness. I would also like to thank the staff of Visual Cultures and CRA for all of their help and guidance over the years, as well my upgrade examiners Shela Sheikh and Richard Crownshaw. Outside Goldsmiths I would like to thank Astrida Neimanis for the rich and productive conversation we were able to have in October 2018 during the Round Table I organised on Submergence, and Carolina Caycedo for the inspirational conversation we had in 2019 and for your courageous activist practice.

My friends and colleagues at the Centre for Research Architecture have been an invaluable and ongoing source of support and motivation. I thank you for sharing your own brave and innovative work: João Prates Ruivo, Hannah Meszaros Martin, Helene Kazan, Mirna Pedalo, Ariel Caine, Dele Adeyemo, Lorenzo Pezzani, Henry Bradley, Sophie Dyer, Solveig Suess, Blanca Pujals, Ariadna Serrahima, Elena Solis, Riccardo Badano and many many more. I couldn't think of a better person to share all of those bleary-eyed morning coffees in the final stages of write up than David Burns. I want to reserve special thanks to Daniel Mann for his valued insight and conversation, and to Sofia and Stefanos for those Halcyon days in the field in Greece and hopefully more still to come.

In Visual Cultures I thank Aimar Arriola and Sarah Charalambides for... well, being *the cavalry* when it was needed. Elsewhere at Goldsmiths: Sasha Litvintseva (for the animal videos), Annie Goh, Sandra Kazlauskaitė, Alex Coupe, Roberto Mozzachiodi and Peter Rees. Beyond Goldsmiths, I want to thank Geronimo Sarmiento Cruz and Nathaniel Barron, and all my other wonderful and joyous friends at home and abroad. I also want to thank Nile Davies for his ongoing care.

This research would not have been possible without the rivers I have lived in, above and with. So, I want to acknowledge the Thames, and the waters of the buried Effra, above which I was born and grew up, and have made their way into my dreams. I also want to thank the aquatic road names of Brixton partly responsible for my fascination with present and absent waters: Atlantic, Walcott, Electric, Coldharbour. Likewise, the lyrical rivers of west Wales have greatly influenced my thinking, especially, the Cych where I have spent so much time, and is said to harbor an entrance to the underworld. These acknowledgements would not be complete, however, without giving appreciation to the Evros / Meriç / Maritsa; the Cauca; and the Wisła, Soła, and Przemsza rivers and the communities who live with them, and those lost within their flows. May you flow in fairer times.

I want reserve special thanks for my family: Stephen, Marilyn, Bobby and Gabby. Without their love and unconditional support none of this would be possible (I also want to acknowledge the remarkable Snowy Bachgen who at 18 has seen me this far).

This is dedicated to my grandmother Beata Duncan (née Rehfisch), or just “Lala,” who we lost at the beginning of this process but who will always be with me in everything I do.

Finally, this is also to Lilli, Toni, Paul & Eve-Marie Stadthagen, whom I will always remember.

Abstract

This PhD project identifies the complex imbrications of political and environmental violence resulting in patterns of human bodies and remains washing up on the shores of three rivers. It seeks to demonstrate that, contrary to common abstractions and universalisations of water as empty and neutral, the materiality and fluvial processes of rivers are highly engineered and even weaponised. Part I, co-researched with colleague Stefanos Levidis (CRA), considers the Evros / Meriç / Maritsa river between Greece, Turkey and Bulgaria as a *Fluvial Frontier* weighted with riverine crossings and systematic illegal pushbacks at the border of the EU. Part II explores the condition of *Fluvial Terror* on the Cauca river in Colombia, where the dispossessions of local communities, through extractive processes, are further compounded by the obfuscation of paramilitary violence within the reservoir of the Hidroituango megadam. Part III reads the mobilisation of the confluence of the Wisła, Soła and Przemsza rivers, Poland, as a technology in the obfuscation of traces from the Auschwitz-Birkenau extermination camp and IG Farben chemical factory, as well as contemporary anthropogenic pollutants. In each case power organises, and is organised around, specific fluvial processes and hydrologic properties to disperse the causal agencies of violence enacted against subjugated and disempowered communities. Incorporating visual culture, testimony, field notes and hydrophonic soundings I employ a methodology that reads rivers across a multi-scalar spectrum from flood to drought, and from entire river catchments to the particulate scale of processes of saltation, accretion and erosion. This thesis, consequently, offers an alternative conceptualisation of rivers as complex and dynamic archives that resist attempts to erase acts of state and non-state violence, and instead continue to narrate and mediate the stories and traces of those who have been lost.

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TRIBUTARIES

CASE STUDY 1: EVROS / MERIÇ / MARITSA



Figure 1 The Graveyard at Sidiro (Ifor Duncan and Stefanos Levidis).

It was early evening when we¹ arrived at the “Cemetery for Illegal Aliens”²: a fenced area overlooking the village of Sidiro. The cemetery is no longer in use due to claims that unidentified people seeking asylum have been buried in mass graves here. On the day of our visit in February 2019 six empty graves were still flooded by winter rainwater. Border crossings increase between April when the Evros / Meriç / Maritsa’s spring floods recede and November when temperatures drop to between 7 and -1°C.³ After the floods bodies of border crossers re-emerge from the river amongst the sediment banks and islands of the delta, where the Evros / Meriç / Maritsa empties into the Aegean. The still water in the empty graves at Sidiro contributes to a mournful atmosphere and remain as unintentional memorials to those

¹ “We” refers to myself and my collaborator Stefanos Levidis, PhD candidate (CRA), with whom Part I of this thesis is co-researched. Sidiro is 20 km drive west from the old silk town of Soufli in Evros prefecture.

² “Illegal aliens” is a loose translation of the term *lathrometanastes*, a derogatory term used by xenophobic discourse to describe illegalized migrants. The use of the term was banned by law in 2018 but is still used widely, including from state officials.

³ Andreas Matzarakis, ‘Climate And Bioclimate Information For Tourism – The Example Of Evros Prefecture,’ in A. Matzarakis, C. R. de Freitas, D. Scott (eds.) *Developments in Tourism Climatology* (Commission on Climate, Tourism and Recreation, International Society of Biometeorology, 2007), p.14.

buried close by, those still submerged and yet to surface, and those continuing to cross the turbulent currents of the river. Contemplating these currents at the border I tape my hydrophones to a Y-shaped branch and place them into the still and silent water (see Figure 12).

(See USB key appendix. Also available at: <https://soundcloud.com/for-duncan/sidiro-grave-hydrophone-recording/s-HcL4f>)

CASE STUDY 2: CAUCA



Figure 2 Water Hyacinth growth (between February and July) on the surface of the Hidroituango reservoir near the town of Sabanalarga, Antioquia province, Colombia. Landsat 8 (band combination: 4-3-2) (17/07/2019) (Ifor Duncan).

A blanket of water hyacinths (*Eichhornia crassipes*) spreads across the surface of the reservoir of the Hidroituango megadam. Estimated to produce an annual average of 13,930 GWh, or 13% of Colombia's electricity needs, the 225 metre high embankment dam finally closed in February 2019.⁴ In addition to the displacement of tens of thousands of people the reservoir has submerged the sites, cemeteries, and remains of decades of paramilitary violence, including the massacres of June 1996 and October 1997.⁵ The closure of the final floodgates occurred despite seismic activity within the canyon into which the dam is set, threatening catastrophic flooding for hundreds of miles downstream. The heavy engineering and extraction of energy from the river's flow contributes to a multiplicity of hydrologic affects: water hyacinths in bloom mask the depletion of oxygen levels within the impounded water; downstream, thousands of fish writhe on the beaches of the receding river; while violence continues to be

⁴ Hidroeléctrica Ituango, Información General, available at: <https://www.hidroituango.com.co/hidroituango/accionistas/32#c30> (accessed February 2019).

⁵ Perpetrated by paramilitary groups with state collusion: Ituango Massacres v. Colombia, Inter-American Court of Human Rights (July 1 2006) available at: http://www.corteidh.or.cr/docs/casos/articulos/seriec_148_ing.pdf (accessed February 2019).

directed against members of Movimiento Ríos Vivos Antioquia (MRVA)⁶ and other river defenders.⁷ Through this lethal confluence the dam's vast embankment folds together the fluvial terror of paramilitary violence with the ecological atrophy of extraction. All conditioned by an ongoing anxiety of devastation downstream if the dam itself fails.

⁶ This specifically refers to the Antioquia branch of MRV, which has in recent months become autonomous from the national group.

⁷ Centre for International Environmental Law (CIEL), Re: Submission to Questionnaire on the Situation of Human Rights Defenders in the Americas: Environmental and Human Rights Defenders in Antioquia, Colombia (June 10 2019) p.4, available at: <https://www.ohchr.org/Documents/Countries/LAC/HRDAmericas/CIEL.pdf> (accessed June 2019).

CASE STUDY 3: WISŁA, SOŁA & PRZEMSKA



Figure 3 Map consulted during the testimony of Dr Otto Ambros, specifically when questioned in October 1946 on the location of the IG Farben Buna rubber works between Dwory and Monowice (Just right of “OŚWIĘCIM” on this map). *Mysłowitz und Oświęcim* (Vienna: Kuk Militärgeographisches Institut in Wien, 1905).⁸

15 thousand cubic metres of water an hour - the necessary volume of flow that Dr Otto Ambros, chairman of chemical conglomerate IG Farben’s⁹ Committee for rubber and plastics, calculated was required for a “Buna” rubber plant in 1941.¹⁰ Documents and testimonies of IG Farben defendants presented at the Nuremberg Military Tribunals state that the volume of water below the confluence of the Wisła, Soła and Przemsza rivers was sufficient, even at its minimum discharge of 6 m³/s (21,600 m³/hour), to locate the ‘draining works’ for dispersing the chemicals from what became sub-camp III-Monowitz of the Auschwitz-Birkenau complex.¹¹

⁸ The map is also reproduced by Debórah Dwork and Robert Jan van Pelt in their chapter on IG Farben’s presence at Auschwitz. Dwork & Jan van Pelt, *Auschwitz: 1270 to the Present* (New York: W.W. Norton & Co, 1996) p. 198.

⁹ Interessgemeinschaft Farbenindustrie Aktiengesellschaft (IG Farben). The major chemical company formed as the conglomeration of 6 corporations in 1925, and implicated at multiple levels within the war efforts of the National Socialist regime.

¹⁰ The testimony of defendant Dr Otto Ambros. Nuernburg Military Tribunals, “The Farben Case”, *Trials of War Criminals*, vol. 8 (Washington DC: Government Printing Office, 1952), p.735.

¹¹ Report of a conference between Farben representatives, including Ambros, and others from the Schlesien-Benzin company, 18 January 1941, document NI-11784 (prosecution exhibit) 1411. *Ibid*, p. 337.

In addition to the river's volume the site was identified for its access to coal from Silesia, rail infrastructure, and, what is referred to in IG Farben reports as, a 'reservoir of Jewish manpower.'¹² The attraction to this location in 1941 was thus access to the combination of enforced human, mineral, and riverine resources.

By 1944, the rivers had been appropriated as a technology for the obfuscation of an altogether more disturbing substance. It was in the summer of this year that hundreds of thousands of deportees from Hungary began to arrive at Auschwitz-Birkenau. The increased numbers initiated the development of alternative methods for discarding the remains of the cremated bodies. It was into these rivers (Soła at the immediate rear of Auschwitz I, Wisła a short distance from the rear of Auschwitz II Birkenau) that ashes and pulverized bone were scattered. Through a material politics of confluence, at once synthesising and differentiating, these rivers became a dynamic and *solvent* archive of radically distinct forms of violence: industrially fast genocide and the relative slowness of chemical pollutants. In this way the river archive is not fixed in relation to the past but offers a new spatio-temporal category of archiving whereby the river organises these traces, at varying scales of presence and absence, within the present.

¹² Translation of a letter from the Mineraloel-Baugesellschaft M. B. H. To defendant Ambros, 11 January 1941, document NI-11783 (prosecution exhibit) 1410. *Ibid*, p. 335.

INTRODUCTION

The three cases introduced above signal the primary concerns of this thesis: the production of political violence around river ecosystems. In a planetary context of environmental degradation this practice-based research generates a method for investigating rivers as hinges of dehumanising conflict. Where terrestrially biased knowledge systems abstract water in the interests of extraction, conceive of rivers as boundaries, or utilise them as technologies in the dispersal of incriminating remains, this thesis contributes to the emergence of wet and watery thinking, in the environmental humanities and geography, to examine the multiple ways water has been manipulated in the acts and aftermaths of violence. Thus, my aim in *Hydrology of the Powerless* is to advance the existing literatures of river politics, hydropolitics and hydrosociality, that bring rivers in from the periphery of territorial politics. Central to this contribution is an engagement with relational thinking that runs parallel with the conception of other possible worlds enabled by thinking the world relationally.¹³ This parallel course identifies how relationality is mobilised – directly and obliquely – in the technologies of conflict.

To explore rivers as, often unrecognised, spaces and processes of conflict I locate this project within critical literatures and practices that recast the political imperative of water. Previously, the cultural and political centring of watery space has been most extensively considered through the multiple politics of oceanic space.¹⁴ The character of this thesis, however, specifically addresses critical research concerning freshwater ecosystems, and particularly rivers, which might be termed a fluvial turn.¹⁵ A rise in research addressing riverine politics is

¹³ Foremost among such thinking are the contributions to the collected edition *Thinking With Water*, Cecelia Chen; Janine MacLeod; & Astrida Neimanis, (eds.), (Montreal: McGill-Queens University Press, 2013).

¹⁴ In ocean or maritime based research this turn has been variously described as a ‘blue turn,’ (Steve Mentz, ‘Toward a Blue Cultural Studies: The Sea, Maritime Culture, and Early Modern English Literature’, *Literature Compass* (2009) vol.6: 5, pp.997-1013.), ‘Oceanic Studies’ (Hester Blum, ‘Terraqueous Planet: The Case for Oceanic Studies’, in Amy J. Elias and Christian Moraru (eds.) *The Planetary Turn: Relationality and Geoaesthetics*, (Evanston IL: Northwestern University Press, 2015).) and ‘Ocean-region-based studies.’ (Philip Steinberg ‘Of Other Seas: Metaphors and Materialities in Maritime Regions’ *Atlantic Studies* (2013) 10:2, pp.156-169.) The ocean, specifically although not exclusively the Atlantic, has long been a central preoccupation in post-colonial theory through the traumas of the triangular slave trade (In the poetry of Derek Walcott and Kamau Brathwaite, as well as in Paul Gilroy’s pivotal work *The Black Atlantic: Modernity and Double Consciousness* (London: Verso, 1993)).

¹⁵ While my project does not intend to pursue this claim in depth, it is difficult to ignore the volume of recent river focused research in design and the environmental humanities, the following are only a few of these: Dilip Da Cunha, *The Invention of Rivers: Alexander’s Eye and Ganga’s Descent* (Philadelphia PA: University of Pennsylvania Press, 2018); Kelly, Scarpino, Berry, Syvitski, Meybeck eds., *Rivers of the Anthropocene* (Berkeley

in direct response to the perils faced by river ecosystems and their pivotal role within the formation of current and future life. Consequently, this research navigates between the natural sciences, more orthodox policy-based research produced in hydro-politics, the relational aspects of the hydrosocial, and eco- or hydro-feminist theory. Accommodating each of these fields, I foreground the role water plays not only as the cause or result of political violence but more specifically how it is mobilised as a tool or medium of conflict and oppression across each of the distinct cases of this thesis.

Access to fresh water is typically recognised as foundational to human rights. The United Nations often cite it as a fundamental, or even inalienable, human right. Indeed, access to water resources has been established as the ‘bedrock of social and economic rights,’¹⁶ and ‘indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights.’¹⁷ However, where water is made scarce, polluted or access is inhibited by the processes of anthropogenic climate change, the realisation of such ‘universal’ rights is almost impossible.¹⁸ Here I propose that far from being actualised as a human right, water is not inalienable but made to be *alienating* through its weaponisation against subjugated communities. This is no more acutely evident than in the three rivers explored here, in each case culminating in both the submergence and emergence of human remains from river systems.

The dispersed and submerged corporeal remains resulting from such violence often return to the surface in unexpected ways, including seasonal hydrologic variations from flooding to drought. This presages one of the driving questions of this project: what are the conditions that

CA: University of California Press, 2017); Timothy Neale, *Wild Articulations: Environmentalism and Indigeneity in northern Australia* (Honolulu HI: University of Hawai’i Press, 2017); Jerome Whittington, *Anthropogenic Rivers: The Production of Uncertainty in Lao Hydropower* (Ithaca NY: Cornell UP, 2018).

¹⁶ United Nations Development Programme (UNDP), *Integrating Human Rights with Sustainable Development. United Nations Development Programme.* (New York: United Nations, 1998).

¹⁷ United Nations Economic and Social Council (UNESCO), ‘General Comment No. 15. *The Right To Water*’ (New York: UN Committee on Economic, Social and Cultural Rights, 2003).

¹⁸ Such failures are unevenly distributed across regional, socio-racial and gendered boundaries. See Erik Swyngedouw, ‘The Political Economy and Political Ecology of the Hydro-Social Cycle’ *Journal Of Contemporary Water Research & Education*, (2009) 142, p.57. Feminist theorist of Hydrological thinking Astrida Neimanis describes a similar condition, citing the right to water as the ‘cornerstone for realizing all other human rights,’ in ‘Bodies of Water, Human Rights and the Hydrocommons,’ *Topia* (2009) 21, pp.161-182, p.169. Anthropologist of water rights, Andrea Ballestro places the commodification of fresh water as diametrically opposed to human rights, *A Future History of Water* (Durham NC: Duke University Press, 2019) p.1.

make the weaponisation of rivers possible? What does the existence of dead bodies in rivers reveal about the specific hydro-social formations of each context? These questions outline the inextricable relation between political and hydro-social conditions.¹⁹ Likewise, they echo the question raised by MRVA and Colombian forensic NGO EQUITAS in their challenge to the completion of the Hidroituango megadam: ‘*What are the cultural and social implications of the phenomenon of the "floating body", within the violent context of Colombia?*’²⁰ Or, more simply put, by seminal anthropologist of indigenous and Afro-Colombian cultures Michael Taussig, ‘*Why do they put the bodies in the river?*’²¹ Consequently, it is both the rivers themselves and the floating and submerged bodies – disarticulated, decomposing, particulate – that are the central axes around which each case of this thesis pivots. In other words, bodies and their remains are thrown into rivers to co-opt the agency of the river’s transportation flows, erosion, and dispersal in the attempt to consign these traces to what is culturally received as a subaqueous oblivion. This condition, however, is even more complex. Where Dilip Da Cunha, decolonial theorist of watery ecosystems, traces the colonial history of the drawing of cartographic lines and their bounding of rivers as an epistemological violence with environmental affects, in the cases of this thesis I identify how States, and other actors, outwardly maintain this division whilst simultaneously blurring such distinctions and exploiting the ways the relationship between water and land is always more than this. Consequently, by thinking of rivers in an expanded sense as I do in this thesis – through their entire hydrologic range from upstream to downstream, from their central courses through to the ground waters of floodplains, and including the volume of waters exceeding the surface of rivers as fog and mist – enables a greater critical perception of the various forms of violence that take place around and through river systems.²² As I will discuss later in this introduction,

¹⁹ Eco-Feminist thinker Stefanie Lavau equates this to the ontological multiplicity of rivers, where the reality of each river is the result of ‘particular sociomaterial orderings.’ Lavau, ‘Going With the Flow: Sustainable Water Management As Ontological Cleaving,’ *Environment and Planning D: Society and Space* (2013) 31, pp. 416–433, p.424. This is a relational politics expounded in David Harvey’s claim that objects only exist in relation with other objects, even if this relation is uneven. Harvey, ‘Social Justice and the City’, (Athens G.A., University of Georgia Press, 1973) p.13; Swyngedouw, (2009), p.59

²⁰ ‘Observation And Verification Mission On The Searching Conditions Of Disappeared Persons And The Preservation Of Areas Where Unidentified Bodies Are Presumably Buried, Along The Course Of The Cauca River, Antioquia, Colombia, 15th To 23rd Of January Of 2018’ available at: https://www.business-humanrights.org/sites/default/files/documents/Informe_Misio%CC%81n_Final-A.pdf (Accessed March 2019)

²¹ Michael Taussig, ‘Excelente Zona Social,’ *Cultural Anthropology*, (2012) 27:3, pp. 498–517, p. 513. He returns to this question in *Palma Africana* (Chicago IL: University of Chicago Press, 2018) p.21.

²² Forensic Oceanography use the term ‘Liquid Violence’ – title of their exhibition at Manifesta-12 in the Palazzo Forcella De Seta, Palermo, Italy 2018 - to address the ‘political, spatial and aesthetic conditions’ that have made the Mediterranean sea deadly for the movement of migrants.

it is by conversely paying critical attention to rivers as watery spectrums that present moments of resistance where potentially incriminating remains wash up on the shore downstream.²³

The presence of dead bodies within these waters reflects the confluent politics of violent affects manifesting in multiple forms in each case of this thesis, namely: *Frontier*, *Terror*, and *Trace*. Consequently, the thesis is organised into three parts corresponding to these three forms. Each part is then subdivided into sections that narrate the conditions of each river. Part I, *Fluvial Frontier*, researched in collaboration with colleague Stefanos Levidis, considers the type of transboundary water produced in the Evros/Meriç/Maritsa river at the border of the EU between Greece, Turkey and Bulgaria. Bolstered by the conception of rivers as ‘arcifinious’ – geophysical characteristics deemed to be inherently defensive or ‘fit to keep the enemy out’ – this frontier water is characterised by regular flooding, unregulated pollution and deadly velocities. Here anthropogenic interventions and policy decisions accentuate the river’s treacherous – or arcifinious – characteristics. These concealed dangers are weaponised in the production of increasingly perilous migration routes. In the case of Colombia (part II) those who throw bodies into rivers also know that rivers do not only erase trace, rather they calculate that some of these bodies will travel downstream and wash up on beaches to strike fear into local communities. This fear is heightened, in the case of rural Colombia, where rivers are often pivotal features in the cultural and social production of community.²⁴ In cases where massacres occur near to rivers, or bodies wash up on nearby beaches, they become places of suffering and desolation.²⁵ This is a specific form of terror produced in relation to territory²⁶: a strategy that

²³ Karen Bakker refers to this as the importance of understanding the materiality of water to decenter its reduction to the will of human intention. In this way the question of agency is central to the concept of socio-natures and their ‘unpredictability, unruliness, and in some cases resistance.’ Bakker’s words are important here, as I will develop later, unpredictability and unruliness is not only important for understanding how water resists ‘control’ but, perhaps conversely, is actually calculated into forms of control and the technologization of rivers as weapons. Karen Bakker, ‘Water: Political, biopolitical, material,’ *Social Studies of Science* (2012), 42:4, pp.616-623, p.621.

²⁴ Ulrich Oslender identifies an ‘aquatic sense of place’ specifically for Afro-Colombian communities of the pacific coast, incorporating ‘high levels of precipitation, large tidal ranges, intricate river networks, mangrove swamps and frequent inundations.’ Oslender, “Fleshing out the Geographies of social Movements: Black communities on the Colombian Pacific Coast and the aquatic space,” *Political geography* (2001) 23:8, pp.957-985, p.959.

²⁵ Maria Victoria Uribe, ‘Dismembering and Expelling: Semantics of Political Terror in Colombia’ *Public Culture* (2004) 16:1 pp.79-95, p.90.

²⁶ There is a range of literature on the relation between terror and territory. Primarily: Stuart Elden’s *Terror and Territory: The Spatial Extent of Sovereignty* (Minneapolis MN: University of Minnesota Press, 2009) and Derek Gregory and Allan Pred’s edited volume *Violent Geographies: Fear, Terror, and Political Violence*

employs geographical elements in violent acts to produce a disjunction between communities and their riverine sense of place – often resulting in displacement from rural areas to cities as a result.²⁷ Fear is produced through the harnessing of both the predictability and unpredictability of river processes and the possible re-emergence of bodies downstream. What I identify as *Fluvial Terror* has often prefigured the development of major infrastructure projects in Colombia.²⁸ In this part the extractive transformation of the Cauca river is explored through the imbrications of tens of thousands of gigawatts of energy, the dispossession of tens of thousands of people, a history of paramilitary violence, and fear of the dam's potential collapse. Part III, *Fluvial Trace*, enters through contemporary drought patterns to narrate the instrumentalisation of the meeting of the Wisła, Soła and Przemsza rivers in Poland to disperse the traces of genocide in differentiated material and temporal confluence with anthropogenic pollutants. Here the river's processes become a lens through which to perceive how soluble materials form an unexpected and transient archive in solvent waters. In this way I intervene the very concept of the archive through the dual absence and presence of trace within riverine ecosystems.

I explore these fluvial forms through a multi-disciplinary fieldwork practice focusing on rivers and their dynamic processes.²⁹ In these cases rivers are used both for the purposes of disappearance and are themselves disappeared – where access to, or sight of, the water is controlled by military surveillance (as at the Evros), or where rivers are unrecognisably transformed into reservoirs upstream and dramatically lowered flows downstream (as on the Cauca). It has thus been necessary to employ multiple methods and entry points to expose the

(New York: Routledge, 2006) both responses to Susan Cutter, Douglas Richardson and Thomas Wilbanks's collected book *The Geographical Dimensions of Terrorism* (New York: Routledge, 2003) which placed its focus on the immediate aftermath of 9/11 before the extents of the "war on terror" began to be recognized in the above volumes. The contributors to Gregory and Pred's book, as well as Elden's work, offer more politically and geographically expanded understandings of the territorial concerns of terrorism beyond the context of the 9/11 attacks.

²⁷ Ulrich Oslender, 'Spaces of Terror and Fear on Colombia's Pacific Coast,' in Gregory and Pred (eds) *Violent Geographies* (2006), pp. 111-132, p. 121.; Maria Victoria Uribe describes the exhibition of violence in Colombia as the production of terror with the intention of scaring rural communities from their lands. Uribe, 'Dismembering and Expelling: Semantics of Political Terror in Colombia' *Public Culture* (2004) 16:1 pp.79-95, p.78, p.89; See also, GMH, *Basta Ya! Colombia: Memories of War and Dignity*, pp.341-343.

²⁸ Michael Taussig points this out in relation to paramilitary violence presaging the expansion of palm plantation mega projects in drained swamp land. Michael Taussig, *Palma Africana* (Chicago: University of Chicago Press, 2018) p.23.

²⁹ A project that incorporates such a multiplicity of contents requires an inter-disciplinary approach marshalling multiple literatures. These include but are not restricted to theory from the environmental humanities, river management policy, critical border studies, decolonial approaches to extraction, and genocide studies.

calculations made by the perpetrators of violence that conceive of rivers as watery environments expanded beyond their banks. This method is most prominent in Part I, *Fluvial Frontier*, where it is realised in field notes and sketches, photography, and hydrophone soundings. The process of writing field notes is, in its own way, fragmented and anecdotal, with various passages and trains of thought overlapping in a montage form. The field notes (found in full in the appendix) try to reflect, or stay “true”, to my own process. The notes, sketches, and images collected here provide an insight into the ways ideas and thinking emerge and take shape within, and in direct response to, the field. Many of the passages are written in the car between locations or while walking through a site and are often rushed to get them down before the road gets too uneven and writing becomes impossible. Consequently, some passages are in more polished form than others. Beyond this, I try to write with the rivers but also in response to materials and contents they bring into conversation. Perhaps this method can be thought of much like the confluent politics of the rivers themselves, as the braiding of external influences – strands passing over and under, or within and without of one another. When one comes to prominence others recede before returning again further down the braid.

Conditioned by their own productive gaps, particularly in relation to the fatal contexts of such rivers, these methods piece together the concealment of trace within fluvial process.³⁰ These encounters enable a situated practice to reflect on the paradox of river environments as records of the attempted erasures of both cultural memory and physical trace. However, due to ongoing tension surrounding Hidroituango, in addition to practical limitations, I have not been able to conduct fieldwork in Colombia. From the position of geographic and cultural remove, part II, *Fluvial Terror*, reads this heavily impacted case primarily through human rights reports, documentation from evidence gathering missions, and artistic and activist practices challenging the ongoing legacies of river disappearance and its entanglement with hydropower development. In this way I attempt to identify the production of terror through, and relating to, human intervention in the river. Despite the research limitations specific to each river, this practice is developed to explore water not as material absence but as sensorial spaces and processes that are at once dispersed yet dense with traces carried within their currents.

³⁰ I think these productive inadequacies alongside Michael Taussig’s approach to the fieldwork diary as ‘built upon a sense of failure – a foreboding sense that the writing is always inadequate to the experience it records.’ Or indeed cannot record. Michael Taussig, *I Swear I saw This: Drawings in Fieldwork Notebooks, Namely My Own* (Chicago IL: University of Chicago Press, 2011) p.100.

Certain questions regarding the approach to practice arise when contemplating these heavy waters and their material complexity, or, for example, the intentions behind submerging a hydrophone within an empty flooded grave? Perhaps these are gestures towards an impulse to fill the rivers with cultural information when the common assumption is that they are empty. However, I lean towards another answer: rather than clarity this practice stresses the political and material thicknesses constituted within river currents. Thus sound, even at an ambient register, like an image taken within turbid water (figure 24 & 25), offers an entry into spaces which are often entirely unmediated.³¹ Dense yet mobile, these spaces transmit the aftermaths of violence at sensible and insensible scales.³² The challenge and complexity of exploring such cases is no more evident than in the work of artists who embed their practises within frontline river activism. This includes artist and activist Carolina Caycedo, an important interlocutor in this research (extracts from our conversation are included in part II), who adopts *submerged* methods to counter the very *submergence* and dispossession produced by hydropower (figure 26).³³ Elsewhere, the cusp of material sensibility is present in Elżbieta Janicka's work *Odd Place*, which attempts to locate the ephemeral remains of ashes encoded within an airborne environment for over 70 years (figure 43). Exploring these fissures in the onto-epistemic othering of subaqueous space, through a sensibility attuned to the confluent politics of river processes, makes it possible to discern the multiple ways bodies (migrant bodies, indigenous and rural bodies, religiously persecuted bodies) are marginalized, as they are most viscerally in these cases when they are discarded into river undercurrents.³⁴ To develop such a sensibility

³¹ Macarena Gómez-Barris, *The Extractive Zone: Social Ecologies and Decolonial Perspectives* (Durham NC: Duke University Press, 2017), p.100.

³² Kathryn Yussof makes the important instruction to remain with the insensible, particularly in the case of the deep ocean, so as not to disregard the sites and spaces within which mass extinction occurs. 'Insensible Worlds: Postrelational Ethics, Indeterminacy And The (K)Nots Of Relating,' *Environment and Planning D: Society and Space* (2013) 31, pp.208 – 226.

³³ Gómez-Barris, (2017) p.93.

³⁴ Such exclusion identifies the overlaps of rivers and conflict as an Anthropocenic condition. The Anthropocene has a particular and increasing relevance for river ecosystems, as the engineering and pollution of these systems signal the forces and residues of capital and industrialisation. Likewise, the uneven consequences of Anthropocenic forces are most acutely felt in relation with rivers and fresh water ecosystems. Kelly et al. eds., (2017). This form of exclusion equates to a long line of research into the spatial exclusion of racialised bodies, recently addressed in Kathryn Yussof's identification of the exclusion of black and brown bodies through practices of extractive colonialism through humanist developments of scientific discipline – specifically geology. Kathryn Yussof, *A Billion Black Anthropocenes or None* (Minneapolis MN: University of Minnesota Press, 2018) p.18.

requires adjusting ones imaginary to the material and processual specificities of these subaqueous spaces.

Consequently, I place this research, sometimes critically, within the context of relational thinking with water. Asking how thinking *with*,³⁵ around, and through river ecosystems can reveal the workings of ecologically obscured spaces of political violence? And if water is a relational and all-pervasive material what does it mean for thinking conflict in relation to water bodies? By relational and pervasive I take my cue from Dilip Da Cunha and Anuradha Mathur's conception of the world in a moment of wetness, where watery environments are not marginal but in the air and all around the human subject.³⁶ As well Astrida Neimanis's writing on becoming a body of water, where she takes such thinking a step further by emphasising the cycles of embodiment humans are engaged in with the world through water's material flow and the porosity of skin.³⁷ To think of watery ecosystems in such an expanded way requires a reassessment of the realm of water as a site and process of political violence, one that is equally dispersed and constitutive. By thinking in this way I perceive rivers as a weaponized in a relational sense which is dispersed everywhere within the river basin and atmosphere – including as embodied by the subjects who are the target of this instrumentalization of water. Before returning to this way of thinking the world as co-constitutively constructed with water bodies, I will now consider how this project sits in relation to existing literature on rivers and their relations with conflict.

From the Hydropolitical to the Hydrosocial

³⁵ Especially productive for thinking with water as a quintessentially relational substance, within wider political spheres are the contributions to: Cecelia Chen; Janine MacLeod; & Astrida Neimanis, (eds.), *Thinking With Water* (Montreal: McGill-Queens University Press, 2013). Elsewhere, Stacy Alaimo's understanding of the trans-corporeal relation of the human with flows of substance and environment. Stacy Alaimo, 'States of Suspension: Trans-corporeality at Sea' *Interdisciplinary Studies in Literature and Environment* (2012) 19:3, pp.476-493. Nancy Tuana also conceives of 'viscous porosity,' which has helped me to narrate political conditions through both intertwined yet distinct human and non-human relations. Tuana, 'Viscous Porosity: Witnessing Katrina,' in Stacy Alaimo & Susan J. Hekman (eds.) *Material Feminisms*, (Bloomington IN: Indiana UP, 2008) pp.188-213.

³⁶ GIDEST, *Anuradha Mathur and Dilip da Cunha - Wetness Everywhere*. [Online Video] (7 August 2017) Available at: <https://vimeo.com/228719234>. (Accessed: 1 March 2018). The musician and Anthropologist Claudio Mercado goes to the extreme in thinking the world as water within the context of the genocide and epistemicide of the archipelagic indigenous groups of Patagonia's Tierra del Fuego coast, in Patricio Guzmán's 2015 film *The Pearl Button*. He says: 'what we call "earth" is actually water. Our bodies are made of water, plants are water, so everything's water, with bits of something more solid: earth, stones, or bones. But everything is water. What we breathe is also water.' Patricio Guzmán, *El botón de nácar (The Pearl Button)*, (Chile: new Wave Films, 2015).

³⁷ Astrida Neimanis, *Bodies of Water: Posthuman Feminist Phenomenology* (London: Bloomsbury, 2017).

It is important at this early juncture to identify the existing literature on water and conflict and situate this project in relation to such discourses. In political geography, water and conflict has been primarily considered through hydrogeopolitics. The discourses within this field are notably split along two main strands: the first emerged in the 1980s, focusing primarily on the “middle east”, and proposed the seemingly inevitable relationship between the scarcity of water resources, or the deterioration of its quality, and the emergence of conflict.³⁸ The second, led by primarily by Aaron T. Wolf, Peter H. Gleick, Daanish Mustafa amongst others, contest the previous position as overly simplifying a more nuanced political condition. It is this second strand that I will focus on here as it is the divergent typologies relating to how water relates to conflict that informs this thesis. These authors consider the first strand to reproduce neo-Malthusian arguments that can, in the wrong hands, feed discourses of division and contribute to the re-production of the very conflicts that they are researching through pervasive misconception that scarcity will inevitably result in conflict. In response, Wolf and his colleagues provide empirical data to show that rather than leading to inevitable conflict, water concerns are more likely to lead to collaboration and cooperation.³⁹

In his own summation of the state of both of these discourses, geographer Philip Stucki comes to a similar conclusion, redressing the 1980s paradigm of the water wars nexus that heralded a shift of conflict away from theological or ethnic divisions, in the middle east in particular, to conflict explicitly over access to resources.⁴⁰ As Stucki outlines, much of this earlier literature fails to accommodate for changes to the wider context of conflict, limiting their analytical scope to water resources only, without accounting for the position of water within wider political conditions and processes.⁴¹ Stucki, in particular, argues, that while academic discourse

³⁸ This was a popular position in the 1980s. Those who make this argument include, Westing A.H., *Global resources and international conflict: Environmental factors in strategic policy and action* (Oxford: Oxford University Press, 1986); John K. Cooley, ‘The War over Water’, *Foreign Policy* (1984) 54, pp.3-26.; John Bulloch and Adel Darwish, *Water Wars. Coming Conflicts in the Middle East* (London: Weidenfeld & Nicholson, 1993).

³⁹ Aaron T. Wolf & Jerome Delli Priscoli, *Managing and Transforming Water Conflicts* (Cambridge: Cambridge University Press, 2009).

⁴⁰ Philipp Stucki, ‘Water Wars or Water Peace?: rethinking the Nexus between Water scarcity and Armed Conflict,’ *Programme for Strategic and International Security Studies Occasional Paper*, no.3, (Geneva: PSIS, 2005).

⁴¹ *Ibid*, p.15.

has shifted away from the neo-malthusian stance of the 1980s to a discourse that re-centres water's potential role in peace efforts and trans-national cooperation, mainstream media coverage has maintained the belief that scarcity contributes to conflict. Such a prevailing media trend can be attributed to nationalist media coverage that gloss over internal disputes regarding equal water allocation in favour of producing the image of a struggle for survival against an external threat.

Daanish Mustafa, however, has increasingly shifted away from the association of water with conflict, whether transboundary or concerning military or economic factors. Instead, he suggests that addressing the overlaps of hydropolitics and security should primarily focus on the production of conditions where the lack of water, as a material basis for life, is a direct threat to human populations on a local scale, in his case specifically the Indus basin.⁴² Geographer of urban hydrosocial formations, Erik Swyngedouw echoes this sentiment in his use of the term 'water violence' to refer to the outbreak of conflict around scarcity or price rises between those in need of water and the authorities controlling access to it.⁴³ For Mustafa, literature that considers water scarcity to translate directly into conflict tends to remain at a transboundary level. As Stucki also points out above, Mustafa identifies a failure in the 1980s literature of the water-wars-nexus to sufficiently accommodate for internal or domestic social power relations and inequalities prevailing in internal water management in favour of prioritising external threats at a geopolitical level.⁴⁴ In doing so Mustafa gains a better grasp of who controls access to resources rather than assuming scarcity is experienced evenly.⁴⁵ In this

⁴² Jon Martin Trolldalen also addresses the relationship between internal and external dynamics of water politics in the chapter 'International River Systems' in his book *International Environmental Conflict Resolution* (Wfed-World Foundation for Environment and Development, 1992). Trolldalen, however, states that internal struggles are microcosms of broader geopolitical issues. Thus, nation states are not homogeneous but always a combination of multiple interests. In the case of this project, not all Greeks are anti-immigration, however, the current Greek government pursues an anti-immigrant agenda. In the Colombian context, hydropower might well be supported by millions of Colombians – yet it is the same rural communities that are repeatedly exploited as a result.

⁴³ Erik Swyngedouw, *Social Power and the Urbanization of Water* (Oxford: Oxford University Press, 2004) p.4; p.153.

⁴⁴ Daanish Mustafa, 'Social Construction of Hydropolitics: The Geographical Scales of Water and Security in the Indus Basin,' *The Geographical Review* 97: 4 (2007), pp.484-501, p.486.

⁴⁵ Daanish Mustafa, 'Linking Access and Vulnerability: Perceptions of Irrigation and Flood Management in Pakistan,' *Professional Geographer* (2002) 54:I pp.94-105; See also Jessica Budds, 'Power, Nature and Neoliberalism: The Political Ecology of Water in Chile,' *Singapore Journal of Tropical Geography* (2004) 25:3, pp.322-342.

way internal inequalities are deflected by those who reproduce fear of the external other – beyond the border – and assimilating water scarcity into an adversarial ecological imaginary rather than a critique of internal resource inequalities.

Writing in this way, Mustafa grounds his research in the belief that, rather than natural, the elements invested in the nexus are socially constructed, whether they be ‘environmental degradation, resource scarcity or security’.⁴⁶ These have social and physical consequences but not ones that inherently lead to conflict. There may well be value in both arguments, and perhaps a balance is to be struck between the more deterministic approach and that which incorporates more nuanced thinking on both internal and wider-geopolitical conditions. As explored in part I, the Evros/Meriç river is a continuing flash point of geopolitical concern not initially because it is a river but because it, as a river, was identified as a strategic point in an already tense conflict between nation states and broader geopolitical powers. Over time, the crystallisation of the river as a border brings the specifics of its materiality – its propensity to flood, its flow rates, the behavior of sediment forming islands and shifting across the lines of demarcation – into play as elements of a defensive architecture. This proffers reciprocal material and temporal relationships that result from the choice of a water body, or any geophysical feature for that matter, as a border demarcation.⁴⁷ Consequently, water as a resource is not necessarily paramount in the following, rather water’s material characteristics, in an expanded sense, are themselves considered to be crucial components of the production of conflict at borders. In other words, water is not necessarily a resource fought over but, as I will develop later in this introduction, the very medium of conflict itself.

Underlying the discourse in hydropolitics is a debate about the definition of what should be counted as a water war or conflict. For example, Aaron Wolf and Jerome Delli Priscoli employ a limited understanding of what can be called a water war prioritising cases where conflict occurs over access to water as a resource, limiting access to ports, fishing or boundaries.⁴⁸

⁴⁶ *Ibid*, p.488.

⁴⁷ For more on this in the context of Climate change see the impressive project Marco Ferrari, Elisa Pasqual, Andrea Bagnato, *A Moving Border: Alpine Cartographies of Climate Change* (New York: Columbia University Press, 2018).

⁴⁸ Delli Priscoli & Wolf, (2009), p.12.

They also exclude cases where water is ‘a tool, target or victim’.⁴⁹ For Wolf these are not truly *water wars*. So limited is his definition in fact that he and Delli Priscoli only identify one true case, which is 4,500 year old. Wolf makes such a clear distinction in the attempt to arrest the neo-malthusian argument by shedding light on exactly how many conflicts in history have actually been ‘water wars’ and thus foster the argument that water is more likely to be a figure of peace and co-operation.

Nevertheless, Wolf’s distinction is a pivotal point of departure with another key thinker in water and conflict, Peter Gleick. In stark contrast to Wolf, Gleick produces a careful, and regularly updated, typology for the evolution of water’s relationship with conflict, most recently including cyber warfare and water management practices. Gleick states that 2017 saw a steep rise not only in individual cases of water as the object of conflict (more than double that of the previous year and a substantial increase on the previous high) but also in cases where water ecosystems are the targets or casualties of conflict.⁵⁰ Unlike Wolf’s position, Gleick’s typology includes the multiple and nuanced forms of water related conflict including as a Trigger:

Trigger (Water as a trigger or root cause of conflict: where economic or physical access to water, or scarcity of water, triggers violence); Weapon (Water as a weapon of conflict: where water resources, or water systems themselves, are used as a tool or weapon in a violent conflict); Casualty (Water resources or water systems as a casualty of conflict: where water resources, or water systems, are intentional or incidental casualties or targets of violence).⁵¹

Gleick’s notion of trigger is closest to Wolf’s limited view. My stance, however, is closer to the entangled relationship between cases where water is both a weapon and casualty. With this complex relationship in mind, placing Gleick’s expanded typology against Wolf’s overly prescribed definition, emphasises how unnecessary such strict prescription is, as it appears to miss the specific and nuanced ways in which water exists as a figure within conflict.

An example that would fall outside of his definition includes the identification of the *Conflict Shoreline* made by leading scholar of the spatial investigation of political violence Eyal Weizman. For Weizman this shoreline exists along the elusive climatic threshold of aridity

⁴⁹ *Ibid*, p.12. Although they acknowledge the importance of such cases, just not within their definition of a water war.

⁵⁰ Peter H. Gleick, ‘Water as a Weapon and Casualty of Conflict: Freshwater and International Humanitarian Law,’ *Water Resource Management* (2019) 33:5, pp. 1737–1751.

⁵¹ Gleick, (2019), p.1744.

across the Sahara and the Arabian deserts and stretching as far as central Asia and the Gobi desert.⁵² Produced by anthropogenic climate change, this meteorological condition has impoverished hundreds of millions along this shifting aridity line through the destruction of agriculture, accelerated desertification and the exacerbation of existing socio-political tensions. This has led, in turn, to the outbreak of recent conflict, most notably in Syria.⁵³ In this way, access to depleting water resources is not only the direct cause or reward of conflict but also the dispersed site of conflict hidden within vast meteorological processes.⁵⁴ Such conflict, operates across the scales of the local and geopolitical through the hydrologic register of rain. While consistent with Wolf and Mustafa's stance against the neo-malthusian argument, Weizman's conception of water's relationship with conflict falls outside Wolf's definition and accommodates for the significance of water in an expanded sense – as a contributing force and catalyst of pre-existing tensions – within conflict.⁵⁵ By exploring the changes that occur at a meteorological scale Weizman shows how this has lived impacts on the ground for the ways space is mapped and lived in such conditions, in his case for Bedouin communities oppressed by the Israeli state in the Negev desert. This is perhaps the most extreme example of the insufficient scope of Wolf's typology; and it is exactly the more nuanced ways that rivers and their wider hydrologic systems are enfolded into the environments of borders, extraction, and erasure that this thesis examines.

Far from arbitrary, Wolf's distinction is between conflicting political interests and cases of direct conflict over water resources alone makes an important contribution to prevent water

⁵² Eyal Weizman, & Fazal Sheikh, *The Conflict Shoreline: Colonialism as Climate Change*. (Göttingen: Steidl, 2015) p.7. Elsewhere, he has importantly identified the role of 'natural' features such as streams as volumes incorporated into Israel's border infrastructure in the West Bank. Eyal Weizman, 'The Politics of Verticality,' *Open Democracy* (23/04/2002) available at: https://www.opendemocracy.net/en/article_801jsp/ (accessed: June 2018), & *Hollow Land: Israel's Architecture of Occupation* (London: Verso, 2007).

⁵³ *Ibid*, p.10-12.

⁵⁴ Gleick calls this a "trigger": the cause of conflict conditioned by access to water. He also identifies water as a "weapon": the use of water resources as a tool in conflict. And a "casualty": the intentional or collateral casualty of conflict. Gleick, 'Water as a Weapon' (2019), p. 1746.

⁵⁵ Elsewhere, Ayub Qutub has stated that water conflict is inherently "fractal" manifesting across scales with greatest impact at the local. Qutub, S.A., A. R. Saleemi, M. S. Reddy, N. V. V. Char, D. Gyawali, and others. 2004. Water Sharing Conflicts within Countries, and Possible Solutions. WASSA Project Reports, vol. 2. Honolulu: Global Environment and Energy in the 21st Century. [www.gee-21.org/publications/pdf%20files/ConflictswithinCountriesVol.~Jan.200~.p]. Mustafa extrapolates on Qutub's point to say that within the local scale such conflict is always conditioned by the specifics of socio-political discursive conditions within which they are set. Mustafa, (2007), p.490.

scarcity becoming constructed as the sole reason for conflict where other prevailing tensions are contributing factors. However, his approach runs the risk of failing to account for small scale violence and forecloses the exploitation of populations in such cases of tension or violence that exist in relation to water bodies: such as those who perish while seeking asylum at the fluvial frontier, those disappeared into rivers and killed in the interests of the extraction of hydropower, or those whose trace is dissolved into a vast hydrologic system.⁵⁶ These are maybe not ‘water wars’ in the sense of transboundary conflict between state actors, as Wolf indicates, but they are, nevertheless, crucial to understand the often subtle ways hydrology and the processual agencies of rivers are intertwined within these forms of violence. Indeed, Wolf’s approach runs the risk of reducing water to a resource and conflict to only that which occurs between nation states. The cases explored here show that it may no longer be possible to clearly distinguish between water as a driver of conflict than as, in Gleick’s words, ‘a tool, target, or victim.’ While Wolf’s typology serves the purpose of countering the neo-malthusian argument it no longer serves the purpose of identifying the multifarious and dispersed ways that conflict and hydrology are entangled. Wolf’s demarcation does not fully accommodate for water in an expanded sense far beyond the overt forms of physical infrastructure, or the mapped lines of banks, but into the ephemeral state of vapour traversing vast distances, or carried on and within human bodies, or containing particulate traces.

Consequently, I argue that making such clear-cut distinctions regarding how water and conflict relate is no longer feasible. Where most hydropolitical texts themselves reduce water to a resource they reproduce such limiting conceptions of human, multi-species relations with water. What I intend to do here is to present exactly how these relations with conflict exist in more entangled ways. Thus, my attempt is to uncover the possible environmental breadth through which marginalised communities are oppressed by hydrological means. As I will show, to think rivers in an expanded and relational sense, far beyond only its reduction to resource or the abstract line that separates land from water, enables alternative understandings of how water bodies are managed in ways that relationally foreground their physical characteristics as deadly rather than their assumed vitality.⁵⁷

⁵⁶ Aaron T. Wolf ed., *Conflict Prevention and Resolution in Water Systems* (Cheltenham: Edward Elgar Publishing, 2002), p.xviii.

⁵⁷ Thom van Dooren suggests something similar in *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014), p.57, writing: ‘While we may all ultimately be connected to one another, the specificity and proximity of connections matters — who we are bound up with and in what ways.’

This present project sits at the very periphery of the Hydropolitical discourse on water and conflict. Rather than undertaking an evaluation of what sort of conflict or violence occurs in relation to water systems instead I consider how different types of waters are enfolded into forms of political violence. Indeed, if we eschew water as a universal substance and think it as always multiple and specific to the context in which it is encountered then it becomes possible to reveal the specific forms of violence that are so often hidden or obfuscated by perpetrators within and by waters. Thus, when I state that water becomes the medium of conflict I mean both the complex and multiple ways waters are directly and indirectly manipulated and technologised, as well as how rivers bear the traces of such conflict: the human and more-than-human casualties but also as a casualty itself. In other words, the waters of rivers that are enfolded into forms of conflict are changed by this very relation. In this way, I identify in Gleick's typology how when water is a weapon it becomes a casualty of this weaponisation. This is explored further in part I.

Where traditional study of the politics of water and rivers has regarded it as a backdrop, object or resource of political processes, recent literature has embraced a far more nuanced understanding that accommodates water and watery environments as reciprocally co-constitutional in political and social conditions.⁵⁸ In political ecology, this position is known as the hydrosocial. The emergence of hydrosocial thinking is an important influence on the contribution this thesis makes to the study of rivers and conflict. A hydrosocial approach is fundamentally based on the understanding that water and society are co-constitutive, with the potential to be re-orientated when the conditions under which they form change.⁵⁹ In my thinking of the hydrosocial it is always as a multi-species condition even where human-society is so often the dominant register, and where mt research has begun with the deaths of humans. This is because water relations always have multi-species consequences.⁶⁰ Thus, this project

Life and death happen inside these relationships.' Thus, the relational rivers of this thesis are encountered with an imbalance towards deathly relations but could always be encountered differently from other subjectivities and from transformed relational ways of living that return life to the fore. I explore this further in the section that outlines 'necro-hydrologies' in this introduction.

⁵⁸ Bakker, (2012), pp.616-623.

⁵⁹ Jamie Linton & Jessica Budds, 'The Hydrosocial Cycle: Defining and Mobilizing a Relational-Dialectical Approach to Water,' *Geoforum*, 57 (2014) pp.170-180.

⁶⁰ Here I take a cue from Bruno Latour's conception of Actor-network theory as it adapts received conceptions of the social by thinking through natural assemblages of connection – as I will show a river ecosystem is a social form of connection that becomes deadly at points of the imbalances of such assemblages. Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network Theory* (Oxford: oxford University Press, 2005). However, I have chosen not to address Latour's work more directly as I find the work of hydro-feminist

forges a point of intersection with hydrosocial discourse that has emerged out of Marxist literatures on urban water management in the 2000s, characterised by the work of Erik Swyngedouw, and its shift into a more relational approach in the early 2010s through Jamie Linton. Indeed, it is the reciprocal and co-constitutive thinking of the hydrosocial that I apply specifically to the realm of conflict.

Shifting away from the understanding of hydrology as the circulation of waters within the hydrosphere in the earth-sciences, Jamie Linton and Jessica Budds suggest the development of the hydrosocial has increased the awareness of the social nature of water itself: ‘a shift from regarding water as the object of social processes, to a nature that is both shaped by, and shapes, social relations, structures and subjectivities.’⁶¹ Thus in this reciprocity of shaping, lies the ways conflict is shaped by water and, in turn, shapes the waters with which it comes into contact. We might consider this in light of ecofeminist theorist Stefanie Lavau’s ontological multiplicity of each river as the result of its ‘particular sociomaterial orderings.’⁶² Thus, in the three cases explored here, policy and material become co-constitutional in ‘particular sociomaterial orderings’ of power and violence. Indeed, Linton and Budds describe the hydrosocial as referring to co-constitutional processes between water and power – this would incorporate policy as well as material forms of circulation.⁶³ Elsewhere, Mustafa and Matthew Tilotson open their article on hydrosocial territorialisation in Jordan, by twisting a received notion of territory as the entangled relationship of power and land equating to ‘struggles over land, [as] power struggles’, to one where land, as an object fought over, is itself, particularly in arid regions, ‘produced – not least hydropolitically – through water.’⁶⁴ This sentiment is likewise expressed by political geographer Philip Steinberg in his recent contribution to the *Handbook on Geographies of Power*, where he states that water is not only an object of power

thinkers, as well as Deleuze and Guattari and the reading of them by Manuel DeLanda more insightful to the specifics of my thesis.

⁶¹ Linton and Budds, (2014), p.170.

⁶²Stefanie Lavau, ‘Going With the Flow: Sustainable Water Management As Ontological Cleaving,’ *Environment and Planning D: Society and Space* (2013) 31, pp. 416–433, p.424.

⁶³ Linton & Budds, (2014).

⁶⁴ Daanish Mustafa & Matthew Tilotson, ‘The Topologies and Topographies of hydro-social territorialisation in Jordan,’ *Political Geography*, 70 (2019), pp. 74-82, p.74.

but likewise world-making and generative of power.⁶⁵ With this in mind, water itself can be conceived of as constitutive in territorialising projects, perhaps most visibly at the border. Water is thus not only what is fought over but, at a step removed, contributes to the mutual production of the terrain upon which such antagonism or exploitation takes place. As I will explore, in Part II, the intervention of the dam hydro-forms the territory, by flooding up stream and depleting river levels downstream, through the sociomaterial ordering of extraction and the assertion of State power in a region with a history of insurgency and counter-insurgency.

This is a clear departure from Wolf's position, who casts doubt on the co-constitutive argument of what would later be known as the hydrosocial, writing: '[...] it is quite clear that people affect their environment – the resources and natural systems that surround them – but to what extent is the opposite true: just how deep is the causal relationship between environmental stresses and the structure of human politics?'⁶⁶ Contrary to Wolf's doubt, I argue that with regards conflict it seems evident, especially with riverine borders, that the material makeup of a river, even if influenced by human intervention, dictates not only the form that such conflict might take but also the very way a river might be made deadly. This emphasises the politics of materials and the conditioning of their agency in explicit cases of conflict and less overt cases of oppression. Geographic elements such as water are not inert, they do not merely form a passive canvas or object over which conflict emerges. Rather water, understood in its entire range of meteorological, hydrological, and elemental forms is itself an agent in conditioning where and how conflict emerges. This is the case whether impacted by acute environmental stress or not. Thus, a river continues to be co-constitutive with the context of violence with which it exists, and it is formed with the human and material results of such conflict which it bears within its flows. This is not to cast the environment as a perpetrator but rather to point to the ways states harness the agency of the environment in subtle ways and use the cultural naturalisation of geophysical and meteorological elements as alibis for the deadly conditions it produces.

Returning to the localised scale of the river, in a more directly weaponised sense, it is through the process by which a river is made a border that it becomes a techno-natural component of

⁶⁵ Steinberg in turn echoes the editors of this collection Mat Coleman and John Agnew. Philip Steinberg, 'The Power of Water,' in Coleman and Agnew eds., *Handbook on the Geographies of Power* (Cheltenham: Edward Elgar Publishing, 2018), pp.217-228, p.219.

⁶⁶ Wolf, (2002), p.xvi.

the border regime. It thus becomes another river, one conditioned by what are deemed to be its borderly qualities. If we think of rivers hydrosocially then we understand them to be co-constitutive with the human and more than human communities with which they relate. In this way, the river made border, re-forms the border in reciprocity. For example, geographer Karen Bakker states that ‘Water is [...] inherently political, not only because it is an object of conventional politics, but also because of its material imbrication in the socio-technical formations through which political processes unfold.’⁶⁷ At the border the river is then socio-technical as well as a techno-natural medium through which political violence takes place. It is an assemblage of multiple factors, including the social conditions that lead states to exclude asylum seekers, as well as the physical infrastructure such as dams, canalisation, fences, flood defences, but also the very characteristics of the water itself. I will explore the significance of assemblage theory in more detail later in this introduction when I consider how a river is a weapon further.

Between the riverine qualities of the border, and borderine qualities of the river, is produced both a specific type of river – technologised – and a specific type of border: riverine. It is not necessarily that the water itself changes in composition, although I am not adverse to such a claim, but more that by making it a trespass line the river’s characteristics are framed in a way that are adversarial. This framing has real affects for those trying to seek asylum on the other bank and those directed to cross at strategic points in its course. The encounter with the border produces water that is inflected with the border and cannot be understood as only ‘natural.’ In other words no water is *a priori* ‘natural’ but always constructed in the multispecies relations within which it exists. In the contexts explored in this thesis, of actors reproducing ‘nature’ as alibi for violence organised around water bodies, it is important to refuse an *a priori* natural river.⁶⁸ In doing so it might be possible to better understand how waters crossing jurisdictional boundaries – flooding, or shifting its course over time – enable a State to factor the very lack of cross-jurisdictional cooperation within its strategies for ‘stemming the flows’ of third party movement while obfuscating the pushbacks and other clandestine methods enacted at the ‘natural’ border produced at the river. This is not to say that this is the only way such water can be framed, however, the possibility of changing this framing is contingent upon the radical

⁶⁷ Bakker, (2012), p.618. Despite the biopolitical leaning of Bakker’s statement, this echoes Val Plumwood’s call to consider ‘nature’ as a political category. *Feminism and the Mastery of Nature* (London: Routledge, 1993).

⁶⁸ Wolf & Delli Priscoli, (2009), p.xii.

transformation of the socio-political and cultural conditions of such a water body. To do so thinking *with* the river is essential.⁶⁹

As I approach to the end of this section I want to briefly return to the discourse of conflict and cooperation prevalent in hydropolitical literature on transboundary conditions to I ask a focused question: can cooperation or a productive hydrosocial environment exist in a transboundary region specifically conditioned by conflict? The hydrodiplomacy literature considered in Part I reflects the hydropolitical stance of Wolf and Mustafa that water might be a source of peace in existing conditions of geopolitical tension.⁷⁰ Fitting within what might be mapped as the hydro-positivist branch of hydropolitics this seems to be a distant wish in a region, such as the Evros, currently racked by discord. Indeed, the legacies of drawing the border along the river contribute to essentialising nationalist rhetoric, as well as an environmental alibi for the continuation of military discord.⁷¹ By twisting the context on which the hydrosocial is applied I am able to conceive of the co-constitution of rivers and societies in the specific context of conflict. I do so to the extent of making the claim that certain hydrosocial contexts are not only either inherently, or produced as, biopolitical, as Karen Bakker⁷² puts it, but, echoing Achille Mbembe, also variously necropolitical. In other words, the ways water is managed in the cases explored here are not conditioned to the register of the control of life, as is the main concern of the hydrosocial, but rather in the register of death. I see the shift of reading human relations with watery environments through the lens of the necropolitical as my main contribution to both hydropolitical and hydrosocial literatures. As I will unpack in more detail later in this introduction, I name this necro-hydrology.

As I will show, the Evros is turned into a hydrosocial weapon through the reciprocal, or co-constitutional, material processes *and* strained border diplomacy (from the treaty of Lausanne

⁶⁹ Chen; Janine MacLeod; & Astrida Neimanis, (2013).

⁷⁰ Stamatis Zogaris et al., 'Assessment Of Riparian Zone And River Island Conditions In A Trans-Boundary Greenbelt: The Evros/Meriç River (Greece-Turkey)', *Fresenius Environmental Bulletin*, (2015) 24:1, pp.269-277, p.276.; & Mylopoulos, Y., et al., 'Hydrodiplomacy In Practice: Transboundary Water Management in Northern Greece,' *Global NEST* (2008) 10:3, pp. 287-294, p.293.

⁷¹ See the eruption of tension at the Evros in the early months of 2020 where the bodies of border crossers and the river itself became mobilised in what has been reported as attempted land grabs by Turkish forces of Greek land east of the Evros. For the mobilisation of 'natural' environments see Roxanne Lynn Doty, 'Bare life: border-crossing deaths and spaces of moral alibi,' in *Environment and Planning D: Society and Space*, 29 (2011), pp. 599-612.

⁷² Bakker, p.619.

to the multiple EU-Turkey deals in response to migration). Namely the hydrosocial form of the border is both imposed on the waters of the river and takes its constitution from these same waters. On the Cauca river, the necropolitical hydrosociality is forged initially through the practices of disappearance mobilised by the medium of the river, and secondly in the interest of energy production and capital accumulation, dramatically reshaping the river, with all of the violent multi-species displacements this entails. Finally, in Poland the river was a resource important to the location of the Auschwitz complex in first place, and then adopted in unexpected ways as the experimental development of genocide progressed. This reciprocity became all the more evident in cases of material encounters and relationality between the waterborne remains of genocide and communities living close by. To make these arguments I will next introduce my conceptual framework for how a river is produced as a weapon through assemblages of relations.

River Weapons as Assemblages

My argument moves beyond the hydropolitical literature concerned with access to water resources, instead it considers how this discourse shifts when it encounters specific riverine locations as weaponised technologies of conflict. In doing so I intend to add greater detail to Gleick's understanding of 'Water as a weapon of conflict' where he outlines water resources and systems 'as a tool or weapon in a violent conflict.'⁷³ With Gleick's words in mind, I ask how is a river a weapon?

While I do not directly pursue rivers through orthodox understandings of weaponry, such as ballistics, it is, nevertheless, possible to read rivers in such a way. The mechanics of flow, for example, include calculations of velocity, gravity, volume, and riverbed friction.⁷⁴ In this context it might be asked at what velocity or volume is water weaponisable? The threshold of such a question might just as importantly be placed at the lower end of the spectrum, as it is not only in excess but in scarcity that water is operative in conflict. What is a constant, however, is that if rivers are always an assemblage, of volumes of water, its contents, and the communities and geomorphologies of which it is co-constitutive etc., then the weaponisation

⁷³ Gleick, (2019), p.1744. A notable case of the manipulation of water in combat occurred in 1938 when Chinese forces breached the Yellow river levée to halt the advancing Japanese army. With catastrophic effects the indiscriminatory waters drowned 100,000s and made millions homeless. Gleick, (1993), p.79.

⁷⁴ David Knighton, *Fluvial Forms and Processes: A New Perspective* (London: Arnold, 1998) p. 97.

of rivers always occurs as part of an assemblage of speeds, contents, actors etc. in specific locations and socio-political contexts. In other words, a river does not become a weapon at a certain speed but under specific conditions.⁷⁵

To make such a statement it is necessary to consider assemblage theory in greater depth. Here I specifically read the Deleuzo-Guattarian theorist Manuel DeLanda's chapter 'Assemblages and the Weapons of War' in his book *Assemblage Theory*. I consult these thinkers here not only because of their seminal positions within assemblage theory but also because of their specific conceptualisation of weapons *as* assemblages. This starts with Gilles Deleuze and Félix Guattari's extensive description of the complex relationship between State and war machine. Without going into too much detail on this discourse here, what I have drawn particular attention to in the following is how Deleuze and Guattari identify moments where a State assumes elements of the nomad war machine in what I see as the manipulation of the river environment as borderised weapon. What is perhaps surprising in DeLanda's chapter is the consideration of weapons as assemblages with little, although implied, reference to terrain or environment. When unpacking Deleuze and Guattari's notion of the nomad invention of the 'man-animal-weapon, man-horse-bow assemblage,'⁷⁶ DeLanda considers the spatio-temporal significance of the development of the horse-borne archer as being able to manipulate the topography of the terrain but only gesturally addressing the specifics of such terrain or incorporating it within the assemblage.⁷⁷ I redress this important oversight by considering the river itself to be a crucial component within the co-constitutive and nested assemblages of conflict. In this way, rather than incorporating the realms of reality as 'personal, the biological,

⁷⁵ DeLanda outlines the distinction between extensive and intensive as that of quantitative and qualitative respectively giving the example of the flow of liquid whereby at a certain speed, or critical point, water no longer flows in a laminar or uniform fashion but in a circular motion or 'convective flow,' and eventually at the next critical point it becomes turbulent flow (Manuel DeLanda, *Assemblage Theory* (Edinburgh: Edinburgh University Press, 2016), p.76.). However, DeLanda makes this point with regards to water in laboratory conditions, much like Jamie Linton's critique of the abstractions of Modern Water in the formula H₂O (Jamie Linton, *What is Water: The History of a Modern Abstraction* (Vancouver: University of British Columbia Press, 2010)). While rivers certainly have critical intensities where flow qualitatively shifts, such turbulence is often produced at slower speeds. A river might reach a turbulent flow at the intersection of water's topologic relations with the topographies of its bed. Turbulent flow is also produced by river water in its assemblage with its sediments and other material contents such as boulders, trees etc. Such turbulences, vortices and eddies produced within these riverine assemblages can be deadly at slower speeds to a border crosser swimming or on a boat, as explored in Part I when considering the work of the Evros regional coroner and forensic pathologist Dr Pavlos Pavlidis.

⁷⁶ DeLanda, (2016) p. 68-69; Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. By Brian Massumi (Minneapolis MN: University of Minnesota Press, 1987), p. 404.

⁷⁷ DeLanda, (2016), p.69.

and the technological,⁷⁸ as DeLanda does, I bring the environment itself to centre stage and as the focus of enquiry; such that the trinity would be the man-river-weapon or the personal, *hydrological*, and the technological. Here the hydrological is relationally present with each component – water is embodied by the personal, and the technological is contingent upon the river’s own agencies or indeed when the river is understood as a technology in and of itself. In this way the river is not an object *per se* but a series of processes.

Such an understanding is perhaps most evident in the way the river is formed as a border, this choice itself speaks to Deleuze and Guattari’s conception of a technology as something determined at a given moment⁷⁹: namely the river is a tool when it is a mode of communication but a weapon when the very same characteristics of turbulent flow are mobilised against enemy forces, or in this case asylum seekers. DeLanda suggests that this is the specific distinction between a property and a capacity, which he elaborates through the knife’s property of sharpness in analogue to its capacity to cut.⁸⁰ A river has certain properties that remain constant whether as a mode of communication or as a weapon: flow, width, volume, wetness, evaporation, solvency, turbulence etc. It is rather the register of the capacity of such properties conditioned by human intervention, within the human-hydrological-technological assemblage, that the distinction is made and its effects are produced. Namely a river’s capacity to transport as part of a trade assemblage, or the capacity to irrigate and quench thirst in life giving and socio-economic assemblages, against its capacity to drown or drench so as to kill. The capacity to transport might also be enfolded into either of course, as is evident in the river’s role in the obfuscation of violence, which, while ostensibly a collateral effect, is essential in the production of certain forms of violence and obfuscation that I will explore. Namely, the erasure of trace in the production of impunity or the simultaneous communication of traces in the production of terror. It is thus in the very decision to make a river a border, a social albeit divisive decision, that produces the river as a weaponised part of the border assemblage.⁸¹

⁷⁸ DeLanda, p.68-69.

⁷⁹ Deleuze & Guattari, p.397-8.

⁸⁰ DeLanda, (2016), p.73.

⁸¹ The relationship between water and conflict as a scalar and causal concern often emerges within the uncertain space between object and instrument. This is present in the bordering and weaponisation of ‘natural’ features taken up so notably by Lorenzo Pezzani and Charles Heller’s ongoing humanitarian project Forensic Oceanography. Their interventions, in the field of critical border studies, position the Mediterranean as a highly technologised space of surveillance and practices that exceed socio-political neglect. In their work violence not only operates ‘at sea, but through a strategic use of the sea.’ [Charles Heller & Lorenzo Pezzani, ‘Liquid Traces:

Taking into account both physical infrastructure and water's own agency, the river's position within such an assemblage is complex. As Deleuze and Guattari consider, in their teasing out of the distinctions between royal sciences and nomad sciences, State's require hydraulic science to 'subordinate' water's force and turbulence through physical interventions, such as 'conduits, pipes, embankments.'⁸² With such methods the State measures and striates fluid movement as uniform through its relationship to the solid banks that channel it from one point to another in the most efficient ways.⁸³ This is against the hydraulic models of Nomad science which distribute turbulence across smooth space effecting all points rather than limiting the efficient transport from one point to another. In the case of the Evros, as will be unpacked in Part I, it is not as simple as to make a distinction between the two. Rather, we contend that the State, in the form of the Evros border regime, incorporates both sciences within its arcifinious ordering. As a trespass line and as a shield weapon against outsiders, the river's turbulence (its flooding, its muds etc.) as well as laminar flow (the river at its fastest and deepest) have always both been incorporated within the State's hydraulic manipulation of the river.

Indeed, turbulence, flooding and other hydraulic contingencies are also part of the masked science of the border. Perhaps a clue lies in the very conception of an arcifinious state – one bounded by geophysical features – as forged upon such nomad science of the rivers turbulence as smooth space, and then built upon through striations of conduits, pipes, embankments and dams. In other words, the straited border line is drawn onto the smooth space of the river and broader ecosystem of the flood plain, and in doing so striates it. However, it is the arcifinious geophysical elements that the war machine is distributed through turbulence across smooth space in the properties of flooding, mud, mist etc. This is exactly what Deleuze and Guattari call the State's reconstitution of smooth space by 'reimport[ing] smooth in the wake of the striated.'⁸⁴ Or in the case of the Evros neither the smooth nor the striated are reimported but

Investigating the Deaths of Migrants at the EU's Maritime Frontier,' in Forensic Architecture (eds.), *Forensis: The Architecture of Public Truth* (Berlin: Sternberg Press, 2014), p.658.] In the mediation of violence through water they identify the 'process of *design*' in power's organization of different ecosystems where the conspiring of geologic and military practices create the deadly order of the border regime. Stuart Elden refers to a similar concept as an expanded notion of *terrain*: as dynamic and indeterminate volumes encompassing multiple disciplinary (legal, economic, military, scientific) concerns. 'Legal Terrain – The Political Materiality of Territory,' *London Review of International Law* (2017) pp.1-26.

⁸² Deleuze & Guattari, p.363.

⁸³ This can be most immediately identified in the levee systems of the Mississippi river.

⁸⁴ Deleuze and Guattari, p. 388.

always remain present and co-dependent in the production of an arcifinious border. In other words, the arcifinious river border assemblage relies upon both the cartographic line and the turbulent and contingent movements of the geophysical feature upon which the abstract line was drawn. It is in the interest of the arcifinious State to retain a balance between striation (fences) and smoothness (turbulent river flow and flooding) to allow for the river's contingency to act both as weapon and alibi for the violence it perpetrates at its margins.

In the case of the river border, the capacity for the river to be multiple evokes Lavau's identification of the sociomaterial orderings of individual rivers. The Evros is both smooth and striated, as it is both an obstacle and a route for the asylum seeker. However, in the mind of military engineers, right-wing nationalist politicians, major corporations, or far right militia (groups who might consider the river in what I will outline as necro-hydrologic terms) it offers the possibility to control flow but also has the capacity to bring death to enemy forces and to humans exercising their right to claim asylum.⁸⁵ It is in these imaginaries that a river is a weapon – not just through overt technological interventions but dispersed ambiguously, relationally, and discursively – with very real effects.⁸⁶

Where Deleuze and Guattari suggest that a weapon moves as if self-propelling while a tool is moved, a river appears to be self-propelling, and does to a certain extent, but it is only weaponised within the socio-material context within which it moves.⁸⁷ To further stress this point, a river is not inherently a weapon but is made one in the specific assemblage within which it, as an assemblage in its own way, is nested.⁸⁸ The river assemblage nested in the border is made into an assemblage of antagonistic bordering relations. Its characteristics of speed and volume in this light are thus weaponised. As Deleuze and Guattari might suggest, rivers are weaponised in light of the 'respective assemblage with which they are associated,' or that 'Weapons and tools are consequences, nothing but consequences. It has often been remarked that a weapon is nothing outside of the combat organization it is bound up with.'⁸⁹

⁸⁵ DeLanda, (2016), p.73.

⁸⁶ See also Bakker, where she asks how the study of water as biopolitical, prompts us to 'rethink the notion of techno-politics, and to reframe water as simultaneously socio-technical and socio-natural?' Bakker, p.616.

⁸⁷ Deleuze and Guattari, p.397.

⁸⁸ DeLanda, (2016), p.83.

⁸⁹ Deleuze and Guattari, p.398.

Thus, the Evros exists as a river-border / border-river, where the border's riveriness and the river's borderiness are accentuated. This formula could, of course, likewise be applied to the river as sewer or river as extractive resource, but also offers the potential for thinking and practicing with these riverine spaces and their agencies as sites of resistance. It is thus in such co-constitutive ways that this thesis explores these three rivers as central components of assemblage regimes of exclusion, extraction and extermination.

Such assemblages are partially made possible by how subaqueous space is culturally constructed as ambiguous and uncertain. As a sewer, or a solvent, it exists as the ideal materiality into which to discard what is no longer wanted, or to dissolve the traces of crime. Mobilised as both weapon and sewer, rivers simultaneously kill, and carry away trace.⁹⁰ For the perpetrators of extrajudicial killing the perceived material elusiveness of water is materially conducive to obfuscation and therefore an ideal tool in the production of impunity.⁹¹ This is the weaponisation of water as concealment. Rarely, however, is this obfuscation neat. In part II and III, I explore how rivers deployed as weapons and modes of erasure paradoxically remain heavy and thick archives of the confluent traces of these processes. Thus, in each case, through their contingent and ambiguous properties rivers oscillate between weapon *and* archive. With this in mind, in the rest of this introduction I will begin to establish three of the key concepts that run through this thesis: *Confluent Politics*, *Spectrum of Wetness*, and *Necro-Hydrology*.

Confluent Politics

As confluences of multiple contents and actors rivers are relational political spaces. Spaces weighted with reciprocal processes such as anthropogenic pollution entering water bodies and the subsequent re-mediation of these harmful contents back into the multi-species communities that exist in relation with them.⁹² Therefore, I use the term confluent politics to understand the

⁹⁰ Joel A. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron OH: The University of Akron Press, 1996); Jacob Darwin Hamblin, *Poison in the Well: Radioactive Waste in the Ocean at the Dawn of the Nuclear Age* (New Brunswick NJ: Rutgers University Press, 2009) p. 2, p. 103).

⁹¹ This is clearly the case in the case of Death Flights such during the “Dirty War” in Argentina, as well as during the Chilean dictatorship, the war in Zaïre, and the Algerian War.

⁹² See Neimanis's recent article, “‘The Chemists’ War’ in Sydney’s seas: Water, time, and everyday militarisms,” *Environment and Planning E: Nature and Space* (February, 2020), 0:0, pp. 1-17.; see also Neimanis, ‘Fathoming Chemical Weapons in the Gotland Deep,’ *Cultural Geographies* (2017) 24:4, pp.631-638.; and Michelle Murphy, ‘Alterlife and Decolonial Chemical Relations,’ *Cultural Anthropology* (2017) 32:4, pp.494-503.

world's riverine ecosystems as the products of multiple processes, influences and interventions. I use confluence as a metaphor⁹³ but one always grounded in the material and processual overlaps within river bodies themselves. Both are necessary when engaging with the material and discursive concentrations of political, environmental and social conditions.⁹⁴ Here rivers are thus not approached as static sinks for terrestrial politics, as they are so commonly misused, but as intensities of persistent political and material conditions.⁹⁵ It would be reductive, however, to position confluent politics as synthesising. Rather, as feminist theorist Astrida Neimanis defines the 'hydro-logic' of differentiation as a necessary balance to 'water's capacity for confluence,'⁹⁶ rivers contain multifariously distinct contents washing from one object or place and accreting elsewhere. In this way, the specific confluences of the cases of this thesis do not merge distinct materials and discourses together into a singular object but are the dynamic reciprocities of multiple distinct processes. Reciprocity accommodates the agency of the rivers themselves as they sort and return their contents unpredictably. In this way confluence helps to think through the material, corporeal and discursive ways rivers become the concentrations of exploitative and often violent politics. In doing so, however, confluence as a processual archive also offers opportunities for resistance to this manipulation. This is most directly addressed in part II where a condensation of fatal affects emerges in the shadows of the Hidroituango megadam; deadly in relation to the river and local communities but also reflecting the threat posed by the dam's possible failure.⁹⁷ In part III such a concentration of

⁹³ Sara Pritchard uses confluence primarily as a metaphor to form an insight into the entwined social, technological and natural histories of the Rhône valley. Sara Pritchard, *Confluence: The Nature of Technology and the Remaking of the Rhône* (Cambridge MA: Harvard University Press, 2011) p.4.

⁹⁴ Stefan Helmreich emphasises the necessity to resist the separation of meaning and materiality by thinking both water and theory as things in the world. Stefan Helmreich, 'Nature / Culture / Seawater,' *American Anthropologist* (2011) 133:1 pp. 132-144, p.138. Elsewhere, Philip Steinberg challenges the overtheorisation of oceanic space by stressing its multidimensionality through Lagrangian fluid dynamics (where the movement of a fluid object through space and time is tracked) against the Eulerian model (which relies on fixed points or a static mesh marking such movement). Through this model he states that movement is not subsequent to, but is geography. Philip Steinberg, 'Of Other Seas: Metaphors and Materialities in Maritime Regions,' *Atlantic Studies* (2013) 10:2, pp.156-169.

⁹⁵ Tarr, (1996).

⁹⁶ Astrida Neimanis, 'Water and Knowledge,' in Dorothy Christian and Rita Wong (eds.), *Downstream: Reimagining Water* (Waterloo: Wilfrid Laurier University Press, 2016), pp. 51-68, p.54. The theoretical device of hydro-logics are employed elsewhere as a dialectic in the work of Jamie Linton, *What is Water: The History of a Modern Abstraction* (Vancouver: University of British Columbia Press, 2010), particularly in his conclusion 'Hydrolectics' where he proposes an alternative hydro-sociality.

⁹⁷ Karen Bakker (p.621) identifies the importance of considering water's agency as unpredictable and unruly when discussing its materiality, particularly in cases of megadams and major irrigation systems as archetypical figures of human control over nature. However, it is also important when decentring human agency not to allow

affects occurs where the remains of genocide contained within the river encounter the material politics of contemporary drought as an unexpected archaeology. With these examples in mind, each river ecosystem is continually mobile: entangling and disentangling in predictably unpredictable ways. This introduction might be read in a similar light where different themes and concepts emerge and re-emerge at different points. Notably, the relational thinking of the spectrum of wetness and necro-hydrology have been consistently present through the course of this introduction, coming more intensively to the surface before receding again. This is a way of writing that is not so etched on a stable surface but dynamic within turbulent undercurrents of watery thinking.

In response to complex socio-political complexities, the emergence of watery thinking has, in places, involved embodied methods of diving and submergence as routes to more nuanced knowledge of human impacts within planetary waters. I value the importance of such embodied research, especially with regards changing and radically degraded environments.⁹⁸ This thesis, however, cautions that ethical consideration must be made when entering water, especially where such spaces contain corporeal traces of conflict. A method I adopted in an early manifestation of my practice informs the ethical consideration I have made regarding these three cases. In August 2017 I collaborated with multiple practitioners (sound artists, performance artists and academics) as part of the *Water Bodies* collective⁹⁹ for a Live Arts Development Agency (LADA) DIY residency alongside Whitstable Biennale (a collaboration continuing with a residency the following year). A productive element of this practice took the embodied and immersive form of critical swimming. The critical swim was not a swimming tutorial, as it might first sound, rather it involved multiple critical embodied, or disembodied, engagements with the contents and socio-cultural significance of the North Sea. During this initial swim I let myself float and be carried by the tide eventually onto the beach. The experience provoked a strong personal reaction that instilled a sense of caution when

for this to become an alibi for human error in trying to contain such waters, or the very choice to build a dam and harness this unruliness in the first place.

⁹⁸ See Stacy Alaimo's approach to submersion in: 'New Materialisms, Old Humanisms, or, Following the Submersible,' *Nordic Journal of Feminist and Gender Research* (2011) 19:4, pp. 280-284, p.281.; Or Melody Jue's diving research practice on the Ocean as Media, footage available at: <http://www.melodyjue.info/new-page-2> (accessed June 2019).

⁹⁹ Co-ordinated by Zoe Czavda Redo, Tuuli Malla and Xavier Velastin. *Water Bodies* (2017-18) Available at: <https://www.whitstablebiennale.com/project/water-bodies/> (Accessed June 2019).

contemplating immersion in further research.¹⁰⁰ Although the waters of this swim have no relation to the sites of my research, while reflecting later I realised that more careful consideration and questioning is necessary before submerging myself in relation to the sensitivity of the water bodies I am studying.

With regards my cases this required asking myself what my presence, with the privileges I have as a researcher at a British university, brings or detracts from the present-absence of subjugated bodies within water? Thinking with waters as an archetypal relational substance, the above consideration led me to ask, what a researcher brings with them into the water and what kind of impacts might they leave behind? The critical swim took place before my argument had taken shape, particularly in relation to the cases in Part I and II of this thesis. In my fieldwork in Poland in June 2017, a month before the swim, I was already taking necessary caution to measure my interventions. These considerations contributed to the use of hydrophone recordings in part I to sense the river border in becoming but also the sensorial space of the empty grave. Subsequently, despite a need to develop insight into watery spaces I have been careful to pursue low intrusion methods with the waters I have encountered. This is particularly due to the focus of my research on the sensitive posthumous contents of these water bodies. It is necessary as a researcher to ask myself such questions before and after conducting such physically submerged research; questions also applicable to immersive research practices found in anthropology. The specific contexts of these rivers require further ethical considerations regarding posthumous remains and necropolitical conditions encountered on the ground. I reflect on these ethical questions and the limits of embodied research within specific contexts further in the conclusion.

Importantly, however, these rivers also exist outside of the posthumous stakes of the research I have conducted; the meeting of rivers also operates in productive and nurturing ways by increasing biodiversity or cultural interrelation. This is a point of differentiation that must be maintained in relation to confluent politics. As artist Carolina Caycedo suggests, in an interview I conducted with her in 2019, confluence is also the coming together of different energies at the places where rivers meet. These are fertile spaces where nutrients from different streams merge, where towns and villages are established, and they are often-sacred sites where

¹⁰⁰ This is not to claim that the other practitioners were not considerate or that the practice is not productive, rather this is a reflection of my own engagement.

the meeting of waters are important within indigenous cosmologies.¹⁰¹ Consequently, it is the submergence of such cultural and biological confluences within megadam reservoirs, as I will explore in part II, that itself engenders spatial and epistemological violence but also sits at the heart of resistance through river defence practices.¹⁰²

To think with confluence requires further unpacking in the context of such geographically distinct and culturally sensitive cases. Although this research is not foremost a comparative study, it is, nevertheless, important to address the possible tensions that might arise from such research. This is especially important when dealing with the cultural context of Auschwitz. Here I have taken a risk by approaching this *ur*-site from such an unexpected entry point. Perhaps, this is not an entry at all but itself a departure from official memory discourse. One of the reasons I have done so is to ask whether the materials remain active and malleable to present changes rather than remaining crystallised in cultural memory? In doing so I take my lead from literature of the Middle Passage. In this way I intend to consider the crucial contribution that thinkers of the mobile aquatic archive of the Black Atlantic (primarily but not exclusively Christina Sharpe and Édouard Glissant) can offer to the dense and often overbearing cultural memory of the holocaust and its own submerged and mobile memory traces.

To navigate this potentially sensitive move I take my cue from seminal memory studies scholar Michael Rothberg, and his model of *Multidirectional* memory. Rothberg introduces a non-competitive memory landscape that, in his words, ‘traverse sacrosanct borders of ethnicity and era’ and where any interaction of forms of cultural memory occur this should not involve ‘a zero-sum struggle for preeminence.’¹⁰³ While I separately consider testimony specific to each case: Sonderkommando testimony (groups of Jewish men forced to carry out the extermination

¹⁰¹ In Caycedo’s work these are specifically cosmologies in the Americas.

¹⁰² This section is informed by the decolonial philosophies of Boaventura de Sousa Santos and Vandana Shiva. Santos refers to ‘cognitive injustice’ as indivisible from social injustice. Boaventura de Sousa Santos, *Epistemologies of the Global South: Justice Against Epistemicide* (London: Routledge, 2014) p.124.; Vandana Shiva identifies similar violence within her conception of colonialism’s production of *Monocultures of the Mind*, (London: Zed Books, 1993) p.2.; Arundathi Roy, elsewhere, calls this the ‘submerging of culture’ in relation to the flooding of Stone Age archaeological sites in the Narmada valley. *The Greater Common Good* (Bombay: India Book Distributor Ltd., 1999) p.63.

¹⁰³ Michael Rothberg, *Multidirectional Memory: Remembering the Holocaust in the Age of Decolonization* (Stanford University Press, 2009) p.17; p.2.

processes at Auschwitz-Birkenau), testimonies of asylum seekers and border crossers, and those of paramilitary conflict, each case remains distinct and is entered through the specific context and critical politics of the unique processes relating to them. Just as the forms of violence are distinct the riverine characteristics and contents likewise physically and discursively differ from the floodplain of what could be the most militarised river in the world (Evros / Meriç / Maritsa), to a catchment dominated by the harnessing of the energy produced by water transporting through a canyon (Cauca), and finally a water body in part characterised by pollutants from heavy coalmining (Wisła). These material and discursive distinctions of confluent politics are important to bear in mind through this thesis. What is coherent, nevertheless, is the systematic appropriation of fluvial agencies to disperse causality and the entanglement of human remains and other anthropogenic interventions within the material currents of these waters. To stay with the structure of this thesis for a moment I have chosen to situate the section on the Wisła river and the Holocaust as the final part (despite encountering this site first) exactly to allow the other cases to be explored independently of the discursive weight of Holocaust literature. In doing so I hope to allow these spaces of violence and trauma to be encountered in their own right. I do this also as a researcher with a family history weighted with the Holocaust and am acutely conscious of allowing the space for my own subjectivity to explore this case in its own light while being cautious of not carrying it through the other cases as a point of continual and perhaps overbearing comparison. I have found that such questions are important to bear at the front of one's mind when considering multi-site research.

Spectrum of Wetness

Beyond power's abstraction and reduction of rivers through extractive colonialism, bordering, and concealment, rivers are always already complex and nuanced processual and material spaces. The spectrum of wetness is a mode of perception, adopted from the work of Anuradha Mathur and Dilip Da Cunha, with the purpose of redressing the balance between the terrestrial and the aquatic, producing a perception that senses beyond the material and cultural divisions that foreground the dry and marginalise the wet. This is most evident as a sensibility that concentrates on the ambiguities of littoral or riparian zones.¹⁰⁴ With this in mind, one starting point for this research is the assertion that, whether in excess or scarcity, space and place is

¹⁰⁴ Anuradha Mathur & Dilip Da Cunha, *Soak: Mumbai in Estuary* (New Delhi: Rupha & co, 2009).

always formed in wetness.¹⁰⁵ This is in many ways complemented by Dilip Da Cunha's decolonial philosophy of river ecosystems, where he states that the contemporary condition of polluted and degraded rivers result from a 'material literacy' that sets up water to be 'dominated by land.'¹⁰⁶ In response, he proposes an alternative literacy that is not formed in the land / river divide but rather in a monsoonal or rain oriented 'moment'.¹⁰⁷

The spectrum of wetness is a term and way of thinking likewise informed by the earlier provocations of Da Cunha and his long-time collaborator Anuradha Mathur, who ask: 'can we think of constructing reality in a moment of wetness?'¹⁰⁸ In turn, I ask what it would mean to read modes of violence enacted from a terrestrially biased view of the world through a spectrum of wetness? This would primarily challenge the dualism of land / water, and nature / culture. Through this resistance the spectrum allows for a sensing of the extent to which political violence operates by shaping river ecosystems and dispersing and encoding traces within the rivers themselves.¹⁰⁹ My argument thus conceives of how conflict occurs across a spectrum of elements. Such a conception of conflict allows me to locate this research somewhere between Mathur and Da Cunha's thinking and that of the more orthodox hydropolitical thinkers such as Mustafa, Gleick and Wolf considered earlier. Where Mathur and Da Cunha have so successfully revealed the spectrum to which the world is wet, this thesis makes the case for this consciousness of a dispersed world of liquids and waters to offer the potential for countering colonial surveying practices and imaginaries of terraforming as forms of onto-epistemic violence, with real effects in the world. Importantly the spectrum of wetness also enables a

¹⁰⁵ Cecilia Chen words it as place is 'always permeable and permeated with water.' Chen, 'Mapping Waters: Thinking with Watery Places,' in *Thinking With Water* (2013) p.275.; For the reduction of water to chemical formula in modern science and its impact on social imaginaries, see Ivan Illich, *H2O And the Waters of Forgetfulness*, (Dallas: Dallas Institute of Humanities & Culture, 1985).

¹⁰⁶ Dilip Da Cunha, (2018) p.6.

¹⁰⁷ In a separate yet resonant move, political geographers Kimberley Peters, Philip Steinberg and Elaine Stratford resist the limitation of a terrestrially biased understanding of territory in order to gain a more comprehensive knowledge of the operations of power with regards what is conceived as nature. Kimberley Peters, Philip Steinberg and Elaine Stratford, 'Introduction,' in Peters, Kimberley, Philip Steinberg & Elaine Stratford (eds.) *Territory Beyond Terra* (London: Rowman and Littlefield, 2018) p.4.

¹⁰⁸ GIDEST, *Anuradha Mathur and Dilip da Cunha - Wetness Everywhere*. [Online Video] (7 August 2017) Available at: <https://vimeo.com/228719234>. (Accessed: 1 March 2018).

¹⁰⁹ Astrida Neimanis conceives of a similar object in her understanding of the *ecotone* as a relational material and epistemological membrane or an interstitial velocity between multiple forms of life and between 'biology' and 'philosophy'. Neimanis, 'Hydrofeminism' (2012) p.107-108.

perception of how it is itself actually already mobilised by military and non-military agents of conflict. As they write:

There is no such thing as dry land. Wetness is everywhere to some degree. It is in the seas, clouds, rain, dew, air, soil, minerals, plants, animals. The sea is very wet; the desert less so. So, when we experience ‘water’ on the other side of a line that allegedly separates it from ‘land’, we know it to be by design, design that articulates a surface for habitation. This surface has served as a ground for experience, understanding and knowledge. Today, however, with rising seas, warming temperatures, and the increasing frequency of floods, this surface along with the edifice of civilization and certainty built upon it is threatened, calling into question the act of separation that brought it into being.¹¹⁰

Reflecting on Mathur and Da Cunha’s words about the drawing of a line as a moment of design where land and water are separated in the interest of property allows me to think of the choice of drawing the border along the river itself as the initial moment of weaponisation. Their approach offers a crucial body of literature for this thesis, mainly as they present a way of understanding waters that are not bound by capture and exploitation, as so conditioned by the universal colonial hydrology imposed around the world. Instead, by foregrounding local conditions and water as dispersed, muddy and suspended in air, their ontological intervention to think the world through water, and in the moment of rain rather than rivers, is itself resistant to the overly canalised capture of water so characteristic of colonial and divisive forms of water management. Crucially, however, their model also enables me to comprehend how forces of exploitation, exclusion and erasure themselves already operate forms of water management that encompass these dispersed environments and spectrums of wetness.

Such a perspective makes it possible to see conflict occurring through the mediums of seas, clouds, rains, air, dew, and in multiple forms: extraction, flooding and water meadows, through the hypothermia experienced by the body, and most directly through the very flow rates of water itself. With this shift the spectrum reads back against the trajectory of river currents to invert the material and epistemic reduction of water to an *anarchival* substance, and instead locates rivers in their expanded sense as technologies, rather than passive bystanders, in political conditions of violence.¹¹¹

¹¹⁰ Mathur and Da Cunha, ‘Ocean of Wetness’ (The blurb to their design platform), available at: <https://www.mathurdacunha.com/ocean-of-wetness> (Accessed: February 2020).

¹¹¹ Stopping at the edge of the land, as Kimberley Peters, Philip Steinberg, and Elaine Stratford suggest, limits ‘our understanding of both power and nature.’ *Territory Beyond Terra* (London: Rowman and Littlefield, 2018) p.4. I explore this further in Part III where I engage with Georges Didi-Huberman’s contemplation of the ponds at the Auschwitz Birkenau camp.

The confluent politics I identify above are likewise sensitive to limitations and potential violence produced through epistemological and topographical divisions – such as that exercised through the abstract line of a border drawn along the central channel of a river. As waters breach their banks, so confluences of social and material conflict exceed the perceived boundary between above and below the surfaces of rivers. These movements are intercepted by plant species, caught in static pools, and slowly seep back into wider ecosystems that are neither entirely wet nor dry. Therefore, from the intensity of the central course of a river (thalweg) through thick mud to the finest mist the world is a spectrum of wetness.¹¹² Here, this term is not only a lens trained to diagnose the epistemic binaries foregrounded in territorial logics, but to perceive how power outwardly enforces these binaries by defending the cartographic line while already operating across the scales of the wet and the dry. In this way we can better appreciate water as a site and process of political violence, and thus perceive the ways expanded hydrologic knowledges and processes are already enfolded into necro-political waterscapes. I will explore this in more detail in what follows.

Necro-Hydrology

How water is known and managed has a direct relationship with how populations are governed. Necro-hydrology exists where the knowledge and corresponding management of water in its multiple forms emerges as adversarial to life.¹¹³ Further than this, as I have outlined previously in this introduction, where such ways of living with water are directly weaponised against marginalised groups. Political philosopher, Achille Mbembe coins the concept of necropolitics or necropower,

¹¹² This echoes Astrida Neimanis's concept of Bodies of Water as the multidirectional relationality of mutually interdependent human, animal, and environmental bodies consisting predominantly of water. This conception of relationality exists within a broader understanding of bodies of water, that she calls 'meteorological or geological bodies' such as: 'oceans, rivers, aquifers [...] clouds [...] swamps and soils.' Neimanis, (2017), pp.27-31.

¹¹³ Karen Bakker identifies water within Foucault's understanding of biopolitics when 'modern governments seek to optimize both water resources and our individual water-use practices in order to secure the health and productivity of the population.' Bakker, 619. The seemingly inevitable underside of this, which I highlight, are those who are the victims of such optimisation. For example, those seen to exceed or exist as a hindrance to such water-use, or where water management might be used antagonistically against those undesirable and othered in the face of such modes of governance. While I do not necessarily address the cases of this thesis through a governmental lens each is an example of how water management is deployed at the transit zone of life and death.

to account for the various ways in which, in our contemporary world, weapons are deployed in the interest of maximally destroying persons and creating *death-worlds*, that is, new and unique forms of social existence in which vast populations are subjected to living conditions that confer upon them the status of the *living dead*.¹¹⁴

Thus, in the cases considered here, it is not only in the removal of access to water that *death-worlds* are created in relation to water. In other complex ways, water management produces new social exploitative formations – through extraction – or modes of water governance that reflect and facilitate wider social formations of violence, at the border (the river border), or in the genocidal technologisation of environments. Thus, to perceive water as all pervasive, or that the world is constructed through water, allows for a nuanced understanding of the possible *death-worlds* that are produced in the hydrologic register.

By ‘hydrology’ I include multiple forms of knowing and acting with water from scientific disciplines to the local knowledges of fishing and farming communities. I also include the riverine knowledges of extractive and military surveyors and engineers, as well as those of policing, and paramilitaries; the knowledges that uphold borders and support extractive practices. Thus, necro-hydrologies are not necessarily universal but are themselves always plural and it is this plurality that needs constant attention. In part I, these knowledges fold into the management of the entire floodplain itself. Such knowledge and practice performs the contradictory processes of altering the river’s course, whilst simultaneously re-producing the impression of rivers as natural. The specific hydrology of the border – one of both demarcation and letting flow, that conceives of a river as a ‘natural boundary’, and by ostensibly allowing the river flow and flood acts as an alibi that *lets* border crossers die. The identification of a relational space such as a river basin as a border speaks to what Mbembe refers to as “borderization,” asking what the intention is of ‘transfom[ing] certain spaces into impassable places for certain classes of populations? What is it about, if not the conscious multiplication of spaces of loss and mourning, where the lives of a multitude of people judged to be undesirable come to be shattered?’¹¹⁵ The case of necro-hydrology at the Evros spans beyond the impassable banks of the river, to which border crossers are directed, to the entire river basin, incorporating the full spectrum of wetness, from the mud in the fields that weighs down the

¹¹⁴ Achille Mbembe, *Necropolitics*, trans. By Steven Corcoran (Durham NC: Duke University Press, 2019), (2019), p.92.

¹¹⁵ Mbembe, (2019), p.99.

asylum seeker,¹¹⁶ or the fog that hangs above the valley and increase the risk of hypothermia. These are less direct forms of river management but become obtuse elements of how a river either becomes a direct weapon or a weapon that is dispersed within the environment with just as fatal results. All of the above contribute to the reality that forms of river management identify and maintain rivers as impassable spaces in the ‘shattering’ of the lives of those deemed undesirable. This is what it means when a river is conditioned through necro-hydrologic knowledges.

The use of a river as a weapon, however, is not the only form of necro-hydrology. Necro-hydrologies also exist where water becomes the medium for the traces of violence. For example, where bodies disappeared upstream they often resurface downstream in the production of terror (part II), or where water becomes the final component of a vast machine of genocide deployed to erase the traces of 100,000s of dead bodies. Examples of necro-hydrology beyond this thesis, include the subjugation of Kurdish communities under the guise of irrigation practices in the case of Turkey’s construction of dams to withhold water as part of a defensive infrastructure at its borders with Iraqi Kurdistan. This also exists in the attempt to erase Kurdish cultural centres through the Ilisu megadam on the Tigris river that is flooding ancient Kurdish communities such as Hasan Keyf.¹¹⁷ Or notably in the case of Flint, Michigan, and elsewhere, where capital’s exploitation of water resources and subsequent toxification has had fatal implications.

It is in such cases where the biopolitical form of water management designed to control life turns necro-hydrologic, and where the potentially poisonous reciprocal human-water relationship is most prescient. As criminologist and anthropologist Stefanie Kane argues, this is a process whereby ‘as we poison water, the water poisons us.’¹¹⁸ Of course this concept of “us” is always unevenly distributed across race, gender, class, and income. In relation to this

¹¹⁶ Selma Mesic, “They Pushed us into the Mud, we were trying to lift the kids out ... We didn’t know anything, it was in the middle of the night.” *Refugee Rights Europe* (2020) available at: https://refugee-rights.eu/2019/12/19/they-pushed-us-into-the-mud-we-were-trying-to-lift-the-kids-out-we-didnt-know-anything-it-was-in-the-middle-of-the-night/#_edn1 (accessed July 2020).

¹¹⁷ Zeynep S. Akinci & Pelin Tan, ‘Water Dams as Dispossession: Ecology, Security, Colonization,’ in James Graham ed., *Climates: Architecture and the Planetary Imaginary* (Columbia Books on Architecture and the City, Lars Müller Publishers, 2016), pp. 142-148.

¹¹⁸ Stefanie C. Kane, *Where Rivers Meet the Sea: The Political Ecology of Water* (Philadelphia PA: Temple University Press, 2012), p.2.

reciprocity, Jacques Derrida considers the soluble politics of liquids as ‘*the* element of the *pharmakon*,’ as it is always ‘[i]n liquid [that] opposites are more easily mixed. [...] And water, pure liquidity, is most easily and dangerously penetrated then corrupted by the *pharmakon*, with which it mixes and immediately unites.’¹¹⁹ In keeping with Derrida’s rendering of the *pharmakon*, in this thesis water, in liquid form and beyond, gives life whilst also being manipulated as a threat to life.¹²⁰ Water becomes contested, as both the material around which community practices oscillate *and* the context through which death occurs. Where water dissolves what societies want to hide it also stores or archives it and transmits it into other unexpected spaces. Bodies of water thus perform the tidal double action of the *pharmakon* neither entirely poison nor remedy but both: between excess and scarcity, flood and drought, and at different scales of toxicity.¹²¹

Consequently, where the *pharmakon* is both medicine and cure the weaponisation of rivers, explored in the following pages, pivots around the blurring of the rationalisation of rivers through overt infrastructures, as well as the more insidious weaponisation of the broader hydrology of rivers. Mbembe would describe this in turn as the surfacing of the hidden violences of democracy:

reconstituting itself as a form of organization for death. Little by little, terror that is molecular in essence and allegedly defensive is seeking legitimation by blurring the relations between violence, murder, and the law, faith, commandment, and obedience, the norm and the exception, and even freedom, tracking and security.¹²²

This manifests most overtly in the border ecologies of the Evros/Meriç/Maritsa river. As a ‘natural’ border, in what Stefanos Levidis and I call an arcifinious ecology, the river is constructed as both a deterrent and a weapon. In line with a *pharmakon*, an arcifinious river border is both perceived as ‘natural’ whilst it is simultaneously mobilised as a human produced weapon. For example, the construction of a 12km fence in 2011 has directed border crossers

¹¹⁹ Jacques Derrida, *Dissemination*, trans. by Barbara Johnson (London: Continuum, 2004), p.150.

¹²⁰ In some ways echoing the *Pharmakon*, Wolf and Delli Prescioli describe water as an irritant, making tense geopolitical conditions worse, but also as a unifier. p.13. As mentioned above water is not only vital but deadly. It is also, in less of a binary way, a biopolitical object as well as a necro-political object.

¹²¹ See also Sophie Lewis’s *Amniotechnics* where she refers to Dakota midwife Wicanhpi’s understanding of amniotic waters as integrating ‘the dual meaning of “care” (pain and relief) and the double power of medicine (poison and cure).’ Sophie Lewis, ‘Amniotechnics,’ *The New Inquiry* (25 January 2017) p.6.

¹²² Mbembe, (2019), p. 7.

to points in the river where the flow rate is perilously strong and unpredictable, while flood defences double up as military infrastructure and terror is produced by Greek detention centre guards who claim that dams upstream in Bulgaria will be opened to flood the river and make it impossible to cross.¹²³ Thus the river border's long construction as 'natural' and defensive is blurred as Greece and the EU increasingly organise their borders around deadly structures: from biometric and digital surveillance, to fences, and the necro-hydrologies of river flow, flood defence berms, the thickness of mud, and freezing fog.

In the context of paramilitary violence in Colombia, rivers have been appropriated not merely in the erasure of trace but the production of a necro-hydrology. While broadly applicable, this term is developed in response to the ongoing presence of terror intrinsic to both the acts of paramilitary violence and the extractive politics and failure of the megadam. Necro-hydrology, discussed in detail in Part II, thus responds to Achille Mbembe's concept of necropolitics as the location of power's assault on the human body, and the territorial exercise of lethal power. In the case of Hidroituango, this occurs through the mobilisation of fluvial and wider hydrological processes. Central to necro-hydrology is the river itself as a casualty with knock-on effects for the multi-species ecosystems it supports.¹²⁴ Thus, necro-hydrologies are always multi-species concerns.¹²⁵ This correlations between rivers and human and more-than-human life as casualties of territorial and extractive politics is the common thread running through the following pages.

To conclude this introduction I return to the discourses of hydropolitics and the hydrosocial, outlined above, what I reassert through the concepts of the spectrum of wetness, confluent politics and necro-hydrology is that water's relationship with conflict is not only about access to scarce resources but is dispersed and unruly even when States, and other forms of power, attempt to control its flows. It, thus, requires a sensibility that accounts for such dispersal and

¹²³ Reported to Stefanos by NGO workers at the Fylakio Detention Centre in March 2020 during a critical period at the border after Turkish President Erdoğan chose to open Turkey's borders with Greece. This led to a drastic increase in violence against border crossers by Greek forces. See our article Ifor Duncan & Stefanos Levidis, 'Weaponizing a River,' *e-flux* (April 11th, 2020), available at: <https://www.e-flux.com/architecture/at-the-border/325751/weaponizing-a-river/> (accessed April 2020).

¹²⁴ Achille Mbembe, 'Necropolitics,' *Public Culture* (2003) 15:1, pp.11-40, p.12.

¹²⁵ Val Plumwood identifies the always multi-species communities that 'die of the product (the destruction of nature) and also of the process (technological brutality alias technological rationality serving the end of commodification).' Indeed it is such human and non-human groups that are 'without market power' who are the first to die. (1993), p.13-14.

unruliness to perceive the often hidden violences perpetrated in relation with water. Indeed, as I have outlined here and will explore further, waters are weaponised as assemblages and operate through relational processes at the scales of the particulate, units of electricity, flooding and mist. Accordingly, I argue that the typologies of existing hydropolitical discourses do not fully account for the evolving ways with which human and multi-species death is produced through and within water bodies.

The distinct cases explored in *Hydrology of the Powerless* reflect the diffusion of fatal politics within planetary rivers. Directly and obliquely, this thesis identifies the social and material stakes of rivers not only as the vessels for crimes against human communities but those occurring through and within river currents themselves. Faced by the prospect of lives and rivers disarticulating and eroding beyond detection this thesis refuses to let these bodies dissolve without trace.

PART I

*FLUVIAL FRONTIER: THE EVROS / MERİÇ / MARITSA RIVER BORDER*¹²⁶

The lie of the mountains, seas, and rivers [in Europe], which serve as boundaries of the various nations which people it, seems to have fixed forever their number and size. We may fairly say that the political order of the Continent is in some sense the work of nature.

Jean-Jacques Rousseau¹²⁷

In so far as concerns frontiers defined by a waterway as distinct from its banks, the phrases "course" or "channel" used in the descriptions of the present Treaty signify, as regards non-navigable rivers, the median line of the waterway or of its principal branch, and, as regards navigable rivers, the median line of the principal channel of navigation. It will rest with the Boundary Commission to specify whether the frontier line shall follow any changes of the course or channel which may take place, or whether it shall be definitely fixed by the position of the course or channel at the time when the present Treaty comes into force.

Treaty of Lausanne¹²⁸

¹²⁶ As previously stated this part is co-researched with Stefanos Levidis. The fieldnotes and sketches as well as hydrophone recordings are my own. These are central to my practice. However, the thinking and research elsewhere in this part is jointly produced. Where key terms from our separate research appear, such as spectrum of wetness, pertinent to my research, or 'border ecologies' in Stefanos's research, they are specified.

¹²⁷ Jean-Jacques Rousseau, *A Lasting Peace Through the Federation of Europe And the State of War* (London: Constable, 1917 [1756]) p. 50.

¹²⁸ Treaty of Lausanne, Article 6., Martin Lawrence, *The Treaties of Peace 1919-1923, Vol. II*, (New York: Carnegie Endowment for International Peace, 1924.) p.1044. (from here on: Lausanne).

Introduction

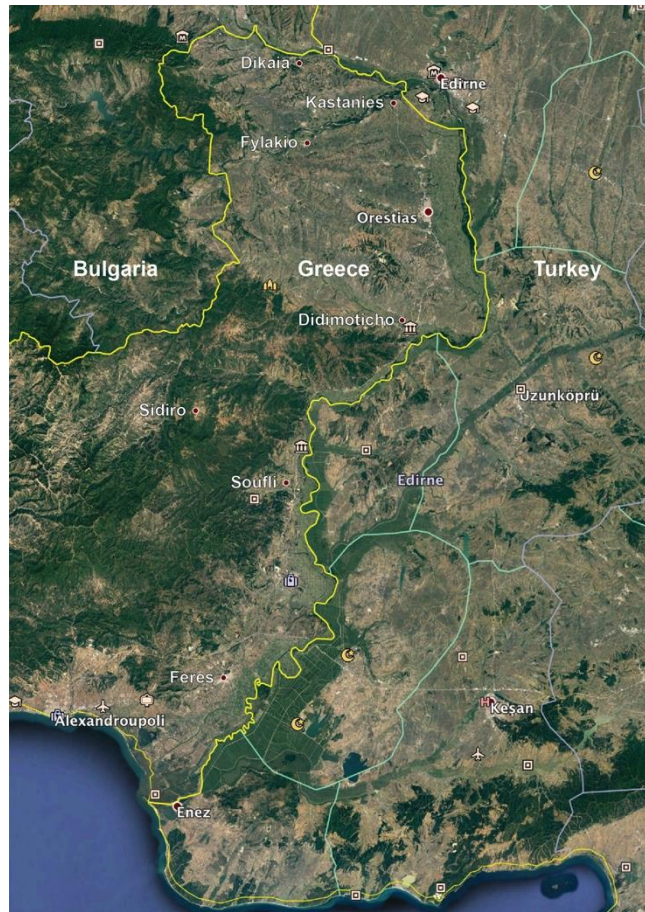


Figure 4 Map of the Evros prefecture with key research locations identified (Ifor Duncan and Stefanos Levidis).

A man kicks the ground trying to uncover the “blood of Greeks” in the soil beneath. He demands that this blood was shed so that Greece could be “free” and as such needs to be respected. His exasperated shouting makes much of what he says difficult to comprehend. Caught in a fit of nationalist fervour he is filmed secretly from behind a wire fence by a group he identifies as ‘Kurds, Syrians, Iraqis, Pakistanis’.¹²⁹ These people are detained at the Fylakio detention centre in the very north of the Evros region of Greece.¹³⁰

¹²⁹ Anna Nini, ‘Nationalist Delirium of Employee of Ministry Migration to the Evros refugee camp’ *Vice News Greece* (January 11 2019) available at: https://www.vice.com/gr/article/59v73a/e8nikistikoparalhrhmaypallhloytoyypmetanasteyshtostokampprosfigwntoyebroy?fbclid=IwAR3_IMAZujfe_T9KLY9LyeG-mMadb8QL3kfzNTqUHBrEHEEyB5KisKk9K9Y (accessed January 2019).

¹³⁰ The Ardas tributary is itself visible from the centre.

Elsewhere it is the Aegean that is Greece's line of defence, here it is the river. The sound of the soil scraped by his boot brings into focus the paradox that water is mobilised as defensive boundary of the earthbound notion of Greekness, and accordingly Europeaness. Towards the end of the short video the official¹³¹ utters the pivotal words: 'Ok, Zagros going to go out. Go out, takes him, going to Turkey now.' In his broken English he intimates that these men should stop complaining about their detention because when they are released they will be picked-up once more and clandestinely pushed-back to Turkey across the Evros/Meriç river. This is a cycle regularly repeated, with many attempting to cross multiple times in quick succession after being pushed back on each occasion.

Kicking the ground he mobilises the soil as that which is to be defended. Except for a 12km fence, the river forms a fluvial frontier against those who attempt to cross into the EU to apply for asylum. The deterrent fence was completed in 2012 along the stretch of border that is not delimited along the river. The fence directed border crossers to more dangerous routes and to deadlier maritime crossings in the Aegean sea. Altering the land border directly and indirectly, it is paradoxically the fence which technologises the river.

The Evros/Meriç/Maritsa is the second longest river in the Balkans, running for more than half of its 530km course through Bulgaria, as the Maritsa, before forming the Evros in Greek, or Meriç in Turkish, for its final 218 km.¹³² This final stretch is frequently called the 'land' border or 'natural border' between Greece and Turkey.¹³³ The river has remained the boundary since its delimitation in the 1923 Lausanne Peace treaty.¹³⁴ In recent years the river has become an established route for refugees travelling through Turkey from Iran, Iraq, Syria, Afghanistan

¹³¹ According to his lanyard, the man is an employee of the centre and not a police officer. On a field trip in November 2018 Stefanos interviewed the same man, identified as Chris Michaelidis, then acting deputy director of the Centre. At the time he made the assurance that he was doing everything within his powers to ensure that human rights are respected within the centre. He gave Stefanos his business card, with the address of a hotel room in Orestiada as his address. His presence in Evros, it seems, was as fleeting as that of the refugees he was tasked with keeping outside Greek territory.

¹³² For the purpose of this chapter the naming of the river indicates its geopolitical division. When the entire river catchment is discussed all three names will be provided. When referring to just the river border between Greece and Turkey this changes to Evros/Meriç. When one name is provided the river is being approached from the context of the relevant side of the border.

¹³³ Mylopoulos, Y., et al., 'Hydrodiplomacy In Practice: Transboundary Water Management in Northern Greece,' *Global NEST* (2008) 10:3, pp. 287-294, p.292.

¹³⁴ The treaty brought an end to the Greco-Turkish war of 1919-1923.

and Bangladesh, as well as from east Africa and elsewhere. Increasingly, Turkish and Kurdish refugees are crossing into Greece in response to Turkish President Recep Tayyip Erdoğan's Justice and Development Party's repressive politics.¹³⁵ Many drown in their efforts to cross. Those who make it do not necessarily escape the river's ambiguous frontier but, often wet and cold, they are instead illegally sent back by masked operatives under the cover of night.

In December 2018 humanitarian NGO *Human Rights Watch* published the testimonies of 26 asylum seekers in Greece and Turkey concerning events taking place between the months of April and November, when most Evros crossings and pushbacks occur.¹³⁶ These testimonies provide crucial first-hand experience of the ways the river has been made treacherous, and these are referred to throughout this part of the thesis. 2018 saw an increase in the numbers of people taking the Evros route, with the International Organization For Migration (IOM) registering 13,784 arrivals by the end of September, four times the number of the previous year.¹³⁷ In June 2018 Turkey suspended the 'bilateral readmission agreement' signed in 2002,¹³⁸ an agreement that has concerned the UNHCR Special Rapporteur as it is deemed to exclusively operate to 'combat[...] "illegal" migration' without 'guarantees for respecting the human rights of migrants, such as non-refoulement or the principle of the best interests of the child'.¹³⁹ Previous reports identify that pushback practices are systematic and embedded, stretching back to before 2000.¹⁴⁰

¹³⁵ Recently Erdoğan has threatened to 'modernise' the Lausanne treaty to much consternation from Greek counter parts. Helena Smith, 'Confrontational Erdoğan stuns Greek hosts on Athens visit' *The Guardian* (7 December 2017) available at: <https://www.theguardian.com/world/2017/dec/07/turkish-president-erdogan-to-make-landmark-visit-to-greece> (accessed: March 2019).

¹³⁶ Human Rights Watch (HRW), 'Greece: Violent Pushbacks at Turkey Border' (December 18 2018) available at: <https://www.hrw.org/news/2018/12/18/greece-violent-pushbacks-turkey-border> (accessed March 2019).

¹³⁷ UNHCR, 'UNHCR Shocked at Deaths in northern Greece' (13 October 2018) available at: <https://www.unhcr.org/gr/en/10611-unhcr-shocked-at-deaths-in-northern-greece.html> (accessed March 2019).

¹³⁸ At the time of writing, following the election of a new right-wing government in Greece, human rights organizations on the ground report that the infamous EU-Turkey deal is de-facto suspended, even if still standing on paper. Such a volatile condition paves the way for an increase in illegal pushbacks.

¹³⁹ Report of the Special Rapporteur on the human rights of migrants, François Crépeau on his mission to Greece (25 November to 3 December 2012) p.9 available at: https://www.ohchr.org/Documents/Issues/.../A.HRC.23.46.Add.4_Greece.doc (accessed May 2019).

¹⁴⁰ Rafael Jimenez, 'Stuck in a Revolving Door: Iraqis and Other Asylum Seekers and Migrants at the Greece/Turkey Entrance to the European Union' *Human Rights Watch* (26 November 2008) available at: <https://www.hrw.org/report/2008/11/26/stuck-revolving-door/iraqis-and-other-asylum-seekers-and-migrants-greece/turkey> (accessed May 2019).; ProAsyl, The Greek Council for Refugees, and Infomobile, 'Walls of Shame: Accounts from the inside: The Detention Centre of Evros' (April 2012) available at:

Within the context of crossing and pushbacks the key questions asked in this part, include how is the river weaponised? How do the ambiguities produced within the fluvial frontier produce a condition of ecological exception where the state acts in violent excess? Finally, what methodological approaches can be adopted to perceive the subtle modes of bordering in such environmental weaponisation? These questions will be approached through four main sections: I.i. *Arcifinious: 'Fit To Keep The Enemy Out*; I.ii *Sounding The Border In Becoming: A Practice Note*; I.iii *Transboundary Waters*; and I.iv *Accretion and Avulsion*.

Through a fieldwork practice focusing primarily on the river ecosystem and floodplain conducted at the Evros/Meriç in February 2019, this research takes the form of field notes, hydrophone recordings, photography, and cartographic methods. These field notes and images punctuate the following, giving texture to the conceptual thinking that took place in the field. A multi-disciplinary approach is likewise adopted here through the assemblage of critical humanities discourse with natural sciences and legal boundary literatures. Through this approach this part of the thesis explores the strained border relationship between Greece, Bulgaria, the EU and Turkey as it manifests across ecological scales at the Evros/Meriç/Maritsa.¹⁴¹ In the foreground are tensions over irregular border crossings between Greece and Turkey,¹⁴² a friction that spans across ongoing territorial disputes between the two, and in the background centuries of political friction and military conflict. These tensions have had environmental impacts, including the failures of transboundary river management and adequate flood prevention. Alongside the Aegean islands, boundary discord has been concentrated at the Evros/Meriç, implicating the river within the confluent politics of the fluvial frontier.

https://www.proasyl.de/wp-content/uploads/2015/12/PRO_ASYL_Report_Walls_of_Shame_Accounts_From_The_Inside_Detention_Centres_of_Evros_April_2012-1.pdf (accessed may 2019).

¹⁴¹ The Thracian plain and Evros river have been of strategic geopolitical importance for centuries. The history and memory of conflict in the region is engrained into the border landscape. Including a decisive victory by vastly outnumbered Ottoman forces against an invading Serbian army at the battle of Maritsa in 1371. This took place near the Greek village of Ormenio close to the Bulgarian border. The river is said to have run red with the blood of Serbian soldiers drowning and dying in the river as they escaped the battle. Harold W.V. Temperley, *History of Serbia* (H. Fertig, 1917) p. 97.

¹⁴² Irregular border crossings also take place between Bulgaria and Turkey although this is not the primary focus of this chapter. As recently as July 2019 the EU-Turkey readmission deal was suspended ushering in a further increase in the numbers of illegal pushbacks from Greece and Bulgaria into Turkey.

The fluvial frontier incorporates both the social weight of rivers and expanded environmental forms of bordering. River borders are complex examples of the employment of environmental features in bordering processes. As borders, rivers embody a paradoxical *concentration* and *diffusion* of their social and political surroundings. Where hydrosocial and relational thinking increasingly understands rivers as containing *concentrations* of multiple social and political conditions,¹⁴³ borders on the other hand are increasingly understood as a *diffusion* of power across technological, socio-cultural and environmental processes.¹⁴⁴ The fluvial frontier of the Evros/Meriç thus incorporates the material and socio-cultural conditions at play within its floodplain. The border regime appropriates the riverine characteristics of flow, erosion, mud, turbulence and fog as much as it is founded on military, agriculture and environmental conservation practices. These elements are braided into the border, producing a complex weave of strands that this part of this thesis attempts to explicate. The technological militarisation of the riparian zone against invading Turkish forces on the Greek side of the river is likewise marshalled against border crossers. Foremost amongst this organisation is the fence built in 2012 to close the safest route for crossing, in the north near Edirne, and directing crossings to more dangerous routes into Greece (contributing to a rise in deaths in the Aegean). In a more direct manner the floodplain is militarised through the illegal and often violent pushbacks of crossers back into Turkey by clandestine forces.

This combination of elements around the river has led us to ask: what is the role of water in the politics of death at the border? Here river waters stand between and, perhaps more importantly, blur the binarisms of connection / division, and life / death. The fluvial frontier is a complex and nuanced territorial condition braiding together multiple elements including conservation, transboundary river management, military technology, the geopolitics of resource logistics, and the diverging visible and opaque politics of border crossing and push backs. In their influential book *Border as Method, or, the Multiplication of Labor*, Sandro Mezzadra and Brett Neilson state that at borders it is never as easy as to make clear distinctions between division and flow,

¹⁴³ Swyngedouw (2004) p.4.

¹⁴⁴ Anssi Paasi, 'Boundaries as social processes: territoriality in the world of flows', *Geopolitics*, (1998) 3:1, pp. 69–88, p.73, p.82.; see also, Marco Ferrari, Elisa Pasqual & Andrea Bagnato, *A Moving Border: Alpine Cartographies of Climate Change* (New York NY: Columbia Books on Architecture and the City, 2019).

or division and fragmentation.¹⁴⁵ Instead, in their unfolding of the seminal work of anthropologist Anna Tsing, frontiers are the ‘confusions between legal and illegal, public and private, disciplined and wild.’¹⁴⁶ Mezzadra and Neilson suggest that border zones are entangled with the paradoxes of both connection and disconnection. The border, thus, folds together floodplain, military buffer zone, conservation, and resource exchange. Between these elements the Evros is a technology produced by such ‘frictions.’ These frictions result in a specific type of border water. These border waters are a confluent hydrosocial politics of discord.¹⁴⁷ Such discord revolves around the frictions produced by the braiding of the above elements through the exchange of resources in pipelines, unregulated pollution, and major flood events.

The border condition produces a type of water that is itself an arcifinious infrastructure. The production of water through specific socio-natural contexts changes not only the institutional and discursive constructions of water but also its very physical presence – in turn influencing the socio-natures it is internally connected with.¹⁴⁸ This echoes Jamie Linton and Jessica Budds statement that ‘water internalizes social relations and politics.’¹⁴⁹ In the context of a bordering water the mutual and internalised relationship of water and society is one in which water’s agency is harnessed violently within the social formation of the border. This specific border water has emerged since the Athens protocol of 1926. Prior to 1926 the river’s processes had other associations. In the time since, however, this water has become a specifically bordering socio-natural construction. In return, through the mutuality of water the surrounding transboundary tensions produce a type of water conditioned by the border. Karen Bakker also emphasises that in specific socio-natures the mutuality of water has an agentive and positive role in the production of social formations.¹⁵⁰ Thinking through the cases of this thesis, I would

¹⁴⁵ Sandro Mezzadra and Brett Neilson, *Border as Method, or, the Multiplication of Labor* (Durham NC: Duke University Press, 2013) p.210-11.

¹⁴⁶ Anna Tsing, *Friction: An Ethnography of Global Connection* (Princeton NJ: Princeton University Press, 2005) p.41.

¹⁴⁷ Henri Lefebvre identifies that sovereign space is established through originary and continuing acts of violence. The Lausanne treaty itself can be considered as such an originary act with continuing repercussions. *The Production of Space*, trans. by Donald Nicolson-Smith (Oxford: Blackwell, 1991) p.280.

¹⁴⁸ Jamie Linton and Jessica Budds, ‘The Hydrosocial Cycle: Defining and Mobilizing a relational-dialectical approach to water,’ in *Geoforum* (2014) 57, pp.170-180, p.173-4. (Karen Bakker, ‘Water: Political, biopolitical, material’, in *Social Studies of Science* (2012) 42:4, pp.616-623). Here, however, I show how in constructing a specific hydrosocial formation water’s agency is mobilised for violent processes.

¹⁴⁹ Linton and Budds, (2014), p.171.

¹⁵⁰ Karen Bakker, ‘Water: Political, biopolitical, material’, in *Social Studies of Science* (2012) 42:4, pp.616-623.

argue that a reverse mutuality also operates at the Evros/Meriç/Maritsa, whereby the framing of water's agency through arcifinious bordering practices, defining both borders and national identities, has a violent impact on the production of social relations. This is particularly the case where social relations include the fatal treatment of refugees and asylum seekers. Consequently, not only are waters harnessed as an external medium of border violence, they also 'internalise' this politics. As explored in Section I.i, this produces a water that is heavily polluted, susceptible to major flooding, increasingly saline close to the Delta, and, most tellingly, bearing the bodies of those displaced by conflict and illegalised in their attempt to claim asylum. With border water conditioned in this way, we claim that rather than being a 'natural' border, the Evros is an exemplary case of a *borderised* nature.¹⁵¹

As much as the Evros/Meriç is always a spatial configuration this braiding of infrastructure, policy and water resonates with anthropologist Elizabeth Povinelli's reading of the frontier as concept not place, and a 'way of imagining space so that various things can be done there'.¹⁵² The very drawing of a fixed yet imaginary line along the central course of the river (dictated at Lausanne, above) effectively produced the river as a frontier, whereby its movements and muds become spaces where sovereign territorial imaginaries are projected. It is such a legal-territorial imaginary that turns the vectors and fluid dynamics of the river into a weapon.

In *Hollow Land: Israel's Architecture of Occupation* Eyal Weizman emphasises that linear borders, a legacy of the military cartographic imagination, have become elastic.¹⁵³ The elastic border is constantly being remade, it shifts and reforms and, as Weizman identifies, is as, or even more, deadly than static borders.¹⁵⁴ At the Evros/Meriç this elasticity is present as the blurring between flood defences and tank-traps in the form of the berm (which we will explore later in this part).¹⁵⁵ Despite the elasticity of the border in practice, the violent discriminations

¹⁵¹ This inversion is a central pillar to Stefanos's thesis.

¹⁵² Elizabeth A. Povinelli, 'Three Imaginaries of the Frontier with Illustrations,' *Frontier Imaginaries* 5 (9 April 2019) available at: <http://frontierimaginaries.org/organisation/essays/the-imaginaries-of-the-frontier-with-illustrations> (accessed May 2019).

¹⁵³ Eyal Weizman, (2007), 6.; Weizman includes the terms 'separation walls', 'barriers', 'blockades', 'closures', 'roadblocks', 'checkpoints', 'sterile areas', 'special security zones', 'closed military areas' and 'killing zones' as border synonyms.

¹⁵⁴ *Ibid*, p.7.

¹⁵⁵ Prem Kumar Rajaram and Carl Grundy-Warr have defined the term 'borderscape' that resists the line of division between inside (domestic) and outside (alien) instead considering borders as 'mobile, perspectival, and

reproduced by bordering states continue to limit the epistemology of the border to stark divisions. These divisions maintain naturalised ethnic difference through equally naturalised boundaries.¹⁵⁶ To see this frontier as a spectrum of wetness, however, uncovers the production of the border as a simple geographic and ethnic demarcation when it has always operated in dispersed and muddy ways beyond the reductive binarisms of inside and outside, which power tries to sustain. This spectrum of operation in liquid form includes river waters, mud, disinfectant sprays, and liquid gas passing through pipelines beneath the river. With this expanded perspective we aim to critique and disambiguate the very notion of rivers as ‘natural’. This is intended to de-naturalise borders and, in turn, further de-naturalise racist rhetoric that reproduces ethnic and cultural division. By thinking against material and discursive reproductions of both rivers and borders as ‘natural’ phenomena this part, *Fluvial Frontier* identifies the Evros/Meriç/Maritsa as the result of multiple organisational technologies of territorial sovereignty.

In addition to the fluvial frontier, the key terms that are employed in this chapter, include: arcifinious, thalweg, and watery spectrum. *Arcifinious* is a term derived from the legal heredity of international border law, and refers to a state, or indeed arcifinious state, bounded by geophysical limits considered to have defensive capabilities such as rivers and mountains. The decision to choose these geo-physical features for their hostile qualities is inevitably the instrumentalisation of what have commonly been thought of as ‘natural borders’. The choice of arcifinious boundaries is mobilised in naturalising processes central to claims of territorial sovereignty. International river borders are regularly located upon the thalweg, as the deepest and fastest flowing part of river channels. This is most commonly so that both parties can utilise the fastest and deepest downstream channel for navigation purposes. As the fastest part of the river, however, it is also the most lethal. By thinking with rivers as insufficient boundaries this chapter, however, attempts to challenge the arcifinious and, in turn, goes some way to further denaturalise the very territorial claims of the nation state. In doing so the inheritance of

relational.’ Rajaram & Grundy-Warr, (eds.) *Borderscapes: Hidden Geographies and Politics at Territory’s Edge* (Minneapolis MN: University of Minnesota Press, 2007) p.10.

¹⁵⁶ John Agnew has written of the imposition of borders as territorial and, therefore, epistemologically limiting phenomena that require practices that think and act beyond these delimitations. John Agnew, ‘Borders on the Mind: Re-framing Border Thinking’ *Ethics and Global Politics* (2008) 1:4, pp. 175-191.

geophysical features as boundaries by contemporary border regimes¹⁵⁷ is identified through the arcifinious as the appropriation of “nature” as a weapon.

Today the river continues to be shadowed by a military buffer zone extending as far as the railway line and main roads at the edge of the floodplain, often engulfing entire villages. The variation of the border from the thalweg, at the centre of the river course, to the floodplain / buffer zone is the result of a combination of ecological, military and, in places, conservation practices producing a fluvial border technology.¹⁵⁸ The blurring of the floodplain and buffer zone is a particular focus of this chapter. Access to the buffer zone is tightly controlled and photography is prohibited, creating a scarce image regime and clear limitations for research. This further contributes to an ambiguous frontier zone with gaps in knowledge and observation within which extraterritorial violence takes place with impunity.

The ambiguity of this frontier is further constructed by the multiple actors – many unidentified – operating within the uncertain floodplain. ‘Joint Operation Poseidon Land,’ the name of Frontex’s (the EU border and coastguard agency) Evros operation, conjures a pathologic mythology casting asylum seekers as mortals committing the hubris of seeking refuge in Europe, while Frontex claims the role of the chastising deity.¹⁵⁹ Here, Poseidon, god of both the sea and rivers, intervenes at the land / water divide. In mythology where his trident struck the land earthquakes, flooding and drowning ensued. The trident in this case takes the form of Frontex’s RABITs (Rapid Border Intervention Team), the shadowy forces suspected of multiple cases of pushbacks and violence – even of killing border crossers.¹⁶⁰ Revealingly, they are what European Home Affairs Commissioner Cecilia Malmström described as “a concrete demonstration of European Solidarity”.¹⁶¹ The manifestation of this solidarity remains dubious,

¹⁵⁷ By border regime we refer to a combination of elements that directly and indirectly govern the frontier. The regime might refer to direct actions by the individual states, or supranational organisations such as Frontex, but also the very ambiguities of the fluvial frontier as contributing to political and social conditions.

¹⁵⁸ The geomorphological shifts of the riverbed inherent to fluvial processes speak to Pezzani and Heller’s understanding of the ‘decoupling’ of the functioning of borders on land, instead they become ‘dispersed and mobile’ presenting the possibility of ‘ever-shifting routes.’ Charles Heller & Lorenzo Pezzani, ‘Liquid Traces: Investigating the Deaths of Migrants at the EU’s Maritime Frontier’ in *Forensis* (2014), p. 680.

¹⁵⁹ Helena Drysdale, ‘Night vigil in Thrace: Despite its turmoil, ever more people are risking their lives to enter Greece. Welcome to Europe’s most porous border,’ *AEON* (17 September, 2012) available at: <https://aeon.co/essays/greece-s-other-crisis-coping-with-a-rising-tide-of-immigrants> (accessed May 2019).

¹⁶⁰ ProAsyl et al, (2012) p.7.

¹⁶¹ *Ibid.*

as a 2012 report by German asylum advocacy organisation ProAsyl states: ‘There are many actors involved in the procedures of border patrols and screening, so ambiguity over the respective roles and responsibilities creates a gap in accountability and potentially permits impunity.’¹⁶² In addition to the multiple actors, impunity is also produced by the buffer zone’s folding of the excess represented by floodwaters into the excesses of sovereign territorial power. What we have discovered in this case is that the “concrete manifestation of European solidarity” has resulted in a region in which beatings are customary, official documentation is thrown into rivers and, after seasonal floods, bodies wash up in the accretions of the border.

This might be understood as the construction of an ecology of exception. Adapting political philosopher Giorgio Agamben’s definition of the state of exception as the ambiguous zone between law and fact where the demands of a constructed *status necessitas* produces spaces in which state violence is enacted with impunity.¹⁶³ Likewise, critical border scholars Prem Kumar Rajaram and Carl Grundy-Warr suggest that the exposure of border crossers to fatal forces is the operation of ‘the zones of exemption’ where ‘sovereign power cease[s] to function.’¹⁶⁴ However, in relation to the fluvial frontier, rather than a space of exemption sovereign power does not cease to function but incorporates the river’s ambiguities in the production of impunity. The frontier reveals itself as an excess of law rather than its absence. Consequently, this is not the cessation of power’s function but its very purpose.

The violence of the border operates under an equivalent construction of necessity. In Evros this folds together the ambiguous space of the floodplain with transboundary impasse. This is most evident when water shifts and floods beyond the cartographic line of the banks.¹⁶⁵ It blurs the

¹⁶² *Ibid.* p.8; Julie Evans, ‘Where lawlessness is law: the settler-colonial frontier as a legal space of violence’, *Australian Feminist Law Journal* (2009) 30:1, pp. 3-22; See also: Suvendrini Perera, ‘Oceanic corpo-graphies, refugee bodies and the making and unmaking of waters’ *Feminist Review* (2013) 103:1, pp. 58-79.

¹⁶³ Giorgio Agamben, *State of Exception*, trans. by Kevin Attell (Chicago IL: University of Chicago Press, 2005) p.29.

¹⁶⁴ Rajaram & Grundy-Warr, ‘The Irregular Migrant As Homo Sacer: Migration and Detention in Australia, Malaysia, And Thailand’, *International Migration* (2004) 42, pp. 33–63, p.38.

¹⁶⁵ Povinelli, *Geontologies: A Requiem to Late Liberalism* (Durham NC: Duke University Press, 2016) p.19-22; For more on the spatial politics of the cartographic discipline of the line see Dilip Da Cunha (2018).

cartographic and physical delimitation to scale the border up to the entire floodplain / buffer zone.¹⁶⁶



Figure 5 Diagram of the overlaps of flooding (here on the 4th of April 2015) with the Zoni Asfaleias Prokalypsis (ZAP) or Security Buffer Zone. (Ifor Duncan and Stefanos Levidis).

The above diagram records a flood event in April 2015 on one of the major bends of the river east of Didymoteicho. Here the river stretches from the village of Isaakio, in the bottom left of the map, to Pythio, at the top. The annotation indicates that the river's flooding extends only as far as the railway berm itself (indicated by the dashed line for the railway above. Berms are banks of earth often used for flood defence purposes). With the numbers of deaths on the railways rising in recent years it is, at least in an oblique way, incorporated within the assemblage of obstacles mobilised against migrants.¹⁶⁷ The diagram establishes the overlapping relationship between the raised railway, as flood barrier, and the military buffer zone. The river as a militarized space extends as far as the flood berm – incorporating the floodplain as a crucial arcifinious element within the border infrastructure. Perhaps un-

¹⁶⁶ The Evros region, as I shall develop further, is skirted by a military buffer zone restricting access to the river.

¹⁶⁷ Refugee.info, 'Hidden Dangers at the Greece-Turkey land border' (25/01/2019) available at: <https://blog.refugee.info/major-risks-at-the-greek-land-border/> (accessed May 2019).

coincidentally this small stretch of river is a regular point for both crossings¹⁶⁸ and pushbacks, as well as the location of the deaths of twelve border crossers between 2000 and 2010.¹⁶⁹ A case on the 8th of May 2018, involving a group of 14 attempting to cross during a flood event, speaks directly to the overlapping of flooding with the operations of the border. The attempt failed and resulted in one fatality. Once the border crossers returned to Turkey they attempted to contact Greek authorities with a picture of the ID card and the GPS location of the missing person. Greek Police stated that *the flooding was too severe* to attempt a recovery, and over the next few days no confirmation of the recovery of the body was received.¹⁷⁰ As we shall explore later flooding is likewise referenced by the Police in their attempts to obscure the possibility of the existence of pushbacks.



Figure 6 On top of the berm at Dikaia (Ifor Duncan and Stefanos Levidis, 2019).

¹⁶⁸ For example, a group of nearly 200 people, including 37 children, crossed at Pythio on the 26th December 2015. Watch the Med ‘Travellers stranded on an island in the Evros river,’ <http://www.watchthemed.net/reports/view/390> (Accessed May 2019).

¹⁶⁹ Pavlidis & Karakasi, (2019), p.469.; In August 2016 a group were stranded on an island in the middle of the river – towards the left of the image. Watch the Med, ‘Travellers stranded on an island in the Evros river,’ (03/08/2016): <http://www.watchthemed.net/reports/view/550> (Accessed May 2019).

¹⁷⁰ Watch the Med, ‘14 Travellers attempt to cross Turkish-Greek land border, one dead person’ (08/05/2018) <http://www.watchthemed.net/reports/view/859#> (Accessed May 2019).

To counter the obfuscating tactics deployed by the Police in their use of flooding as an alibi, requires perceiving the entire flood zone as a border technology. This, in turn, involves a beholding eye striving to see water as freezing fog in the valley, dew in the field and mud in the riverbanks as clearly as it sees water in the material intensity of the main river channel. Such a mode of perception makes evident the contradictory way the border regime outwardly maintains a river / land divide whilst already operating as an expanded or ‘dispersed’ territorial technology.¹⁷¹

This includes interstitial muddiness – a muddiness that is itself hazardous.¹⁷² Many refugee testimonies describe the point of stepping onto the ground as saturated and difficult to walk through.¹⁷³ Mud is often an unaccounted element in the arcifinious imaginary of the river.¹⁷⁴ The after-effects of immersion and soaking rain are also folded into the spectrum, where the wetness of the fluvial frontier is embodied by border crossers and becomes deadly through hypothermia. Mud emphasizes how the ecosystem border exists through the full watery spectrum, where violence spans each of the elements of the spectrum. Here we perceive the river border as a relational zone of flows, currents, ground and river water, mud, floods, and irrigation technologies. This mode of perception understands borders beyond the cartographic lines¹⁷⁵ that power chooses to represent itself but as always already expanded through deadly infrastructures that consist of spectrums of material and environmental elements.

¹⁷¹ Anssi Paasi, ‘Border studies reanimated: going beyond the territorial/relational Divide’, *Environment and Planning A* (2012) 44:10, pp. 2303–9, p. 2304.

¹⁷² We found the thick and deep mud tracks hazardous to drive on.

¹⁷³ Behzad Yaghmaian, *Embracing the Infidel: Stories of Muslim Migrants on the Journey West* (New York: Delacorte Press, 2005) p.113. The refugee named ‘Roberto’ describes crossing Meriç between Turkey and Bulgaria and walking in mud up to their knees in the riverbank.

¹⁷⁴ In his treatise on the poetics of water, Gaston Bachelard considered that in the union of water and earth, ‘water is dreamed in turns in its role as softener and as binder.’ If the materiality of the flood space is ‘softened’ with water – it is malleable within the frontier imaginary. Malleable, for example, into the form of the embankment. Bachelard, *Water and Dreams: An Essay on the Imagination of Matter*, trans. by Edith Farrell (Dallas TX: Dallas Institute of Humanities and Culture, 1982 [1942]) p.104.

¹⁷⁵ Denis Cosgrove, *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination*, (Baltimore MD: Johns Hopkins University Press, 2003).

*ARCIFINIOUS: 'FIT TO KEEP THE ENEMY OUT'**or de 'NATURAL'ising BORDERS*

Arcifnious: *a. rare.* [f. L. *arci-fini-us* (f. *arc-* (*arx*) defence, or *arcēre* to ward + *finis* boundary) + -ous.] Having a frontier which forms a natural defence. (The exact sense of the word in Latin is disputed.) // 1859 in WORCESTER. 1884 TWISS *Law of Nations* II. 215 A Title to Territory by reason of contiguity, in the case of Arcifnious States, so called according to Varro because their territory admits of boundaries fit to keep the enemy out (*fines arcendis hostibus idoneos*), in other words, of States whose territory admits of practical limits, such as rivers and mountains, is a reciprocal title.¹⁷⁶

With 72,000 km of river and stream forming over a third of all international land boundaries it is clear that rivers offer characteristics that are attractive to those tasked with the territorial project of imposing 'trespass lines'.¹⁷⁷ Now rare, the word arcifnious implies the identification of States which are demarcated along 'practical' territorial limits. Such delimitation understands a mountainous region as the edge of a national community which is in turn defined by being bounded by this geophysical element. In this way rivers are used to divide where connection might be just as, if not more, feasible. In such case national identity is consequently defined by a perceived naturalness based on the perception that the sea, river, mountain is itself a natural boundary. This cartographic perspective was certainly dominant at the drawing of the border between Greece and Turkey at the Lausanne treaty in 1923, and, as evidenced by the Fylakio border guard, remains a dominant component of Greek nationalist identity.

Recently Lorenzo Pezzani and Charles Heller have incorporated Theresa May's phrase 'hostile environment' to identify the relation between the internalisation of an all-pervasive border regime and policy decisions of channeling migrants into increasingly hostile terrains, most notably the Mediterranean. Central to their thesis is the very harnessing of geophysical characteristics as tools of the border.¹⁷⁸ It is in this way that "physiographic political boundaries,"¹⁷⁹ are chosen by design not only as modes of deterrence but as weapons. The malleability of such physiographic boundaries is likewise calculated into the

¹⁷⁶ *Oxford English Dictionary*, 2nd ed. (Oxford: Oxford University Press, 1989), s.v. "Arcifnious".

¹⁷⁷ John W. Donaldson, 'Paradox of the moving boundary: Legal heredity of river accretion and avulsion' *Water Alternatives* (2011) 4:2, pp.155-170; For Trespass line see Martin Glassner, *Political Geography* (New York: John Wiley & Sons, 1993), p.73.

¹⁷⁸ Pezzani & Heller, "'Hostile Environment'(s): Sensing migration across weaponised terrains' (forthcoming).

¹⁷⁹ Glassner, (1993) p.77.

Evros/Meriç/Maritsa. An increase in crossings in 2011, 55,000 in total, led the Greek government, with EU assistance, to build a 12 km fence along the land border in the north of the region. The deterrent fence was completed in 2012 at the stretch of border that is not delimited along the river but specified in Article 2(2) of the Lausanne treaty as running between Bosna-Keuy and Tchorek-Keuy [now: Karaağaç] so as not to isolate the village suburbs of Edirne.¹⁸⁰ Directly altering the land border and indirectly technologising the river, the fence directed border crossers to more dangerous routes across the river.

The de-naturalised condition of the river can itself be extrapolated from the way international law conceives of rivers as borders. Foundational amongst this literature is Dutch jurist Hugo Grotius's 1715 treatise *Of the Rights of War and Peace*. Grotius identifies the notion of the weaponised border within the 'Arcifinious' state, as a state with 'natural' boundaries "fit to keep the Enemy out":¹⁸¹

such lands as are occupied or possessed, either as being vacant, or else by the power of the sword... in arcifinious lands, the river, by gradually altering its course, does also alter the borders of the territory; and whatsoever the river casts up to the opposite side, shall be under his jurisdiction, to whom the augmentation is made.¹⁸²

For John Donaldson, legal scholar, and crucial author in the field of international river border law, both Grotius, and following him jurist Emer de Vattel, conceive of rivers as 'part of 'arcifinious' or 'natural' military frontier zones that are "indetermined", natural, and flexible based on the application of force.'¹⁸³ Here we see a clue to the weaponisation of the river, not, indeed, as 'natural' but to the contrary always flexible to *force*. This force might take many forms, even the indirect force of changes in river management policy, as we shall discuss further in the section I.iii *Transboundary Rivers*. The impacts of these forces might be lateral, relational, as well as vertical.

¹⁸⁰ Lausanne, Article 2.; It is in the strange triangle of land, referred to as a no-mans land, that border crossers encouraged by the Turkish opening of the border in March 2020 were caught between two states. After swimming across the river and breaking down sections of fence large groups of people were faced by Greek riot police and attacked with tear gas and even live rounds. These events were occurring during the writing of corrections and so have not been fully integrated into the body of the text.

¹⁸¹ Donaldson, (2011) p.159.

¹⁸² Hugo Grotius, *Of the Rights of War and Peace* (London: Brown, Ward, Meares, 1715).

¹⁸³ Donaldson, (2011) p.159. As the Oxford English dictionary identifies above Twiss's use of the term in the 1884 *Law of Nations* II, paraphrases Varro, identifying the certain features of the landscape are chosen as 'boundaries fit to keep the enemy out.'

The trespass line here is a large river, annually discharging approximately 3,200,000 tonnes of sediment and 9.5 km³ of freshwater from the Rila mountains in Bulgaria through a region of rich biodiversity and riparian habitats out into the Aegean. These calculations of river flow and sediment transportation conceal a deadly politics of bordering that incorporates the full spectrum of the river's hydrology. The volume and the speed of water are what make it treacherous to cross. In John Collins's compendium of military geography he addresses the significant characteristics of rivers in military application. These include width, depth and most importantly current velocity:

Current velocities, usually stated in feet or meters per second, depend primarily on the steepness of the stream bed. Twenty-five to 30 feet (7-9 meters) per second or 17 to 20 miles an hour is considered quite fast, whereas 1 or 2 feet per second or less is sluggish. The deepest, fastest flow normally follows the main channel well above the bottom, because stream banks and beds function as friction brakes.¹⁸⁴

The mean annual flow rate of the Evros is 103m³s⁻¹ (between December and April this fluctuates from 136 m³s⁻¹ and 239 m³s⁻¹). Unevenly distributed along its course are points where the river becomes treacherous.¹⁸⁵ Alongside his colleague Maria-Valeria Karakasi, the coroner of Alexandroupolis, Evros region, Professor Pavlos Pavlidis states that as with the sea, rivers are deadly and the location and retrieval of bodies is often difficult. They have identified that no standardized definition of 'border-related death' has been established, and consequently the collation of data and statistics are often tenuous. Nevertheless, they suggest that current estimates of migrant deaths washed up on river and seashores could be as much as one-third of the global total of border deaths.¹⁸⁶ Data on bodies emerging from the river on the Turkish side is not available, thus the transboundary nature of the Evros/Meriç further hinders calculation.¹⁸⁷

¹⁸⁴ John M. Collins, *Military Geography: For Professionals and the Public* (Washington DC: National Defense University Press, 1998), p.32

¹⁸⁵ T.D. Kanellopoulos, et al. 'Geochemical composition of the uppermost prodelta sediments of the Evros River, northeastern Aegean Sea,' *Journal of Marine Systems* (2006) 63 pp. 63–78, p.65; Therianos, A.D., 'The geographical distribution of the Greek rivers supply. Bulletin of Geological Society of Greece (1974) 11, pp.28-58.; N. Friligos, 'Local Changes of Salinity and Nutrients and Processes Contributing to Nutrient Distribution of the Evros River, in the North Aegean Sea' in J. Rose, ed. *Water and the Environment* (Philadelphia: Gordon and Breach Science Publishers, 1991).

¹⁸⁶ Pavlidis is the authority on postmortem study in the region. Pavlos Pavlidis & Maria-Valeria Karakasi, 'A Retrospective Statistical Review of Deaths Owing to Migration Through the Southeasternmost Land Borders of the European Union, Greece 2000–14', *Disasters* (2019) 43:3, pp. 459–47 p.460.

¹⁸⁷ *Ibid*, p.466.

Echoing Collins, they identify the Evros's arcifinious characteristics as its 'large width, velocity of waters, and muddy and steeply deepening riverbed.'¹⁸⁸ Elsewhere, Pavlidis goes into detail about the many hazards of the river, as well its very strong currents, dirty water, uneven muddy ground, and branches lodged in the silts of the riverbed:

at one meter distance from the riverbank its' depth is 50 cm; the next step that one might take is at a depth of three meters because the vortex of the river creates so called holes. A second factor increasing the danger is that migrants usually cross at night, in fear and anxiety. They don't see where they are going which makes them panic easily. Many of them don't know how to swim. If they fall into the water they will lose the feeling of space and they might drown. Finally, the migrants are often not allowed to carry their bags with them due to lack of space in the inflatable boats, which results in one person wearing three shirts, three pairs of trousers one on top of the other. If they fall in the water the weight of the wet clothes will pull them down.¹⁸⁹

Pavlidis assembles elements of the river's complex spatiality to outline the many threats posed by its arcifinious characteristics, processes and volumes. Most of the fatalities within the years of their study (2000-14) occurred at the very north of the region near Dikaia, as well as in the middle section of the river near the old silk town of Soufli, and towards Feres at the delta in the south.¹⁹⁰ As places where we were able to access the river itself, Dikaia and Feres were important locations for our research.

Pavlidis's calculations can be identified within the harrowing interviews collated by ProAsyl. In one particular interview with H.Y., an Iranian woman, who crossed the Evros/Meriç with her family was left to the mercy of the river and inept traffickers:

"There were two boats at the riverside. We entered the second with a total of 13 persons inside. The boat turned around and we all fell into the water. Some of us could hold on the boat while others were swept away by the sea. We couldn't swim. The boat got into a vortex so we could not orientate ourselves anymore. We didn't know which side was Turkish and which Greek! The ones of us holding on the boat reached the Turkish coast. Me and another woman were just trying to survive. The Turkish authorities rescued some of us. My two daughters and some others were carried away by the stream. I couldn't see them. I was trying to keep myself above the water. I just heard their voices shouting: 'Mother, help us!' The Turkish police searched for some hours for my daughters. Then they brought us to detention. I was desperate. We were brought to Istanbul and released. With the hope of finding my two daughters we returned to Greece. We crossed the river again and went directly to Orestiada Police Headquarters in order to report the loss of our daughters. We asked the police for help. They said we should tell that to the place they will bring us to. Then they brought us to Fylakio detention centre. Upon registration we said that we had lost our daughters. It was horrible. We asked for help and they showed us a catalogue of food in order to identify our nationality."¹⁹¹

¹⁸⁸ *Ibid*, p.463.

¹⁸⁹ Pavlidis's words quoted in ProAsyl et al., (2012), p. 88.

¹⁹⁰ Pavlidis & Karakasi (2019) p.471.

¹⁹¹ ProAsyl et al., (2012) p.87-88.

In the above words H.Y.'s daughters have become direct victims of the river's arcifinious characteristics. As is evidenced here, border crossers are exposed to the disorientation of the turbulent forces of the river. Drowning often occurs through the capsizing of boats (typically 15-20 people in each) and the instability of the plastic inflatable vessels used.¹⁹² It is afloat the river's vortex where the imaginary line has been drawn – between the two banks of state territory – that the fluvial frontier becomes deadly.

The case of H.Y., who was herself detained, as with many others, is indicative of the precariousness produced by the fence.¹⁹³ Previously crossing had taken place where the fence now stands [the bearing of the border identified in article 2(2) of the Lausanne treaty]. Where the border is delimited inland of the river's course on the Greek side, the treacherous characteristics of the river itself might be minimised but the threat is not. The bordering practice of the fence, however, the land route making crossers increasingly vulnerable to the river.¹⁹⁴ The points chosen by smugglers, taking place elsewhere along the course and at night stress the hazardous elements of the river.¹⁹⁵ These are direct results of the fence's territorial violence.¹⁹⁶

In their chapter on the extraterritorial politics of the drowned body at sea,¹⁹⁷ Elaine Stratford and Thérèse Murray compose a detailed outline of the drowning process in both fresh and salt water and the multiple contingencies and taphonomic pathways of the transportation and

¹⁹² Pavlidis & Karakasi, 2019, p.471. Crossings usually take place either in overcrowded inflatable plastic boats or swimming in groups of two or three.

¹⁹³ The ProAsyl article (2012) lists a number of such cases. p.87. *Ibid*, p.90.

¹⁹⁴ William Walters identifies these as strategic 'weak spots' in the EU external border. William Walters, 'Mapping Schengenland: Denaturalizing the Border' in *Environment and Planning D: Society and Space* (2002) 20, pp. 561-580. p.567.

¹⁹⁵ A similar condition is identified by Jason De León in his analysis of Prevention Through Deterrence. De León, *The Land of Open Graves: Living and Dying on the Migrant Trail* (Oakland CA: University of California Press, 2015) p.28.

¹⁹⁶ As we shall explore these include: the Greek Police's Operation Shield in combination with Operation Xenios Zeus.

¹⁹⁷ Elaine Stratford and Thérèse Murray, 'The Body of the Drowned: Convicts and Shipwrecks,' in Peters, Steinberg, Stratford (eds.) *Territory Beyond Terra* (London: Rowman & Littlefield, 2018) pp.169-184; Stratford and Murray's exploration of the territoriality of drowning focuses on the case of the sinking of the British convict ship *Waterloo* off the coast of Cape Town in 1842.

decomposition endured by bodies.¹⁹⁸ Thus Stratford and Murray point to a growing opinion that asserts the central position of bodies ‘to the constitution of territory and borders’.¹⁹⁹ Stratford and Murray, with the aid of Sara Smith, Nathan Swanson and Banu Gökariksel, insert the drowned into this equation, whereby bodies in water and aboard vessels ‘challenge and subvert state control of territory, and become vulnerable to violence due to state bordering practices’.²⁰⁰ Living and dead bodies perform a similar testing of inclusion and exclusion at the Evros/Meriç. Death in the river is necessary for the state to reinforce the very dangerous geophysical arcifinious quality it wishes to uphold as a ‘natural’ barrier and container of a bounded geography.

Drowning, however, is not the only threat posed by the river. There is also the slower threat of water in an expanded sense when emerging on the other side. In combination with nighttime temperatures wetness or dampness itself becomes deadly. This secondary threat adds to the complexity of the riparian area and the border as a watery spectrum dispersed beyond the banks of demarcation. The threat of hypothermia is present in cases where boats capsize and border crossers attempt to swim to the shore, or where border crossers successfully swim across. In these cases the wetness of the river in combination with cold temperatures of night crossings, exhaustion, and the wearing of multiple layers of clothing that are drenched during crossings, increase the possibility of contracting hypothermia.²⁰¹ Hypothermia is cited as the second most common cause of death at the Evros border, and is most common during winter months.²⁰² Between 2000 and 2014 drowning accounted for just over 50% of all deaths, and hypothermia just over 20%.²⁰³ Attempting to avoid hypothermia, many crossers are detained drying their

¹⁹⁸ *Ibid*, p.171-2.

¹⁹⁹ Stratford and Murray cite Smith, Nathan W. Swanson and Banu Gökariksel, ‘Territory, Bodies and Borders’ *Area*, (2016) 48:3, pp. 258–261. Indicating that it is in what are produced as transgressions that Sara Smith and her colleagues, as with others, suggest that bodies are agents in the making of borders, with the paradoxical capacity to subvert the control of territory. Elsewhere, Joseph Pugliese identifies the presence of the body within what he calls colonialism’s geocorpographies of torture as the ‘violent enmeshment of the flesh and blood of the body within the geopolitics of war, race and empire.’ Joseph Pugliese, ‘Geocorpographies of Torture’, *ACRAWSA e-journal* (2007) 3:1, pp.1-18, p. 12.

²⁰⁰ Sara Smith, Nathan W. Swanson and Banu Gökariksel, ‘Territory, Bodies and Borders’ *Area*, (2016) 48:3, pp. 258–261, p. 258-9.

²⁰¹ Pavlidis & Karakasi, (2019) p.471.

²⁰² Pavlidis has said: ‘Those who die from hypothermia can maintain the last body posture and facial expression they had when they fell asleep.’ Stop Evros Wall, ‘Crossing Through the Land Border: What are the Risks’ (2 March 2019) available at: <http://stopevroswall.blogspot.com/2019/03/> (accessed May 2019).

²⁰³ Pavlidis & Karakasi, 2019, p.466.

clothes in agricultural buildings, old train stations, and empty military outposts. Those who succumb to hypothermia remain unfound in these places for long periods.²⁰⁴ In such cases the ecology of the border is embodied in deadly ways.

After being pushed back in May 2019, Q, a Turkish man crossed again shortly afterwards.²⁰⁵ Soaking wet he went to the health centre in Soufli, where they called the Police. They refused to let him ride in the car and made him walk to the station instead. The dampness of Q's clothes, as with the testimony of other crossers, is worn on the body. He carries the wetness of the fluvial frontier out of the river, beyond the land / water divide, into the broader ecology of the border. In the case of Q, being forced to walk to the Police station, so as not to make the Police car wet, emphasises not only the state's glaring lack of empathy but, more than this, the exposure of people to life threatening body temperatures. In this case Q wears the river in his clothes and on his body and embodies the evidentiary value of water at the fluvial frontier. The combination of the threat of hypothermia alongside the state's disregard for Q's dignity and health figures within the environmental and structural violence of the border.

Pushbacks

The 2018 HRW report, introduced above, includes a video of a group of men with large welts and bruises on their backs resulting from violent beatings during a pushback by 'Greek police and unidentified forces wearing uniforms and masks without recognizable insignia'.²⁰⁶ These 'unidentified forces' are a common element amongst the descriptions of the 24 separate incidents cited by the report. Indeed, in June 2019 the Council of Europe's (CoE) Committee for the Prevention of Torture described the pushbacks as an established practice operated by: "masked Greek police and border guards or (para-)military commandos". Elsewhere Ege Neşe Özgen of the University of İzmir, has speculated on the identity of these operatives: "recently local nationalist criminal gangs and retired soldiers from the EU border control agency Frontex

²⁰⁴ *Ibid*, p.472.

²⁰⁵ Informal conversation that took place in the Human Rights 360 headquarters in Athens.

²⁰⁶ HRW, 'Greece: Violent Pushbacks at Turkey Border End Summary Returns, Unchecked Violence' (18 December 2018) Available at: <https://www.hrw.org/news/2018/12/18/greece-violent-pushbacks-turkey-border> (accessed: May 2019).

have started guarding it”.²⁰⁷ While it remains uncertain who these forces are it is evident that they operate within the border regime’s state of exception, pushing back across the river at night.



Figure 7 Image of the car park at Neo Cheimonio Police Station. The white unmarked vans are those suspected of being used in Pushbacks (Stefanos Levidis and Ifor Duncan).

While many border crossers are detained for much longer periods, whether in Greek or Turkish facilities, in the case of pushbacks detention is often short and does not involve any registration owing to its clandestine character.²⁰⁸ The pushbacks typically occur as a three-part process:

initial capture by local police patrols, detention in police stations or informal locations close to the border with Turkey, and handover from identifiable law enforcement bodies to unidentifiable paramilitaries [‘men who may or may not be law enforcement officers.’] who would carry out the pushback to Turkey across the Evros River, at times violently.²⁰⁹

Many describe being informally detained in open farmland or in towns and villages near the border (within or at the edges of the floodplain) before being transported to the river in

²⁰⁷ Mehmet Zeki Çiçek, ‘It Isn’t Water That Kills Migrants - States Have Made Maritsa River A Graveyard,’ *Ahval News* (27 December 2018) available at: <https://ahvalnews.com/human-smuggling/it-isnt-water-kills-migrants-states-have-made-maritsa-river-graveyard> (accessed June 2019).

²⁰⁸ In her much cited work Judith Butler suggests that indefinite detention suspends the law in the control of specific populations. Unlike indefinite detention, in the case of pushbacks detention is often short but not necessarily any less violent. This form of detention, operating under a much shorter temporality, is also a mode of the state’s suspension of law as with pushbacks. Judith Butler, *Precarious Life: The Powers of Mourning and Violence* (London: Verso, 2006) p.55.

²⁰⁹ HRW, ‘Greece: ‘Violent Pushbacks’’ (2018).

signature white or dark navy vans with no windows or signage. Through this systematic informality the villages and fields are spaces of surveillance and detention. The domestic and agricultural arenas are braided into the border regime much as the river itself meanders along the frontier. The unmarked vans associated with pushbacks can often be spotted driving near and parked in Police station car parks.

Police Director Kossioris has denied the existence of pushbacks.²¹⁰ In other examples the Police have refuted pushbacks because the water is too high or the geomorphology makes it impossible.²¹¹ In this way the behavior of water in excess is itself co-opted as an obviatory device, a veil in the construction of denial. We argue that this hiding behind ecological excess actually reveals how the river's own agentic properties, here flooding, are incorporated as deadly capacities within the weaponised assemblage of the river. In the following four passages (Berms, Land Mines, Non-Receptions, and Moats) we explore four ways the river's arcifinious characteristics have been enhanced by human intervention.

Berms: Flood Technology

One of the most hazardous crossing points is near the village of Dikaia where the Greek, Turkish and Bulgarian borders meet – a point that is susceptible to regular flooding.²¹² We conducted research in fields alongside the river in February 2019. The risk of major flood events is one of the primary transboundary hydrologic concerns in the Evros/Meriç/Maritsa. Such events have increased in frequency over the last 25 years leading to a once in a thousand year flood in 2005, severe events in 2006 and 2007, and a 'state of emergency' announced in March and April 2018. It is uncertain whether this increase results from climatic changes, as a result of the management of upstream dams in Bulgaria, or a combination of these causes.²¹³ Due to the frequency of flooding defensive infrastructures have long been in place.

²¹⁰ Ibid.

²¹¹ Demetris Angelidis, "They took my papers, took me to the river, and passed me across..." *EF SYN* (12 February 2018) available at: https://www.efsyn.gr/ellada/dikaiomata/140103_moy-piran-ta-hartia-me-pigan-sto-potami-kai-me-perasan-apenanti (accessed March 2019).

²¹² Twenty-two bodies have been recovered from the river here between 2010 and 2014. Pavlidis & Karakasi, (2019) p.469, p.471.

²¹³ Angeliki Mentzafou, Vasiliki Markogianni, & Elias Dimitriou, 'The Use of Geospatial Technologies in Flood Hazard Mapping and Assessment: Case Study from River Evros' *Pure and Applied Geophysics*, (2017) 174, pp.679–700, p.681; p.698.



Figure 8 Evros river near Dikaia February 2019 (Ifor Duncan and Stefanos Levidis).

As we found in our fieldwork, the riparian zone is directly and indirectly engineered. At both ends of the river border, upstream near Dikaia and downstream in the delta, berms perform multiple functions. These include flood defences, raised rail lines and roads enabling movement during flood periods, irrigation, and, most explicitly in the delta, as anti-tank installations (see *Appendix II*). As the words of Police director Kossioris unintentionally reveal, the flood is itself technologised as an alibi for border violence, consequently the berm marks the limit of the flood and acts as a container for this riverine geography of exception. The berm is an important object in this research; enveloping within the impacted earth embankment a versatile and ambiguous military-ecological technology.

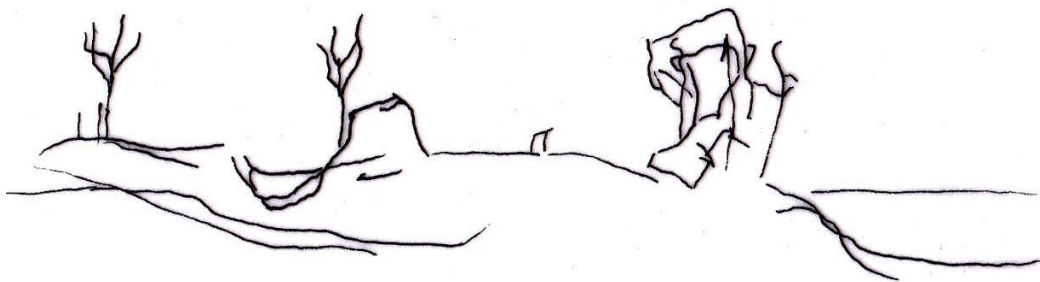
“M” 19/02/2019

We meet M [A barman we spoke with at a bar the night before] in the village. He is dressed in all black for the occasion: Matrix-style shades, heavy boots, a black leather bum bag.

We enter the “buffer zone” along a flood embankment (with dirt road on top). I am told that these berms – or embankments – were built during the dictatorship, the ‘Regime of the Colonels’ (1967-74).

M tells us that there are islands in the middle of the stream awarded to Greece in the Lausanne treaty on account of the traditional grazing of Buffalo. We are near to the "Gamma island".

The dirt road is incredibly muddy, it is built with clay dug and piled up as a flood barrier. M says that every object you see is left by border crossers, by this he means items of clothing, litter (litter carries connotations of disregard, whereas in this case the items left behind are not out of choice but necessity). The deep grooves in the clay berm, on the other hand, M says are left by Police patrols. Because there are no border cameras here this is a regular crossing point.



On the border side of the berm bull rushes grow in the fields. On the side away from the river is a trench dug next to the berm, most likely where the clay for the berm was excavated. The trench is a stagnant canal of water. It feels like a structure that follows military specifications.

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A few days later in the delta, at the very south of the Evros, berms became far more overtly part of the military infrastructure.

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The Delta 21/02/2019



Figure 9 Berm / Tank trap at Delta (Ifor Duncan and Stefanos Levidis).

*The road we are driving on is itself a military installation; with a concrete tunnel running inside, and intermittent foxholes. The dirt road has been a research method over the previous week and here it reveals itself to be an aspect of the military infrastructure of the delta.*²¹⁴

The overlaps between a river that regularly floods and a territory where border crossers are at the mercy of systematic violence resonates troublingly with the proliferation of nationalist media rhetoric of ‘flows’ or “floods of migrants.”²¹⁵ This naturalizing metaphor emerges wherever a border regime is discursively or materially constructed to cement the illegality of movement across borders and to racially ‘other’ border crossers. Such liquid metaphors are evoked to draw a distinction between those who do not belong and those who do within a sedentary notion of territory. In this context the movement of water out of place is perceived as a threat that must be contained to prevent it seeping into the discourses that legally and culturally ground the nation-state.²¹⁶ This geographic threat is perhaps most evident in the

²¹⁴ See Appendix I for images of the delta berms.

²¹⁵ Sandro Mezzadra analyses this metaphor within public discourse as the use of terminology from communication theory and sociology to render migration ‘objective’ and separate from the ‘actions of subjects’. Mezzadra, ‘The Right to Escape,’ *Ephemera* (2004) 4:3, pp.267-275.

²¹⁶ Lissa Malkki explores a similar process in the case of Tanzania where the metaphor of floods of refugees is mobilised against the perceived threat of refugees. Lissa H, Malkki, *Purity and Exile: Violence, Memory, and National Cosmology among Hutu Refugees in Tanzania* (Chicago: University of Chicago Press, 1995) p.15;

exclusionary metaphor of ‘floods’ and ‘flows’ of migrants resisted at borders through human manipulated “natural” forces. We are not intending to repeat the mixing of these metaphors in the production of exclusory non-subjectivity. Rather, we attempt to disambiguate the naturalising metaphor by critiquing land-based epistemologies and ontologies that produce ecological and human othering of movement deemed to be out of place.²¹⁷ In this context, the flood defences themselves become a troubling conflation of the two in the racist othering of border crossers.

A sedentarist nationhood is evident in the Fylakio detention centre official’s exasperated claims for an earthbound state founded on historic bloodshed, directed against the detainees who have crossed the river, and whose detention is conditioned by the continual possibility of forced return. In doing so, this detention regime feeds into the construction of the earth as domesticated through blood against the perceived exception, symbolized by the river from which the human ‘other,’ prejudiced as ‘undomesticated,’ emerges, is killed, or is pushed-back through. The berms as embankments of earth are concentrations of these politics. They are ground engineered in excess. They are routes of control through the floodplain for the Police, military and local farmers and yet they also figure within a mediaeval imaginary as obstacles for invading forces, and now against those seeking asylum. This duality of the berm reveals the border regime’s deployment of the environment as both a metaphor and defensive technology.

Likewise Emma Haddad draws on the liquid metaphor as uprooting and displacing; Emma Haddad, ‘Danger Happens at the Border,’ in Rajaram And Grundy-Warr (eds.) *Borderscapes* (2007) pp.119-136, p.122.

²¹⁷ Philip Steinberg also considers the political construction of the ocean to have followed ‘land-like, developable components of state territory’. Philip Steinberg, *The Social Construction of the Ocean* (Cambridge: Cambridge University Press, 2001) p. 150.

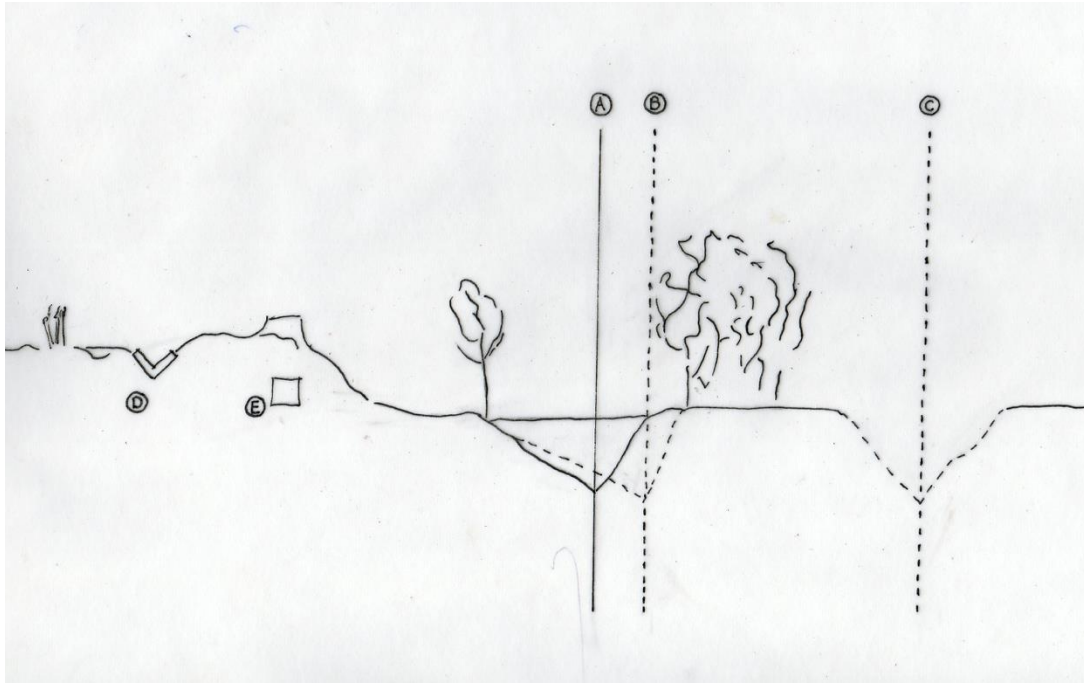


Figure 10 Diagram of berm infrastructure at the delta (taken from field notes), with annotation indicating where the river has shifted as a result of accretion and avulsion: A) Original river course, thalweg identifies border. B) New river course as a result of accretion. C) New river course as a result of avulsion. D) Irrigation culvert. E) Berm. Flood defence / tank trap with internal tunnel (see appendix II). (Ifor Duncan).

In my field note sketches, drawn at the Evros delta, the expanded sense of the buffer zone / floodplain becomes evident. The road we drove on – assumed to be only a flood defence berm – reveals itself through our observations as an anti-tank infrastructure, and despite its imperceptible and silent flow the river at the delta is itself visibly weaponised.

Land Mines

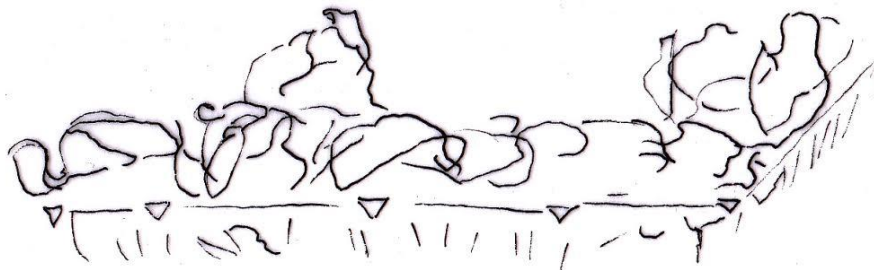
The shallow gradient of the floodplain lends itself to military surveillance against the threat of Turkish invasion. Deforestation along the riverbanks has occurred ostensibly for agricultural purposes but as with all activity in the area it fits military needs. The main periods of deforestation correspond to periods of hostility with Turkey (tension in Cyprus during the 1960s and again after 1986 after a skirmish between Greek and Turkish forces near Feres).²¹⁸ In his theorist Paul Virilio's work on the influence of speed on contemporary culture, he argues that land clearance and cultivation are part of 'the receding of forest darkness' in the production

²¹⁸ Stamatis Zogaris et al., 'Assessment Of Riparian Zone And River Island Conditions In A Trans-Boundary Greenbelt: The Evros/Meriç River (Greece-Turkey)', *Fresenius Environmental Bulletin*, (2015) 24:1, pp.269-277, p.274.

of a rationalised military ‘field of vision.’²¹⁹ Likewise, it is evident that the floodplain itself, in its cultivation, and deforestation offers a relatively uninhibited view from the military border stations punctuating the riparian area.²²⁰

The bordering process of the bufferzone is not only exercised through deforestation but, conversely, through botanical growth entangled with the presence of landmines within the floodplain. This is a crucial element in the organisation of space in the military / agricultural braid of the Evros. Although anti-personnel landmines were supposed to have been removed by 2008, it is suspected that annual flooding has dispersed mines downstream.²²¹ Here the river contributes its own unpredictable agency to the weaponisation of the landscape. While driving on berms close to the river at Dikaia we came across minefields:

There are overgrown thickets of brambles and stunted trees surrounded by flags indicating the presence of mines.



Henrich Böll's old phrase "a question of Botany" comes to mind.

M says: "Heavier than 40kg the mine blows, vehicles are 250."

²¹⁹ For Virilio surveillance aims to ‘occupy, then organize, in a space dominating the trajectories of movement, keys to communication, river, sea, road, or bridge.’ *Speed and Politics* (Édition Galilée, Paris.1977) trans. by Marc Polizzotti (Semiotext(e): 2006), p.94.

²²⁰ Virilio, (2006), p.94.

²²¹ Pavlidis and Karakasi, (2015); (2016); (2019).

The government claims to have removed all anti-personnel mines, these are apparently anti-tank mines left as a precaution in case of Turkish invasion. How thick will the brambles get? How long since they were laid? Böll's question relates to new growth emerging from the rubble of bombing in Cologne in WWII as a measurement of time since a building or street was flattened. Conversely, this growth, since the mines were laid, measures the latency that precedes an explosion. How long before the eruption of the violence stored within the ground?

In military jargon landmines are 'situational obstacles' or "area denial weapons". Unlike German novelist Heinrich Böll's 'question of Botany,' that I refer to in the field notes (above), these fields are characterized by an explosive latency symbolised by the barbed undergrowth of the minefield – a dormant and unpredictable violence.²²² Rob Nixon identifies the association of mines with the concepts of terror, toxicity, and, indeed, as an 'environmental and ethical pollutant.'²²³ This terror is evident in Pavlidis's calculations: in the years between 2000 and 2014 49 border crossers lost their lives to injuries sustained from landmine explosions. This accounts for nearly 15% of all bodies retrieved, although none of these occurred after the landmine clearance of 2008.²²⁴ Through flooding the river's agency has unearthed and then dispersed these explosives across geographic and temporal scales. In this way, the river becomes mediator of the border regime's weaponisation. Rather than a 'question of botany' this is a further fluvial question regarding the latent explosion intended when the mines were first installed. The river's unintentional dispersal of mines alongside the 40 kg of weight exerted by one leg to trigger an explosion symbolises another violent confluence of the floodplain / buffer zone. In our interview with the Mufti of Sidiro he mentioned the horrifying presence of extra legs arriving to be buried.²²⁵ Where elsewhere it is the inclination of the riverbanks, and the point that legs stop touching the river bottom, here the weight of 40 kg is calibrated against the human body. A threat that is transmitted geographically by the river's process of dispersal.

²²² Heinrich Böll, *The Silent Angel*, trans. by Breon Mitchell (London: Andre Deutsch, 1992 [1950]).

²²³ Rob Nixon describes the slow violence whereby the 'earth itself must be treated [...] as armed and dangerous.' *Slow Violence*, p.221; p.227

²²⁴ Pavlidis & Karakasi, 2019, p.466; In a particularly macabre moment of our interview with the Mufti of Sidiro he describes the burial of dismembered limbs that outnumbered those of the bodies buried, suggesting that they are a result of mines still present along the river.

²²⁵ This recording is included in a radio piece we produced in Athens in February 2020. Stefanos Levidis & Ifor Duncan, "Sounding the Arcifinious," *Movement Radio*, February 23, 2020, available at: https://www.mixcloud.com/movement_radio/live-guest-stefanos-levidis-ifor-duncan-sounding-the-arcifinious-1/ (accessed February 2020).

Non-Receptions

The completion of the fence in 2012 not only meant that irregular border crossers had to cross the river rather than the safer land route but saw a major increase in crossings elsewhere due to the direction of border crossings to the sea routes of the Mediterranean. Many, including activist group Stop Evros Wall, consider the increases of drowning in the Mediterranean to be the direct result of the fence.²²⁶ The pattern changed once more after the EU-Turkey agreement of 2016 agreed to exchange irregular migrants: border crossers detained on the Greek islands of the Aegean, would be returned to Turkey. In exchange, the EU offered funding for refugee facilities in Turkey, and most importantly visa liberalisation for Turkish citizens entering the EU. The agreement led to a decrease in the numbers of crossings along the sea route while the land route increased once again.²²⁷ This increase was especially evident in 2018 when the number of crossings spiked along the river, exceeding those in the islands for the first time since 2015.²²⁸

The border condition of the Evros/Meriç is symptomatic of politics of both refusal and denial. Reception centres (KEPIs) were established in 2013, Fylakio as the pilot, with the aim of ‘screening’ the nationality and validity of claims of new arrivals and aiding the process of removal.²²⁹ The authors of the report *Between Greece and Turkey: At the Border of Denial*, however, identify the form of ‘reception’ occurring in the new KEPIs as ‘in fact a euphemism for a new type of detention.’²³⁰ In this way ‘reception’ itself equates to the suspension of law, and is in reality the detention of specific populations. The pushback, however, occurs before

²²⁶ Stop Evros Wall, available at: <http://stopevroswall.blogspot.com/> (accessed May 2019). See the parallel phenomenon of Prevention Through Deterrence in the Sonoran desert. De León, (2015) p.28.

²²⁷ *Land route* refers to crossing the Evros.

²²⁸ Giannis Papadopoulos, ‘Sunrise at the Door of Europe’ *Kathimerini* (29 April 2018) available at: <https://www.kathimerini.gr/961340/interactive/epikairothta/ereynes/evros-3hmerwma-sthn-porta-ths-eyrwphs> (accessed May 2019).

²²⁹ FIDH, Migreurop, and EMHRN, *Between Greece and Turkey: At the Border of Denial*, 2013, p.35-36, available at: <https://www.frontexit.org/en/docs/49-frontexbetween-greece-and-turkey-the-border-of-denial/file> (accessed June 2019).

²³⁰ *Ibid*, p.68.; Jennifer Hyndman and Alison Mountz might describe this euphemism as a feature of the “architecture of enmity”. ‘Refuge and Refusal: the Geography of Exclusion,’ in Derek Gregory and Allan Pred (eds.) *Violent Geographies: fear terror, and Political Violence* (New York: Routledge, 2006), pp. 77-92, p. 79. See also, Judith Butler, *Precarious Life: The Powers of Mourning and Violence* (London: Verso, 2006) p.55.

the ‘reception centres,’ usually in the hours or days after being apprehended at the river. The particular story and vulnerability of each crosser is not duly considered. More than this, when non-reception takes place it is a denial of any acknowledgement of an application in the first place, placing the applicant of refugee status in an ‘inarticulate position’. This is, therefore, a denial of reception let alone refuge.²³¹

Reception occurs in other ways. Olga Demetriou, anthropologist of the Evros region, opens her book *Capricious Borders* by describing the experience of crossing a bridge over the Evros as a digital border where mobile phone receptions change from Greek to Turkish or back again – gesturing towards the shifting and ambiguous space of the river border, where digital mobile phone reception often changes long before the border.²³² The mobile telephone has further significance as a digital border. Indeed, perhaps nothing symbolises the lack of reception experienced by illegally pushed-back asylum seekers more than the object of the mobile telephone.

Research has found that ‘smartphones’ have become so essential for refugee journeys – navigation, communication, and information – that they are ‘lifelines, as important as food and water.’²³³ As testimony indicates at the Evros an additional riverine pattern of border violence emerges where not only are phones confiscated but they are thrown into the river itself at the point of being arrested or during pushbacks. Here we quote from testimony collected in the recently published report by a collaboration of ARSIS-Association for the Social Support of Youth, Greek Council for Refugees, and HumanRights360.²³⁴ Before being pushed back to Turkey, M.M.I, a 24 year old Afghani citizen, detained at Fylakio relayed that their belongings

²³¹ Rajaram & Grundy-Warr, (2004) p.40.

²³² Olga Demetriou, *Capricious Borders: Minority, Population, and Counter-Conduct between Greece and Turkey* (New York: Berghahn, 2013); Often phone reception, as with radio signal, changes long before the border indeed on roads parallel to the river.

²³³ Brigitta Kuster calls the networks of support and resistance emerging through mobile communication, the ‘Mobile undercommons’. ‘Europe’s Borders and the Mobile Undercommons,’ *Wir sind ihr / They are us* (2017) 105. These benefits come hand-in-hand with the price of vulnerabilities incumbent with digital surveillance. Marie Gillespie, Souad Osseiran, Margie Cheesman, ‘Syrian Refugees and the Digital Passage to Europe: Smartphone infrastructures and Affordances,’ *Social Media + Society*, 2018, pp.1-12.

²³⁴ ARSIS-Association for the Social Support of Youth; Greek Council for Refugees; HumanRights360, *The New Normality: Continuous push-backs of third country nationals on the Evros river* (12 December 2018) available at: <https://www.humanrights360.org/the-new-normality-continuous-push-backs-of-third-country-nationals-on-the-evros-river/> (accessed April 2019).

and mobile phones were thrown into the river in front of them.²³⁵ In another example, a Syrian citizen, M.F.A, pushed back to Turkey 6 times between December 2017 and June 2018, describes:

the first 5 times, in the detention room, the police body searched us and kept our personal belongings (mobile phones, documents). They gave us back our documents when putting us on the boats throwing our mobile phones in the river.²³⁶

These testimonies, amongst others, demonstrate how the river has been deployed as a rudimentary mode of digital erasure. While cloud storage is retained, by breaking the electric device, the owner's movements become difficult to trace from the point of seizure and entry into the river. As mobile handsets enter the water the GPS signal cuts, all the photographs and contacts stored in its memory are wiped, the phone becomes inanimate, like a stone²³⁷ thrown into the river and entering its turbulences, and into its sediment life. However, invaluable numbers of phones do make it through these processes, such as the one used to film the detention centre official in Fylakio.

In the case of the Evros, the submergence of phones symbolises non-reception as the denial of access to the infrastructures of communication. Pushbacks are exactly processes of non-reception: not having finger prints taken,²³⁸ the denial of three-month leave-to-remain cards, violently beaten, and exposed to the water and the mud of the river bank as they are left on the other side.²³⁹ The pushback is the exact denial of reception: physical, administrative, emotional,

²³⁵ *Ibid*, p.8. This practice is repeated multiple times including at Fylakio, *Ibid*, p.11-12.

²³⁶ *Ibid*, p. 26.

²³⁷ Although of course if as a stone it is only always already a composite object rendered from multiple material sources. A further step might be to imagine the half-life of a mobile phone and its parts within a fresh water ecosystem.

²³⁸ The recording of biometric data is itself a central part of the repetition of border violence. Many choose to erase their finger prints so they are not identified from previous attempts to enter into the EU. See Ayesha Hameed, *A Rough History (of the destruction of fingerprints) - film and performance*. 2017 [Film/Video]. Available at: <http://research.gold.ac.uk/id/eprint/25835/> (accessed 2018).

²³⁹ For border crossers, however, the inverse of reception, being registered within Greece, due to the Dublin II protocol, is not desirable either. Dublin II is the regulation that decides which EU country is responsible for an asylum claimant, and to where they will be returned.

digital. Within the sediments of the delta, at the threshold of the Aegean, smashed and waterlogged mobile phones accrete with the shifting islands.²⁴⁰

MOAT

During the proposal of the fence in 2011 the Hellenic Army General Staff planned a ‘120km long, 30mt wide and 7mt deep’ moat.²⁴¹ Officially an “anti-tank trap” functioning primarily as a defence against Turkish invasion, it is evident in the context of the increased crossings in 2011 that it is a further technical barrier for border crossers. The plan imagines the conversion of what is already an anthropogenic river into a moat. The scale and form of this project is symptomatic of a medieval imaginary of violence pervasive of border regimes. Where the river itself was not considered to be quite deadly enough, as with Trump’s wall, this imaginary conceives of altering its course into a yet more deadly weapon. As ProAsyl’s statement reads:

These barriers will not keep people in need of international protection from trying to cross the border. Instead, they increase the danger of border-crossings and can lead to more persons losing their lives while trying to reach European territory and international protection.²⁴²

The river and its imagined doubling as a moat instrumentalises the already treacherous route beyond the scale of ‘deterrent’ into an engineered space that maximises fatalities.²⁴³ Stepping back from the Hellenic Army General Staff’s imagined moat, the Evros already performs the arcifinious role of a moat at the EU’s fluvial frontier; the imagined moat features merely as a fantasy of the already existing river weapon.

²⁴⁰ We can speculate that within the delta caches of mobile phones can be found, returning Jussi Parikka’s concept of Geology of Media back to the sediment. The mobile phones as the product of mineral extraction return into a sedimentary geology of the pushback. Parikka, *A Geology of Media* (University of Minnesota Press, Minneapolis & London, 2015).

²⁴¹ ProAsyl, (2012), p.8. Although there is no evidence of digging having begun.

²⁴² *Ibid*, p.3

²⁴³ Separately anthropologists Jason de Leon and Juanita Sundberg have identified the desert’s inhospitable climate as acting as ‘Prevention through deterrence’. Juanita Sundberg, ‘Diabolic *Camino*s in the Desert and Cat Fights on the Río: A Posthumanist Political Ecology of Boundary enforcement in the United States-Mexico Borderlands,’ *Annals of the Association of American Geographers*, (2011) 101:2, pp.318-336, p.323.; de Leon, (2015).

The decision to choose these geo-physical features for their hostile qualities is the instrumentalisation of what have commonly been thought of as ‘natural borders’.²⁴⁴ This itself acts as the ambiguous merging of the nomenclature of first nature into second nature. Influential political geographer Derek Gregory perceives this merger as the consolidation of colonial power through ‘the production of ever more abstract spaces.’ No more abstract than the calculation of water movement, as Gregory writes:

If movements of water and sediment could be made visible and literally brought to account through cascades of equations, was it possible to bring 'culture' within the same calculus? Was it possible to enframe *both* culture *and* nature – a colonized 'culture-nature' – within a system of *simultaneous* equations? One answer sought to reduce culture to nature by treating local actors as so many (other) objects to be controlled with the same dispassionate efficiency that calibrated flow models and turned valves.²⁴⁵

In the case of the Evros, these dispassionate equations and calibrations are not mobilised, as elsewhere in this thesis, to extract energy or to transmit traces and remains of crimes but to deter and, through this deterrence, kill ‘actors’ moving through the local environment. This threat through a nature-culture structure is what is hidden arcifiniously within flow calculations of river borders.

Elsewhere, environmental archaeologist Matthew Edgeworth, in his book *Archaeology of Flow*, asserts that rivers are cultural as much as natural phenomena. He contends that no river is ‘natural’ in the sense of being free from human intervention.²⁴⁶ Thus all rivers are anthropogenic, albeit to varying degrees of instrumentalisation and degradation.²⁴⁷ The Evros/Meriç is certainly no exception, indeed frontier rivers as a condition are archetypically anthropogenic rivers. The Evros/Meriç bears evidence of influence by upstream interventions and the militarisation of its banks downstream produces its own effects, most visibly in the changes in the shape of the deltaic shoreline.²⁴⁸ While rivers shift they can be manipulated, or straightened, into banks. Perhaps more tellingly the very flexibility of a river – its muddiness

²⁴⁴ Evros is referred to as a ‘natural border’ in: Y. Mylopoulos et al., (2008) p.292.

²⁴⁵ Derek Gregory, ‘(Post)Colonialism and the Production of Nature,’ in Noel Castree ed., *Social Nature: Theory, Practice and Politics* (Malden MA: Blackwell, 2001) pp.84-111, p.97.

²⁴⁶ Matthew Edgeworth, *Fluid Pasts: Archaeology of Flow* (London: Bloomsbury, 2011).

²⁴⁷ See the contributions to Kelly et al., *Rivers of the Anthropocene* (University of California Press, 2017).

²⁴⁸ D.I. Giannouli et al., ‘Morphological evolution of the Evros River Deltaic shoreline’ (2014) Available at: [geolib.geo.auth.gr > index.php > pgc > article](http://geolib.geo.auth.gr/index.php/pgc/article) (accessed May 2019).

– might be useful in the production of an ‘indeterminate’ space both materially porous and shifting and thus difficult for trespassers to cross, as well as being unstable in the eyes of international jurisprudence.²⁴⁹ In the case of the arcifinious importance of rivers this ambiguity is important in producing a space in constant process of re-definition. The border’s ecology of exception is made possible by both the river’s adaptability to force and its flexibility. This contributes to the ambiguous space in which multiple modes of violence are perpetrated with impunity.

As we will show in greater detail in the final section, Part I.iii *Transboundary Waters*, the border condition produces a type of water that is itself an arcifinious infrastructure. Stephanie Kane, geographer of the political ecology of water, has made the claim that the construction or failure to build water-control engineering is crucial in establishing or losing territorial power.²⁵⁰ Kane, however, adds that ‘even as flood waters confound attempts at constructing territory, their forces, and the forces deployed to control them, can themselves be enlisted as territorial technologies.’²⁵¹ In this way she postulates that both river infrastructures, and the lack thereof, are paradoxically incorporated into riverine territorial regimes. More importantly, she states that floodwaters are themselves territorial technologies. Similarly, at the Evros it is not only the implementation of physical infrastructure but calculations of the agency of the water itself that are ways in which the river is a territorial technology. More than this, we would claim, it is both these socio-natures and natural-social formations that produce the river as a territorial weapon.

²⁴⁹ For Donaldson, without being written into an international convention the processes of avulsion and accretion ‘have not achieved the high threshold for becoming mandatory rules of international law.’ (2011) p.164. Elsewhere Victor Prescott and Gillian Triggs accuse the International Court of Justice of intentionally leaving river demarcation ambiguous, ‘so that, as the relative importance of the river, its navigability and resource potential become available [...]’.²⁴⁹ Prescott and Triggs, *International Frontiers and Boundaries: Law, Politics and Geography* (Leiden: Martinus Nijhoff Publishers, 2008) p.220-221.

²⁵⁰ This thesis has been well established within extensive literature on the intimate ties of river irrigation and social control. This literature claims that politics have been ordered through liquid means for millennia. Ancient irrigation projects were often produced to control both the contingencies of liquids but also human populations. Karl Wittfogel, *Oriental Despotism: A Comparative Study of Total Power* (New Haven CT: Yale University Press, 1957); Donald Worster explores the centrality of irrigation to the colonial project of Westward expansion in the United States. Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York NY: Pantheon Books, 1985).

²⁵¹ Stephanie C. Kane, ‘Floodplains: Where Sheets of Water Intersect: Infrastructural Culture – From Flooding to Hydropower in Winnipeg, Manitoba’, in Peters, Steinberg, & Stratford (eds.) *Territory beyond Terra* (2018) pp.107-126, p. 107.

Consequently, it is not only the control of water that is important here but the type of water produced by such control. The type of water produced by the border is itself influenced by regular flooding and the lack of suitable flood defences that result from being transboundary rivers. Indeed, the waters of the Evros/Meriç might be considered to be the archetypal water of the anthropocene: geomorphologically shaped by human intervention, regularly flooding due to diplomatic impasse, heavily polluted, and bearing the human bodies – dead or alive – of those othered and displaced.

I.ii *Sounding The Border In Becoming: A Practice Note*



Figure 11 "PHOTOGRAPHS ARE PROHIBITED" (Ifor Duncan and Stefanos Levidis).

On our visit to Evros in February 2019 we met regular signs prohibiting photography. Looking towards the Evros from the road – which runs parallel for most of its course – signs read: “PHOTOGRAPHS ARE PROHIBITED”. From this vantage point it is hard to see the water, other than as a break in the ploughed furrows of the fields below. Regular army bases and the constant relay of camouflaged trucks maintain an atmosphere of tension, and the feeling of being watched, or at the very least having our presence noted. Surrounded by a 10,000 m buffer

zone it is not easy to physically access the river without alerting suspicion.²⁵² However, it is not only being watched that is important here, the surveillance regime is evidently also concerned with the control of image production and circulation (for example the throwing of mobile phones into the river during the apprehension and pushbacks of border crossers). To avoid having images deleted if stopped by the Police (a customary practice) we chose specific routes to avoid interception, such as taking a longer road back from the river at Dikaia. Similarly, after photographing the river we hid our SD cards within loose parts of the internal plastic body of the car and made the decision to offload and delete images from devices each night before returning to the field the next morning. The border regime intends on making any study as difficult as possible. This is the case in much of the scientific literature related to the region. Hydrologic studies in particular attest to restricted access, hence many of those consulted here specify methodological limitations and reliance on satellite imagery to assess riparian conditions.²⁵³ This not only applies to academic research or investigative journalism but also in the implementation of non-military policy, for example a proposed greenbelt along the Evros corridor has never been sufficiently researched for its biodiversity values.²⁵⁴ Many scientific and hydrologic authors, perhaps naively, suggest transboundary water management might be an agent of peace in the region: ‘political will and public participation can convert the existence of shared water resources from a problematic issue to a strong motivation for transboundary co-operation.’²⁵⁵ There is, however, limited scope for this from the respective states, particularly Greece and Bulgaria who flout the EU Water Framework Directive, demanding international co-operation on water conservation issues.²⁵⁶ Whether such a green corridor in the Evros will be realised is doubtful. The indefinite delay or suspension of transboundary hydrodiplomacy and ecological programmes is itself a part of the border regime’s maintenance of a climate of ambiguity. The denial of hydrologic study also maintains an opacity in relation to knowledge of the river.

²⁵² Mentzafou, et al., (2017), pp.679–700, p.687; See also Da Cunha, (2018) p.3: ‘And when authorities keep people from encroaching on rivers, they enforce this line.’

²⁵³ Mentzafou et al., (2017) p.687.

²⁵⁴ Zogaris, et al., (2015) p.275.

²⁵⁵ Mylopoulos, et al., (2008) p.293.

²⁵⁶ Zogaris, et al., (2015) p.276.; Glassner, (1993) p.355. He refers to the necessity to approach transboundary river basins as ecological units, what we might describe as the adoption of Watershed thinking in hydrodiplomacy.

Consequently, it is impossible to study the river without employing a practice tailored to circumvent these restrictions. While we did eventually make it to the river at Dikaia and the delta near Feres the sense of jeopardy was palpable and the feeling of being watched, only increased this sense of restriction. As is often the case, research limitations demand alternative entry points offering new and frequently enlightening perspectives on this complex material and political condition. One of the ways this limitation manifests in our research is through the materials we collected, such as concealed super-slow-motion filming through windows driving past police stations (figure 4).²⁵⁷ Most reflective of these limitations was the difficulty in approaching the main course of the river itself. To address this in part we decided to record the tributaries. This is particularly relevant as we conceive of the river as a dynamic archive, sensorium, and actant.

Mirroring the denial of access to the river the choice of hydrophone recordings followed an intention to capture the likewise inaccessible material movement and sub-aquatic sounds of the border, and, thus, to disambiguate the river as alibi of this sensory inaccessibility. Influential Canadian composer and author R. Murray Schafer's foundational text of sound ecology practice identifies the role of geography and environmental processes in the production of the 'keynote' sounds of a landscape, including 'water, wind, forests, planes, insects, birds, animals'²⁵⁸ Our recordings of the Ardas, near its confluence with the Evros/Meriç at Kastanies, produces such a keynote (appendix II, sounding iii). We play these recordings as close to unedited as possible, to allow the dynamism of the river itself to remain present, a dynamism denied by the river's fixing in the Lausanne treaty, a denial that here reproduces violence.

The use of hydrophonic recording attempts to move beyond an ocular centric experience of river borders, beyond the cartographic line imposed upon them, and attempts to sense the fluvial processes of the submerged space. The sonic texture of this submerged space is produced by turbulence. The fluid dynamics of turbulence are, in turn, the result of objects blocking or deflecting the current. Sound can also result from engines and the movement of

²⁵⁷ 240 frames per second (fps).

²⁵⁸ R. Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World* (Rochester VT: Destiny Books, 1994), p.9-10.; See also Bernie Krause, Stuart H. Gage, Wooyeong Joo, 'Measuring and interpreting the temporal variability in the soundscape at four places in Sequoia National Park,' *Landscape Ecology* (2011) 26:9, pp.1247-1256. They address the use of acoustic signatures, including those of rivers and other water bodies in bioacoustic conservation practices.

flora and fauna underwater. On the other hand, the hydrophone recordings made at the grave are barely even ambient – they are almost silent. The only noise present is the buzz of the gain being turned-up in the effort to identify any possible signal (appendix II sounding i). The static water, however, produces a funereal silence that is only symbolic of the border water but not of the actual flow and turbulence that makes the border water deadly.

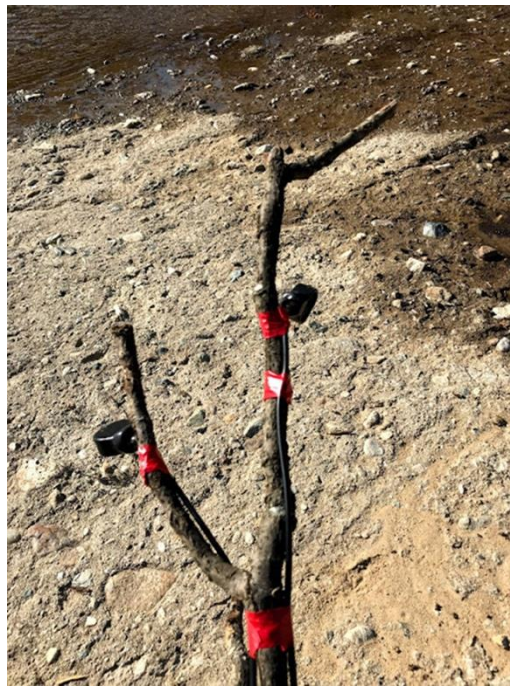


Figure 12 Hydrophones attached to improvised support. (Ifor Duncan).

What we ask here is whether these recordings of the river's turbulence are more than an acoustic ecology? Can they provide an entry point into the weaponisation of the fluvial frontier? Are the sounds of the river we recorded here (for example: appendix II, sounding iii) produced by the very qualities that make the river treacherous? Qualities harnessed by the state.

Through two tributaries, the Ardas and the Erythrotamus, we accessed the river before it had become the border (See USB key appendix II sounding ii, iii. Also available at: <https://soundcloud.com/ifor-duncan/ardas-hydrophone-recording-ii/s-GPtpD>). These waters are part of the frontier extending to the entire catchment basin of the Evros. To consider the river as an arcifinious body, as a weapon of the border regime also requires understanding the river for its properties which make it attractive for military purposes, thus it is important to perceive the river as a process, or the process by which a border, like the Evros comes into existence. River sounds are signatures of types of river: mountain streams are dramatic, while floodplains are mellow with their massively dispersed volume of water. Some of the recordings

in this thesis are not easy to listen to – varying from the almost silent to intense and even uncomfortable. They reflect the multiplicity of the river, shifting in character with its different stages but they also convey, even at its most ambient, something of the polyphony of actors involved in the production of this fluvial frontier. Listening to the volume of water forming upstream and in the tributaries of the Evros can reveal the arcifinious turbulence of the river downstream.

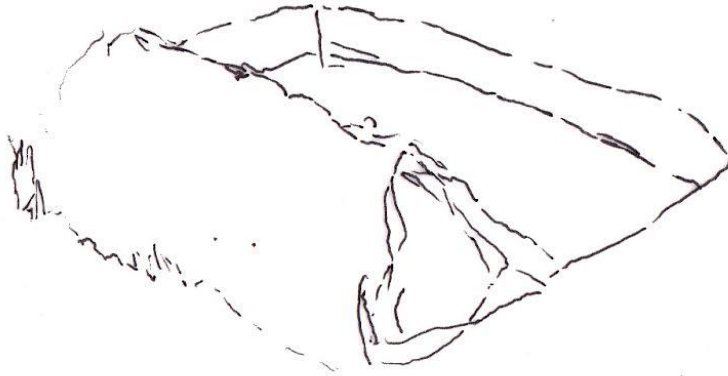
The Ardas waters are particularly the result of processes of anthropogenic intervention. Indexical of the transboundary politics of the river system the Ardas is heavily regulated by upstream dams in Bulgaria. This intervention contributes to changes in the volume and flow rates of the river downstream and the threats of flooding. Making hydrophone recordings of the Ardas and Erythropotamus we attempted to record the sound of the flows and turbulences of the waters that enter the river downstream at the confluence point of Edirne and beyond. Anthropologist of ocean science Stefan Helmreich, who has extensively studied the politics of subaquatic soundings in the context of the temporalities of the ocean, considers the potential for hydrophonic recordings to be the ‘preverberations’ of a future ocean.²⁵⁹ A future ocean characterised on the one hand by the emergence of possible life and, on the other, by mass extinction. Rather than ‘preverberations’ of a deep temporal nature, the hydrophonic recordings made at these rivers are of the sound of the dispersed waters that become the border. This frontier is the accumulation of the flow rates from the multiple tributaries as they become confluent with the Evros/Meriç/Maritsa. This accumulation of turbulent flow accelerates where the rivers meet and contributes to the confluent politics of the frontier. Can it be claimed that these recordings are indicative of an arcifinious sound? While this is possible, this conclusion may be too simplistic. Instead, the hydrophone recordings of the tributaries present the ancillary sonicscape of the turbulent ordering of arcifinious waters.²⁶⁰ The limitation to these points of study before the main course enabled us to aurally record the flow rates and turbulences of the tributaries and thus listen to the sound of the very becoming of the border.

²⁵⁹ Stefan Helmreich, *Sounding the Limits of Life: Essays in the Anthropology of Biology and Beyond* (Princeton NJ: Princeton University Press, 2016).p.xxii

²⁶⁰ Luciana Parisi and Tiziana Terranova identify a turbulent order as ‘the tendency to order [...] inherent in matter, but this order is a turbulent one. Turbulence is in the middle, it is a zone of the unexpected, a diagonal line of flight between order and disorder.’ Rivers themselves follow such a diagonal line between the ordering of matter and an ordering produced by direct and peripheral human intervention. Luciana Parisi and Tiziana Terranova, ‘Heat-Death: Emergence and Control in Genetic Engineering and Artificial Life’ *CTheory*, (2000) available at: <http://www.ctheory.net/articles.aspx?id=127> (accessed May 2019) p.26.

Flooded Graves

We arrive at Sidiro graveyard at 4.59. The sun is setting rapidly and the shadows are long. There are 6 empty graves, and they are flooded.



There feels to be a distinct juxtaposition between all of the flowing water I have been recording and the stillness of the flooded graves at the cemetery. Speed and stillness / velocity and capture.

I record in the grave. This feels strange but I assure myself that there are no bodies in this grave and I am not making a disturbance. There is almost no sound. I increase the gain on the recording beyond a level that is recommended but still I hear nothing but the static fuzz of the gain itself. Does this water signify anything or is it merely a coincidence?

The flooded graves capture my imagination. I immediately think of a very basic understanding of the hydrologic cycle of water cascading from the hills down to the river and then to the sea, and I think of how this water pooling here is somehow a part of this cycle? I think of water captured and removed from the cycle far from any rivers, let alone the Evros itself, just as the bodies buried elsewhere in the graveyard are far from where they intended to be, far from the river or refuge and instead buried in the cemetery of a community that offered to provide a Muslim burial.

//



Figure 13 In the consultation room of the Mufti of Sidiro. (Ifor Duncan and Stefanos Levidis).

We arrive at the Mufti's house. It is one of the first buildings you come to in the village. It is a long building shaped like a barn but painted white with a tile floor. Mehmet, his name, also runs the local petrol station and has a polished Mercedes in his drive. It is dusk when we arrive and we fear that he will not speak with us even though we arranged to talk two nights previously. We knock but there is no response. Then we look around the back into the garden and he and his wife are tending to their beehives. He eventually comes to the front of the house: "How are you?" [some of his few English words] he greets me with a strange enthusiasm to speak to a Brit. We wait by the car while he changes, it feels like we are standing outside for ages and we start to worry that he won't come back out. Then eventually he returns in a suit and a cardigan with the headdress of his position as a cleric: white with a silk top. He leads us into his consultation room, it is small and brightly lit.

Stefanos asks why he changed, he responds in typical good humour: "You came to see Mehmet the Mufti, not Mehmet the beekeeper." A clue to the many roles this man performs. Mehmet mentions a German / Greek woman who accused him of performing mass burials and degrading the dead.²⁶¹ He claims that he did his best with little support from the government and, at times, large numbers of burials.

Unidentified bodies arrive at the cemetery after a process by which they are discovered in the river before being reported to the Police who deliver the body to the Forensic Medical centre at Alexandroupoli General University Hospital, where pictures and records of DNA and

²⁶¹ Welcome to Europe Network, 'Mass Graves of Refugees in Evros Uncovered' w2eu.net (2010) Available at: <http://w2eu.net/2010/08/09/mass-grave-of-refugees-in-evros-uncovered/> (accessed May 2019).

fingerprints are taken for the purposes of subsequent identification. Following a number of further protocols bodies are often prepared for immediate burial in one of the local Muslim cemeteries, including Sidiro.²⁶² After the deaths of 22 border crossers on one night in June 2010 the Mufti decided to bury unidentified border crossers in a patch of ground across a ravine above the village and separate from the local cemetery.²⁶³ The Mufti exercised supervision of the burial process, claiming to bury each in a separate grave. He repeated to us what he has also told a number of journalists that he has a record of the location of each corpse, which is kept in offices in Didymoteicho and so he cannot show us. Despite initial funding from the regional government, since 2011 this funding has stopped and so has official burial at Sidiro.²⁶⁴

The existence of the cemetery has been the cause of scrutiny since it first opened. Anthropologist Kim Rygiel equates the original siting of the cemetery in Sidiro, 20 km from the river, as the extension or ‘diffusion’ of the border.²⁶⁵ Rygiel argues that solidarity shown to living relatives by local community mobilisation, such as at Sidiro, as well as transnational activism around the funerary treatment of the dead offers the potential for a transgressive politics that disrupts the physical and biopolitical borders of citizenship. She understands these multiple processes as contributing to the production of a right to existence after death. A right acknowledged by the local and transnational communities mobilised to provide the services of postmortem dignity.²⁶⁶ Rygiel’s optimism cannot be faulted. State reliance on local, transnational and sometimes informal processes, however, reveals another politics of disregard at play, one that reproduces the very conditions where bodies wash up alongside rivers in the first place.

²⁶² ProAsyl, (2012) p.89.

²⁶³ Perhaps the practice goes further back. In our interview, he alludes to first bodies buried there in 1989. It is estimated that 300 border crossers have been buried here in the years since the cemetery was first opened in 2010. 300 is the estimate of Pavlidis. He says more than 400 people have died in Greece and estimates another 400-500 have re-emerged on the Turkish banks, hence the estimate of 1000 drowned people in the Evros/Meriç.

²⁶⁴ ProAsyl, (2012) p.89.

²⁶⁵ Kim Rygiel, ‘In Life Through Death: Transgressive Citizenship at the Border’ in Engin Isen and Peter Nyers (eds.) *Routledge Handbook of Global Citizenship Studies* (London: Routledge, 2014) p.68. Rygiel evokes Marxist philosopher Etienne Balibar’s understanding of the diffusion of borders.

²⁶⁶ *Ibid*, p.70.

The activist group ‘Welcome to Europe’ claim that the cemetery is a site of mass burial. This claim is in direct opposition to the Mufti’s account. Nevertheless, they state that the presence of mass graves reflects the brutality of the border that ‘puts up with the death of those looking for protection.’²⁶⁷ Perhaps rather than the claim of post-mortem rights, of which we do not dispute the importance, the mass burials and the presence of the cemetery in this village itself further reflects the abdication of responsibility by Greece and the EU. This relates to a further politics of internal marginalisation, made evident by the very presence of migrant cemeteries in these villages. The villages are what remain of the Muslim community of western Thrace after the exchange of the 1920s (part of the Lausanne treaty). Where the river had been primarily a point of connection, since Lausanne the Evros/Meriç/Maritsa has emerged as a space of control.²⁶⁸ With this delimitation came the transfer of populations and the crystallisation of these imagined communities.²⁶⁹ This began, post-Lausanne, with the transfer of Christian Greeks, from what became Turkish territory, and, from the shores of the black sea, Pontic Greeks. In return Turkish Muslim populations from Greek territory were moved to Turkey, although a significant minority population remains in western Thrace. The transfer along religious lines was an unambiguous attempt to produce ethno-religious purity.²⁷⁰ It was this moment that enabled the claim for the earth to be “Greek” on one side of the Evros/Meriç. The material claim of racist ‘purity’ still resonates in the Fylakio guard’s words.

²⁶⁷ Welcome to Europe Network, ‘Mass Graves of Refugees in Evros Uncovered’ (2010).

²⁶⁸ In her project *Uncommon River* based in the Bulgarian city of Plovdiv, on the Maritsa, curator Merve Bedir calls for attempts to re-common the river. Situating the project at the moment of the Lausanne treaty she addresses the process by which the river became a border. Bedir goes on to state that the bordering process removed local access as an act of uncommoning, and the ‘removal of the river from people’s lives’. Merve Bedir, *Uncommon River, A Space*, Asia Art Archive | 亞洲藝術文獻庫, Hong Kong (28 September 2017) available at: <https://www.aaa.org.hk/en/programmes/programmes/merve-bedir-uncommon-river/period/current-upcoming> (accessed October 2017).

²⁶⁹ Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso 1999).

²⁷⁰ Giorgio Agamben cites this period of refugee movement during the interwar years as leading to: ‘the contemporaneous institution by many European states of juridical measures allowing for the mass denaturalization and denationalization of large portions of their own populations.’ Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, trans. by Daniel Heller-Roazen (Stanford CA: Stanford University Press, 1998) p.131. Martin Glassner suggests that it was during this period of concretising nation states that a debate arose amongst political geographers surrounding the most suitable form for borders: artificial or natural. By ‘artificial’, Glassner refers to demarcation along ethnic lines to ease potential for cultural stress. The exchange of populations after the Lausanne treaty occurred in response to the intensification of ethnic division during the years of war but has only re-produced this division through the new border. The Evros is a case in which the border produced as ‘natural’ has formed an artificial, or ethnic, boundary in turn. However, the easing of cultural stress to which Glassner refers has been far from successful. Glassner, (1993) p.76.

In the century since, Pomak and other Muslim minorities in western Thrace have been the focus of multiple marginalising practices, including unofficial policies discouraging the sale of property to Muslims.²⁷¹ It is in the context of the marginalisation of Muslim communities of western Thrace that unidentified border crossers are assumed to be Muslim and handed to local communities for the performance of funerary rites. These villages themselves ostracised by the Greek state, most notably through the lack of road infrastructure, are expected to facilitate the burial of migrants because of the assumption of shared religious identity. While certainly religiously appropriate rites should be followed, the situation, beyond the records taken by Pavlidis, reflects the state's continued marginalisation of Muslims — both Greek citizens and migrants — as non-Greek. Further to this, it indicates the State's overall abdication of responsibility for the violence of the border even beyond death.

I.iii

TRANSBOUNDARY WATERS

In the long heredity of international river law, the boundaries of nation states are fixed to riverbanks while the water flowing within or between was considered neutral or common.²⁷² The waters of the Evros/Meriç, however, are certainly not neutral in any real sense. Within riverine conditions where environmental but also humanitarian transgressions take place specific types of water are produced. Climate change projections have made freshwater rights an increasingly volatile area of geopolitics, exacerbating the potential for cross border conflict around transboundary rivers.²⁷³ Current attempts to develop agreements in the region have stumbled over the key issues of hydroelectricity and its relation to major flood events. In response to this, the wider literature of hydrodiplomacy, and in hydropolitical discourse as outlined in the introduction, water management and flood threat tentatively address the issue of border violence and make motions towards post-border accord. Such accord includes: the somewhat ambitious benefits of 'research opportunities, shared management and monitoring, international cooperation and international peace.'²⁷⁴ This applies to hydro-social thinking that

²⁷¹ Demetriou, (2013) p.109.

²⁷² A. Oye, Chukwurah, *The Settlement of Boundary Disputes in International Law* (Manchester: Manchester University Press, 1967), pp.46-47.

²⁷³ Heather Cooley & Peter H. Gleick, 'Climate-Proofing Transboundary Water Agreements' *Hydrological Sciences* (2011) 56:4, pp.711-718.

²⁷⁴ Zogaris, et al., (2015), p.276.

broadly considers water to be produced by its social relations, and is thus equally susceptible to changes in these relations.²⁷⁵ Despite attempts to comply with EU water management directives, between Greece, Turkey and Bulgaria, including European Water Directive 2000/60/EC, there remains an overriding socio-political suspicion and mistrust fuelled by ongoing legacies of conflict.²⁷⁶ Such discord contributes to how a borderised river as a weapon is one that is produced through an assemblage of material and discursive forces as a man-river-weapon, as outlined through Deleuze and Guattari, and DeLanda, in the introduction.²⁷⁷ When produced through such an assemblage the river also carries the traces of each element assembled in the weaponisation. Consequently, the type of water produced in the Evros/Meriç/Maritsa bears the traces of conflict. This is no more evident than in the pollution of the water, the regular and increased severity of flooding and perhaps most powerfully in the form of bodies submerged within its flows.

While there is a history of transboundary agreements along the Evros/Meriç/Maritsa this co-operation has mostly been fragmented, and rarely if ever treats the river as a unity.²⁷⁸ Where international river basin agreements are common, the existing political tension of the Evros/Meriç/Maritsa makes the possibility of hydrodiplomatic accord almost very slim, if non-existent. The 2005 flood itself reflected a lack of water management framework or common flood prevention strategy. The situation is complex and multi-directional, tension exists between the individual states and more intensely in the case of the two downstream riparians (Turkey and Greece) who, in turn, share joint grievance with their upstream neighbor. The Turkish and Greek governments consider Bulgaria's water management to have had major impacts on downstream flooding. In the entire basin the majority of large dams and reservoirs

²⁷⁵ Linton, (2010), p.224.

²⁷⁶ A comprehensive document outlining the many ways the health of shared water bodies should be maintained with emphasis on the economic benefits of water as an 'in principle renewable natural resource'. The directive pays minimal attention to the social necessity of water management other than in the case of pollution where it is briefly mentioned in relation to the recovery of costs for water services. European Parliament And The Council Of The European Union, 'Directive 2000/60/Ec Of 23 October 2000 establishing a framework for Community action in the field of water policy', available at: https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF (accessed May 2019) p.3, p.13.

²⁷⁷ This is developed in reference to both DeLanda and Guattari, and DeLanda's thinking on the 'man-animal-weapon, man-horse-bow assemblage'. DeLanda, (2016) p. 68-69; Deleuze & Guattari, (1987), p. 404.

²⁷⁸ This includes the 1934 agreement on the control of hydraulic works on both banks of the river between Greece and Turkey and amended in 1963; Y. Mylopoulos, et al., (2008) p.292-3.

are concentrated on Bulgarian territory, as many as 722,²⁷⁹ while Turkey has 60,²⁸⁰ and Greece has just 5 (mainly for irrigation purposes).²⁸¹ Flow variability is central to many transboundary agreements whereby upstream riparian nations enable downstream riparians to adapt to both wet and dry conditions.²⁸² This, as we shall see, is a crucial problem between Greece, Turkey and Bulgaria.

Recent attempts at hydrodiplomacy in the region include the 2016 ‘Joint Declaration Between the Government of the Hellenic Republic and the Government of the Republic of Turkey’ signed by Prime Ministers Alexis Tsipras and Ahmet Davutoglu.²⁸³ It requires minimal prior knowledge to see that the agreement incorporates the interrelation of the multiple elements folded into the frontier. These include a Joint Action Plan to ‘stem migration flows,’ as well as trafficking and smuggling networks, with the implied proviso that Greece will support Turkey in its EU visa liberalization dialogue. Thus, the lubrication of one form of movement is unambiguously exchanged for the curtailment of another. This is followed by an agreement on the ‘timely’ realisation of major geopolitical infrastructure projects. Of particular relevance is the meeting of the Trans Anatolian Pipeline (TANAP) and the Trans Adriatic Pipeline (TAP) projects at the Evros. This is in the interests of mutual energy security. This is followed by a section on flooding, which acknowledges the damage caused each year and outwardly expresses a joint commitment to adhering to the centralized European Water Directive 2000/60/EC. As the downstream nations, Greece and Turkey are in agreement and welcome faintly veiled ‘goodwill and cooperation’ from the ‘other relevant parties’, intimating Bulgaria, to whom they direct much of the blame.

²⁷⁹ Mentzafou et al., (2017), pp.679–700, p.680; Bulgarian dams are ‘mainly for hydropower production and secondarily for irrigation purposes and fish-breeding’.

²⁸⁰ *Ibid*, p.680.

²⁸¹ Despite dams on upstream Bulgarian tributaries, because of its significance as a border and with little transboundary water management the main course of the river in the Greece/Turkey section has no dams or artificial barriers, rare for such a large river, this may make it an important habitat for fish. See Zogaris, et al., (2015), p.275.

²⁸² Cooley & Gleick, (2011) p.715.

²⁸³ ‘Joint Declaration Between the Government of the Hellenic Republic and the Government of the Republic of Turkey,’ Izmir March 2016, signed by prime ministers Alexis Tsipras and Ahmet Davutoglu. Available at: <http://www.jeanpierrecassarino.com/wp-content/uploads/2017/02/GR-TURK-Joint-Declaration-03-2016.pdf>.

Before 2016, discord was evident in specific attempts to address the flooding issue. After the major 2004-6 floods an official visit was made to Sofia (April 2006) where the respective Greek and Bulgarian Prime Ministers agreed a framework for bilateral partnership.²⁸⁴ In addition to the instigation of an early flood warning system Greece suggested a tri-lateral working group with Turkey. The group met in October 2006 in Alexandroupolis where Turkey made a written demand, supported by Greece, that the reservoir storage capacity of large dams situated on the Ardas tributary in Bulgaria be regulated to “minimize water discharges downstream and reduce flow at Edirne,” a densely populated area and major confluence where the Ardas and Tundzha meet the Evros/Meriç/Maritsa. The Bulgarian delegation refused to respond and cancelled future working groups. Bulgaria remains resistant to such regulation because of the role that the private sector plays in managing hydro-electricity infrastructure.²⁸⁵ To maximize energy productivity and profits their primary interest is the maintenance of the highest possible water level and volume in the dam reservoirs all year round to garner the highest possible profit. This is in direct opposition to the interest of the downstream nations who want to regulate reservoir storage in wet seasons to accommodate changes in floodwaters.²⁸⁶

The failures of water management result in flooding but also in the high levels of pollution carried by the river. The lack of transboundary water management means that pollutants enter the water without being treated or regulated. Characterised by pollution these waters materially reflect a hydro-social politics of division. As with other transboundary studies of river pollution not all bordering nations release data, thus making accurate assessment challenging.²⁸⁷ Sewage from the chemical and fertilizer industries in Bulgaria, as well as other heavy industries meet untreated sewage from population centres, such as Plovdiv (Bulgaria) and Edirne, ‘overloading [the river] with significant quantities of organic matter and nutrients.’²⁸⁸ Transported downstream these polluted fluvial contents deposit at the delta, where in the summer months,

²⁸⁴ Stylianos Skias and Andreas Kallioras, ‘Cross border co-operation and the problem of flooding in the Evros Delta’, in Joris Verwijmeren and Mark Wiering eds. *Many Rivers to Cross: Cross Border Co-operation in River Management* (Delft: Eburon, 2007) p.128.

²⁸⁵ *Ibid.*

²⁸⁶ *Ibid.*, p.133.

²⁸⁷ Angelidis, M.O., & Albanis, T.A., ‘Pesticide residues and heavymetals in the Evros river delta, N.E. Greece,’ *Toxicological and Environmental Chemistry* (1996) 53, pp. 33-44.

²⁸⁸ Kanellopoulos et al., ‘Geochemical composition of the uppermost delta sediments of the Evros River, northeastern Aegean Sea,’ *Journal of Marine Systems* (2006) 63 pp. 63–78, p.65.

when the flow rate is low, fine particulate metals accumulate and sediment.²⁸⁹ The difficulties in maintaining transboundary water regulations are palpable in the polluted waters of the Evros/Meriç/Maritsa.

This also resonates with the paradoxical implications of the river border's control of the movement of disease. The location of the river has strategic significance as a biopolitical intersection between two continents.²⁹⁰ For example, between 1985 and 1987 Greece was granted permission from the EU to implement a buffer zone along the border to prevent, in the words of the European Communities agreement, the spread 'of exotic strains of foot-and-mouth disease [...] in Greece and in the other Member States [...] from] certain regions of south-eastern Europe and the Middle East.'²⁹¹ The strategic position reproduces orientalist cultural distinctions and also signals the formation and implementation of exoticised epidemiologic boundaries feeding into a discourse of ethnic biopolitics.²⁹² This is no more evident than the disinfectant baths that cars drive through crossing from Turkey into the EU, while the flows of the river itself harbour waterborne pathogens.

One of the exercises in our research was to drive across the different borders of Evros/Meriç/Maritsa. Even with the low stakes of our border crossing the exercise exemplified the biological border.

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²⁸⁹ Angelidis & Albanis, (1996) p.42.

²⁹⁰ Zogaris et al, (2015) p.269.

²⁹¹ Official Journal of the European Communities, No L 103/26, (1985) available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31985D0224&from=EN> (accessed May 2019).

²⁹² Steve Hinchliffe, John Allen, Stephanie Lavau, Nick Bingham, & Simon Carter, 'Biosecurity and the topologies of infected life: from borderlines to borderlands,' *Transactions of the Institute of British Geographers* (2013) 38:4, pp. 531–543.

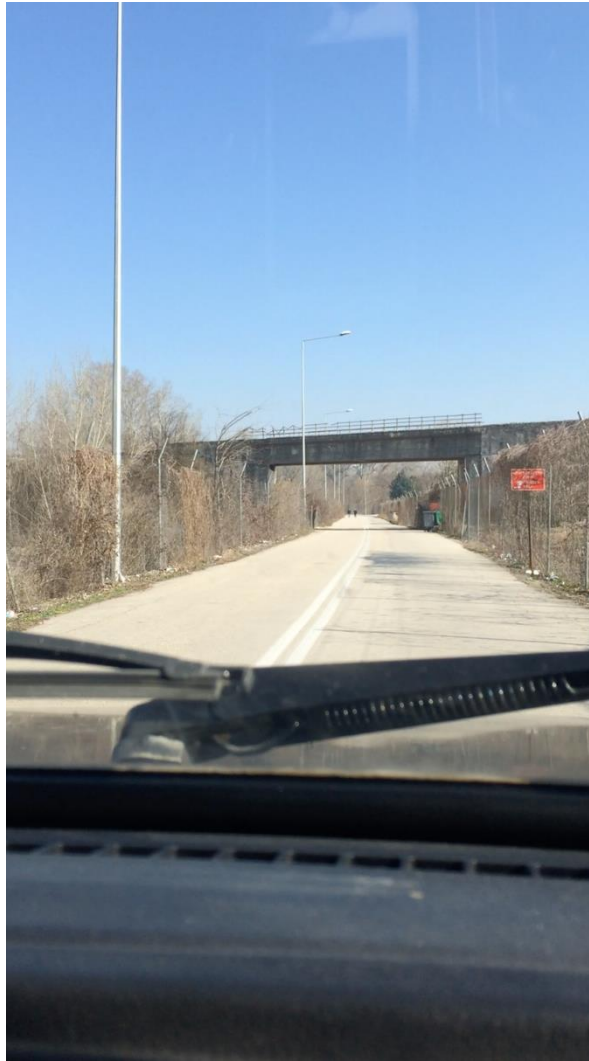
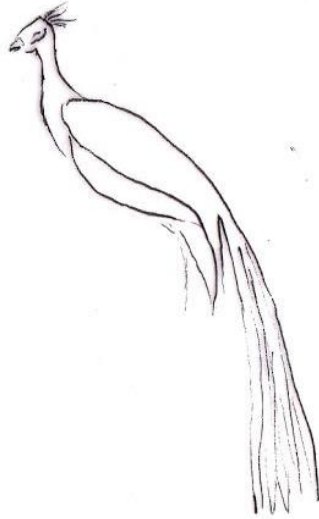


Figure 14 Crossing the border at Kastanies (Ifor Duncan and Stefanos Levidis).

At Kastanies border crossing. 19/02/2019

On the Greek side the border crossing is a desert, full of trash. It feels like a service station. While we wait for our passports to be checked there is a power cut and we are delayed. A month earlier two Greek and British researchers were arrested in the area and during the power-cut it feels like our presence is being registered... Sofia (Stefanos's partner) thinks we are paranoid.

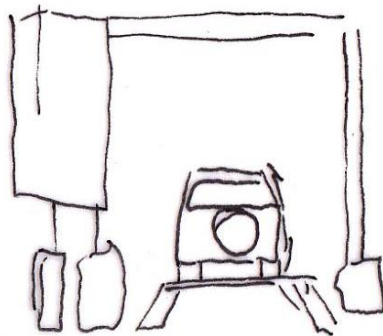
As we pass into Turkey the border is tidy. There is a garden, and there is no litter. Suddenly, we are apprehended by three peacocks. Their feathers are down and yet they are in their own way an obvious display. The strange calm of the peacocks walking across the road leads us into the garden area where the border checks take place. The whole situation has a surreal flavour.



Men in plain clothes – black leather jackets and jeans – smoke at picnic tables waiting to search suspect vehicles. Rosa (our car) is a gas / petrol hybrid and they want to see the natural gas tank in the boot. Eventually they nod their heads in feint admiration for the car. They ask to see the hydrophones – with their black rubber casing and long cables they do look suspicious. With hand gestures I explain that they are for listening under water, which is surprisingly accepted without question. I had forgotten that I need a visa to go into Turkey, a sufficient oversight as it is the European / Turkish border that we are researching. €25 is the visa fee for a three month stay, but we will be in Turkey for only a few hours. Driving on we think about the amounts paid by those coming in the other direction where a visa, so easily obtained for me, is not an option.

Then we cross the bridge into Edirne. We stay for only a few hours before driving on to the Turkish / Bulgarian border with ease. We will cross three borders before lunch.

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The Turkish / Bulgarian border

At Kapikule we pass through without any event and go through disinfection baths, which spray the wheels. This is the EU's biological border, another liquid border.

Then the Turkish guards call us back because they want to X-ray the car. Rosa is driven up onto a ramp where a mobile x-ray passes across the car. Were we called back because we have been in Turkey for only two hours and are crossing a different border into a third country? Or is my paranoia returning because they are suspicious of us? The border guard hands back our passports and says wryly: “Goodbye Stefanos.”

The border is slow and ponderous. It is disconcerting. On the Bulgarian side we are asked if we have cigarettes. Then we turn our lights on! We had been told that you get fined for not having your lights on, even in the middle of the day, and that there is a Police road block 1 km after the border specifically to fine those who are oblivious to this law. But we were prepared, or at least we thought we were. The next ingredient to the gradient of the border is that you need to buy a ticket from the service station for the road toll. When we stopped we turned off the lights but forgot to turn them back on again when we rejoined the road. Half a km later and there they are – a row of Police cars lined up waiting beyond the crest of a hill. Even if the fine was only €10, this is part of the border’s economic gradient. An economic gradient no more exemplified than by the town on the Bulgarian side, which is punctuated by adverts for casinos and Pole-dancing clubs to attract Greek and Turkish tourists across the border.

Driving across the Turkish border into Bulgaria our tires were sprayed twice. After the first time they pulled us back to x-ray the car, then we drove once more through this other liquid border. However, on our passage from Bulgaria back into Greece there was no such disinfectant bath between these two European nations.

The river itself bears a further, biological, significance. Studies of the Ardas and Evros river ecosystem show that due to disregard for pollution regulations the fluvial frontier has become a ‘niche of pathogenic and antibiotic-resistant Enterobacteriaceae’, including E-Coli, produced by chemical waste dumping.²⁹³ Here the fluvial frontier operates transversally with antibacterial baths policing the trajectories of river crossings while the river itself harbours dangerous levels of antibiotic resistant pathogens. When the river floods these pathogens contained within the river become a public health concern.²⁹⁴ One particular niche is below the regularly flooding confluence with the Ardas, near the border crossing of Kastanies. Flooding may deposit these pathogens onto the agricultural land and contaminating produce. It is a lack

²⁹³Athanasios, & Alexopoulos, et al, ‘Antibiotic resistance profiles and integrons in Enterobacteriaceae from the riverside of Evros-Ardas with respect to chemical and waste pollution’, *Microbial Ecology in Health and Disease* (2006) 18:3-4, pp.170-176, p.174.

²⁹⁴ Ibid.

of regulation that contributes to producing this transboundary water, characteristic of the exceptions of the border regime.

Other Flows

Not all the liquids of the fluvial frontier are water. The TANAP meets TAP beneath the thalweg of the Evros/Meriç (figure 18). Buried beneath the watercourse is the intersection of the material flows of a key geopolitical chain. These pipelines bring liquid gas amongst the assembled elements of the frontier: with multiple liquids flowing multidirectionally at different strata.²⁹⁵ As the 2016 Joint Declaration implies (cited above), such infrastructural agreements are contingent upon other concerns at the fluvial border, from flooding, through resource, to migration policy.



Figure 15 Stills from Trans Adriatic Pipeline promotional video *TAP Flyover Video* (25 November 2014) available at: <https://vimeo.com/112816521> (accessed May 2019).

²⁹⁵ We come to the politics of both the vertical and of volume in *L.iv*, where we discuss the river's movements in relation to the fixed border.

The Fluvial Frontier of the Evros/Meriç does not contain neutral liquids but with the addition of TAP and TANAP are, as political geographer of the geopolitics of pipelines Andrew Barry has identified, part of a dynamic and interrelated material politics. A politics that oil companies utilise in their interests even if they continually attempt to diminish the potentially disruptive activities of such assemblages of materials and people.²⁹⁶ The pipeline embedded within its own underground politics of access exists in direct contrast to that of attempts to ‘stem’ human movement. This is one of the more overt examples of the, albeit buried, engineering of the fluvial frontier but not all interventions are so overt.

Where rivers appear at first glance as ‘natural’ courses they are, to greater and lesser extents, the result of centuries of small and large-scale engineering interventions.²⁹⁷ Stefan Helmreich’s concept of ‘infranature’ elucidates the nuance of such engineering. He deploys this term to the geopolitical technologisation of ocean waves in the cloaking of islands under construction, making the specific point that through the calculation of wave fronts second nature is ‘folded’ back into first or organic nature.²⁹⁸ ‘Infranature’ helps to clarify how rivers are technologised not only through overt human interventions, such as dams and other large engineering projects. The Evros/Meriç has been visibly straightened and engineered at numerous points such as the draining and alignment programmes in the delta in 1956 to produce more arable land. Flexible to force, river interventions also occur through the assemblage of smaller scale and almost invisible elements, and perhaps even through the absence of physical intervention at all. Non-intervention takes the form of external policy decisions, such as the building of the fence, which in turn alter relations to the water.

Science and technology studies scholars Caspar Bruun Jensen and Asturo Morita suggest that infrastructures are relational forms that activate experimental ontologies in the production of new worlds. In this complex relational ontology infrastructures are not only things themselves

²⁹⁶ Andrew Barry, *Material Politics: Disputes Along the Pipeline* (Chichester: Wiley Blackwell, 2013) p.4.

²⁹⁷ Edgeworth (2011).

²⁹⁸ Stefan Helmreich, ‘How to Hide an Island’ in Daniel Daou and Pablo Pérez-Ramos (eds.) *New Geographies 8: Island* (Cambridge MA: Harvard Graduate School of Design, 2017) pp.82-87.p.84. This echoes Derek Gregory’s point, above, concerning the ways calculations of abstract space into formations of ‘culture-nature’. Gregory, (2001) p.97.

but the relations between them.²⁹⁹ The river water of the Evros/Meriç is the confluence of just such a multiplicity of relations, its always multiple contingencies are part of what are referred to in critical border studies as a *hybrid collectif*,³⁰⁰ an assemblage of actants,³⁰¹ or what we call border ecologies.³⁰² This is not to say that the deaths of asylum seekers taking place in and around the river are the direct results of the river's agency. Instead, this is to understand the relation of multiple forms of causal agency present within the bordering process without drawing a definite ontological divide between what is produced the *nature* and what is produced by humans.³⁰³ Facilitated by geopolitical impasse, it is this causal ambiguity that enables states to blur their own role in the organisation of such hazardous relations.

The absence of transboundary river management is not only indicative but imbricated in the ambiguities of the shifting river border. These material ambiguities are fundamental to the ecology of exception. Although the flow of resources is accommodated beneath, the river remains a feature of division rather than connection. As this section asserts, the absence of any real transboundary river management of the Evros/Meriç/Maritsa contributes to the intentional ambiguities of the river border region. While flooding is undesirable in its damage to property, it is, by contrast, this very unpredictability that is necessary in the design of the border. The fluctuations in flow rate, the consequent unevenness of the riverbed depths and changing banks are necessary to the production and maintenance of the ambiguities of the fluvial violence of the border.

At the Evros/Meriç there is a layering of liquids, some common or neutral and disregarded from the territory, others prominent in the bio-politics of the border (such as the disinfectant liquids at the crossings described earlier) and yet more are of geopolitical importance. Thus, these multiple liquids shift multi-directionally (between and beyond the two banks, seeping into the fields, and as liquid gas pumped beneath) emphasizing the extent and depth of the

²⁹⁹ Caspar Bruun Jensen & Asturo Morita, 'Infrastructures as Ontological Experiments' *Engaging Science, Technology, and Society* (2015) pp.81-87.

³⁰⁰ Jason de León, *The Land of Open Graves: Living and Dying on the Migrant Trail* (Oakland CA: University of California Press, 2015).

³⁰¹ Sundberg, (2011).

³⁰² The key term in Stefanos's PhD research.

³⁰³ Tuana, (2008) p.192.

confluent politics of the fluvial frontier. This adds greater clarity to our assertion that where the line is its outward representation, the fluvial frontier operates through other moments of precipitation, seeping and soaking, through hypothermia, the mud of the berms, and pushbacks.

I.iv

ACCRETION AND AVULSION

Rivers as ‘natural borders’ are mired in material, spatial and legal ambiguities. This is clear in the Lausanne peace Treaty. Article 2 (2) states that from the village of Bosna-Keuy (Bosna the village at the edge of the border fence) all the way to the Aegean the demarcation follows the river course. Elsewhere, as in Article 6, the discussion of how the border might be demarcated is also vague.

ARTICLE 6.

In so far as concerns frontiers defined by a waterway as distinct from its banks, the phrases "course" or "channel" used in the descriptions of the present Treaty signify, as regards non-navigable rivers, the median line of the waterway or of its principal branch, and, as regards navigable rivers, the median line of the principal channel of navigation. It will rest with the Boundary Commission to specify whether the frontier line shall follow any changes of the course or channel which may take place, or whether it shall be definitely fixed by the position of the course or channel at the time when the present Treaty comes into force.³⁰⁴

An international committee, headed by the Dutch colonel J.Backer, was assembled with the task of determining the precise course of the border between Greece and Turkey. As the river braids, and at times splits, the two countries disputed which of the two main branches of the river should constitute the main course to be followed by the border. Greece argued for the eastern branch, while Turkey argued for the western. An agreement was finally reached and ratified by the 1926 Athens Protocol. This was the first time the course of the border was described in detail. Despite the impossibility of reducing a geography as changeable as the Evros river to legal text, the 1926 committee defined the border with a degree of clarity. The border was marked with red ink on ten maps, and the first 26 pyramids were installed. As a non-navigable river the border follows the median line between the banks throughout the course of the river, or its main ‘branch’, when the river splits.³⁰⁵ Islands were given names or

³⁰⁴ Lausanne, Article 6.

³⁰⁵ The treaty effectively marked the end of the river as a navigable course.

letters from the Latin alphabet. The only exception is the triangle of Kastanies/Karaagac, which was ceded to Turkey, and now hosts the 12km border fence.

The committee, however, deemed that the border should not follow the changes of the route of the river, but instead fixed it forever to correspond to the 1926 protocol. This means that there is almost 100 years of geomorphological variation between the drawn border and the river that it follows. Islands that used to be there are no longer, banks have moved their course and canalisations have directed the river in divergent ways. Since the demarcation of the border, fixing the riverbanks to the 1926 condition has long been a main concern of both Greece and Turkey. The two countries drafted plans for common flood defence. Including attempts in 1936, 1953, 1959, and between 1969 and 71. At different points, however, these efforts were hampered by wider political tension and indeed by the agency of the river itself. For example: in 1960 a mixed committee installed markers that were quickly carried away by the river; in 1963 after significant alterations of the riverbanks, provisions were made to exchange land near Feres and Enez. Due to tensions in Cyprus this was never finished. None of the plans for a fixed border demarcation were fully implemented and, after the 1970s, bilateral communication ceased for decades, until briefly and unsuccessfully re-emerging recently (as discussed above). This impasse has maintained the ambiguity of the waters.

In international law on river borders many demarcations, including the Rio Grande, specify the ‘thalweg’ as the border demarcation.³⁰⁶ In river science this strange term derived from the German for valley (‘Thal’) and way (‘Weg’) refers to the line of lowest elevation of a watercourse. In geopolitics it is often synonymous with international river borders. John Donaldson has written extensively on the international law of river borders, with specific focus on *accretion* and *avulsion* as the key legal terms to identify the spatio-temporal movements of river courses (figure 10 & 17).³⁰⁷ For Donaldson the legal mechanisms behind avulsion and accretion reinforce the ‘land bias,’ a bias made all the more problematic when addressing the vacillations of dynamic bodies such as rivers.³⁰⁸ In Donaldson’s survey of the heredity of

³⁰⁶ Glassner, p.77.

³⁰⁷ Donaldson, (2011).

³⁰⁸ Deleuze and Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. by Brian Massumi (Minneapolis MN: University of Minnesota Press, 1987) p.12; John, W., Donaldson, (2011) p. 155.

accretion and avulsion in International river law he cites a number of Supreme Court rulings³⁰⁹ identifying accretion as the slow, and crucially, imperceptible movement of a river whereby the border shifts laterally with the central channel of the river.³¹⁰ Avulsion, on the other hand, is a violent and perceptible deviation of a river's course to produce, for example, a major change in deltaic plumes, the emergence of a large looping meander after floods, or, conversely, a 'river cutting through the 'neck' of such a meander'.³¹¹ These processes are no better illustrated than in the case of the palimpsestic ribbons of Harold Fisk's famous 1944 map of the Mississippi's fluvio-geomorphology.

Fisk's deep-time map of the changes, accretions, and avulsions illustrate novelist Toni Morrison's famous words on the flooding of the Mississippi, as the water's very own remembering of the courses it followed before being 'straightened out' by colonial, planter, and military interventions.³¹² Fisk's map indicates the possible courses of such deep-fluvial memory, where the river is never singular. In the case of the Evros/Meriç/Maritsa, the river's shifts, perhaps not as dramatically as the Mississippi in Fisk's maps, produce their own territorial ambiguities.

³⁰⁹ Donaldson, (2011) p.158.

³¹⁰ *Ibid*, p.160.

³¹¹ *Ibid*, p.165.

³¹² Toni Morrison, 'The Site of Memory' in William Zinsser ed. *Inventing the Truth: The Art and Craft of Memoir* (Boston; New York: Houghton Mifflin, 1995) pp. 83-102, p.99.

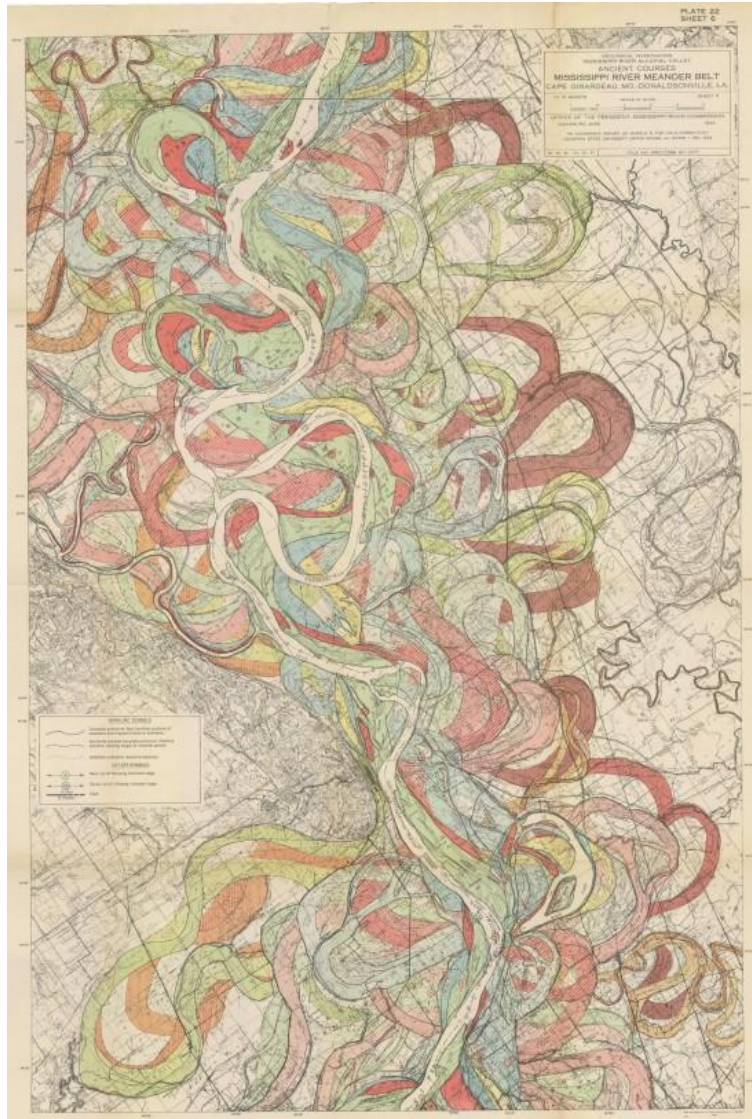


Figure 16 Harold Fisk, 'Plate 22: Sheet 6,' *Geological Investigation Mississippi River Alluvial Valley: Ancient Courses Mississippi River Meander Belt: Cape Girardeau, MO. – Donaldsonville LA.* (Vicksburg MS: Office of the President, Mississippi River Commission, 1944).

Due to these shifts, and their agency, many have considered rivers to be inadequate political boundaries.³¹³ Prescott and Triggs highlight the paradox of the transitory flow of water between two states 'while sovereignty imports the notion of permanence.'³¹⁴ Donaldson words it thus: 'the presence of water makes a boundary river unstable, forceful and risky; incompatible with

³¹³ Climate change also challenges what is perceived as the 'natural' behavior of rivers and river borders. The recent book *A Moving Border: Alpine Cartographies of Climate Change* emphasises the inadequacies of inherited cartographic practices to respond to territorial shifts produced by climate change. Marco Ferrari, Elisa Pasqual, Andrea Bagnato, *A Moving Border: Alpine Cartographies of Climate Change* (New York: Columbia Books on Architecture and the City, 2019).

³¹⁴ Victor Prescott, & Gillian Triggs, *International Frontiers and Boundaries: Law, Politics and Geography.* (Leiden: Martinus Nijhoff Publishers, 2008) p.215.

the legal fiction of a fixed boundary line that would prefer the stability of land over the dynamism of water.³¹⁵ Anthony Oye Chukwurah, legal scholar of boundary delimitation, likewise identifies that a river ‘maps its own course and boundaries are merely delimited along its thalweg, median or bank’.³¹⁶ This instability lies behind the fantasies of the territorial control implied by the moat, which imagines the possibility of fixing the waters in place. One of the reasons that river boundaries are so popular, however, is exactly because of their capricious nature. When rivers shift one side gains territory and the other loses it, while the emergence of alluvial islands enables the possibility of territorial claims.³¹⁷

This fluvial agency echoes Gilles Deleuze and Félix Guattari’s rhizomatic philosophy of decalcomania. They conceive of mapping occurring against the static tracing of cartography: the water maps where the line traces.³¹⁸ When rivers map they shift the thalweg away from its bearing within the tracing made at the particular cartographic moment of border delimitation. Elsewhere, Dilip Da Cunha has shown that the drawn line of the riverbank at the moment of demarcation or mapping almost always takes precedence over the flow of water.

After all, rivers do not cease to exist when they are without water. It is accepted that they ‘run dry’, some seasonally and others exceptionally. What remains is a space between lines which continues to be seen and enforced as a ‘river’ or a ‘river bed’, suggesting that it is the line more than water that is essential to rivers.³¹⁹

As far as demarcation is concerned once the line has been drawn the water itself is no longer relevant, but for the arcifinious imaginary of the state the water remains an essential weapon. Two rivers *and* two borders exist in the example of the Evros/Meriç below (figure 17): the cartographic border of the old median line (now an almost unmoving pond) and that of the new thalweg, which has

³¹⁵ Donaldson (2011), p.167; Glassner (1993), p.36. This equates to Jess Lehman’s proposition that human interventions shaping the ocean can help to rethink legacies of land-based governance. Jess Lehman, “Volumes Beyond Volumetrics: A Response to Simon Dalby’s ‘The Geopolitics of Climate Change’ *Political Geography* (2013) 37, pp. 51–52.

³¹⁶ A. Oye Chukwurah, *The Settlements of Boundary Disputes in International Law* (Manchester: Manchester University Press, 1967) p.189.

³¹⁷ Collins, (1998) p.286.

³¹⁸ Deleuze & Guattari, (1987), p.12.

³¹⁹ Da Cunha, p.4; Elsewhere, Cosgrove evokes the notion of ‘Apollonian cartographic reason’ that takes a bird’s eye view regardless of the complex material make up of the ground. Cosgrove, D, *Apollo’s Eye: A Cartographic Genealogy of the Earth in the Western Imagination* (Baltimore MD: Johns Hopkins University Press, 2003).

become the water of the new trespass line – but not the border.³²⁰ Da Cunha insists that the perception of a line separating water from land is a choice ‘not in where it is seen in a shifting and dynamic terrain, but in the fact that it is seen at all.’³²¹ Indeed, he claims that the lines themselves invented the concept of ‘rivers’: ‘without lines rivers are inconceivable, which is to say that to hear or speak the word ‘river’ is to think flow and see lines.’³²² The choice to see a river also involves the choice of the moment of representation, the abstract notion of a river in a ‘natural’ state, being contained neatly between its banks.³²³ This choice, as with borderlines, requires seeing with the line already entrenched within the mind, and therefore credulously accepting the river as naturalised, de-political, and non-agentive.

This brings to mind how British anthropologist Tim Ingold has conceived of lines, whereby all organisms are made of the entangled tissues of lines.³²⁴ This, at first glance at least, seems to be in opposition to Da Cunha’s stance above. Rather, we would consider them to be thinking of quite different things. Certainly, the movements and flows of organisms and energy leave traces, which Ingold chooses to call lines. Ingold goes further to state that the entanglement of such lines can be seen as the formation of bundles, as meshworks of lines of growth and movement that form ‘fluid space’. In such space nothing is bounded. This is of course a provocative statement when cited in the context of border studies and the movements of humans as they try to cross boundary lines of division and internalisation. With this, Ingold conceptualises a border free world. What reality this has in practice is less certain. Da Cunha, however, is addressing the specifics of very real cartographic practices imposed around the world through colonialism. Thus, his critique of lines – when he says where he sees lines he sees rivers rather than water – relates to the line drawn on the map and its divisive rather than relational or indeed entangling impact on lived experience of that environment. This is all the more prescient for river borders. Where Ingold sees a river as a line of flight a trail, a trajectory, or a riverbed as the path of flow (echoing Deleuze and Guattari’s notion of drawing rather than

³²⁰ Donaldson, (2011) p.165.

³²¹ Da Cunha, (2018) p.ii.

³²² *Ibid*, p.1. In *Deccan Traverses* Mathur and Da Cunha talk of a ‘cultivated eye’ what we might call a fluvial vision, Mathur, Anuradha & Dilip Da Cunha, *Deccan Traverses: The Making of Bangalore’s Terrain* (New Delhi: Rupha & co, 2006) p.viii.

³²³ Da Cunha, (2018) p.5

³²⁴ Tim Ingold, ‘Bindings against Boundaries: Entanglements of Life in an Open World,’ *Environment and Planning A* (2008) 40:8, p.10-11.

tracing), he speaks of the movement of water that cartographers abstract by drawing lines.³²⁵ Such lines attempt to capture river water – internalising it within linear boundaries – without accounting for its movement. Thus, what are known as rivers are indeed much more than this, they are also the eddies within a stream, as well as the mud, mist, and seepages that exceed the drawn boundaries. Consequently, by critiquing the drawing of the line Da Cunha challenges the reduction of water within a river to a single trajectory, as well as to containment, rather than fluid space. When rivers flood they move beyond such containment, they also seep into the fields that border them. At other times they reciprocally internalise run-off from the fields that they had flooded in the previous season. Indeed, the abstract “river” of maps is one that might have no water at all and is merely the path through which water has long since stopped flowing. A path that has been *de-watered*. Consequently, there is not such a stark distinction between the two conceptions. Rather, both challenge the notion of lines as fixed, stable, and internalising markers. Likewise, both might see the water we have been taught to see flowing within “rivers” as dynamic and potentially unrestrained by the bounding of surveying practices. With this in mind, this thesis will continue to follow Da Cunha’s path rather adopting Ingold’s, this choice has been made due to the specific relevance of Da Cunha’s project to rivers and our understanding of the weaponised river border itself as operating both as the line but also as extending in practice to the entire flood plain and catchment basin.

The capricious shifts of the river across the boundary, geo-spatially tethered to the drawn lines of what was once a riverbed, present an unintentional political agency. The shifts produce islands of stranded land, ambiguous spaces within and around which territorial processes become most deadly.³²⁶ In the image below a large meander neck has been cut by either a change of flow or more likely through the straightening of the course. There now exists an expanse of “Turkish” earth on the wrong side of the river. In another example upstream, the river has shifted westward and land has been ceded to Greece on the Turkish side of the river. Greek farmers still tend to this land on the Turkish side of river via yearly periods of sanctioned river crossing.

These stranded parcels of land are also points where fatalities become concentrated. Pavlidis

³²⁵ *Ibid*, p.11.

³²⁶ We might associate this with Weizman’s concept of elasticity in *Hollow Land: Israel’s Architecture of Occupation* (London: Verso, 2007).

and Karakasi identify this particular avulsion (Figure 17) near Feres as the location where 72 bodies were recovered between 2000 and 2014.³²⁷ The IOM places 3 separate fatalities in the area so far in 2019, the highest concentration anywhere on the river.³²⁸

The Delta 21/02/2019

We drive to the delta amongst bull rushes. The delta is protected by the Ramsar³²⁹ convention on Wetlands of international importance, especially for its population of migratory cranes.

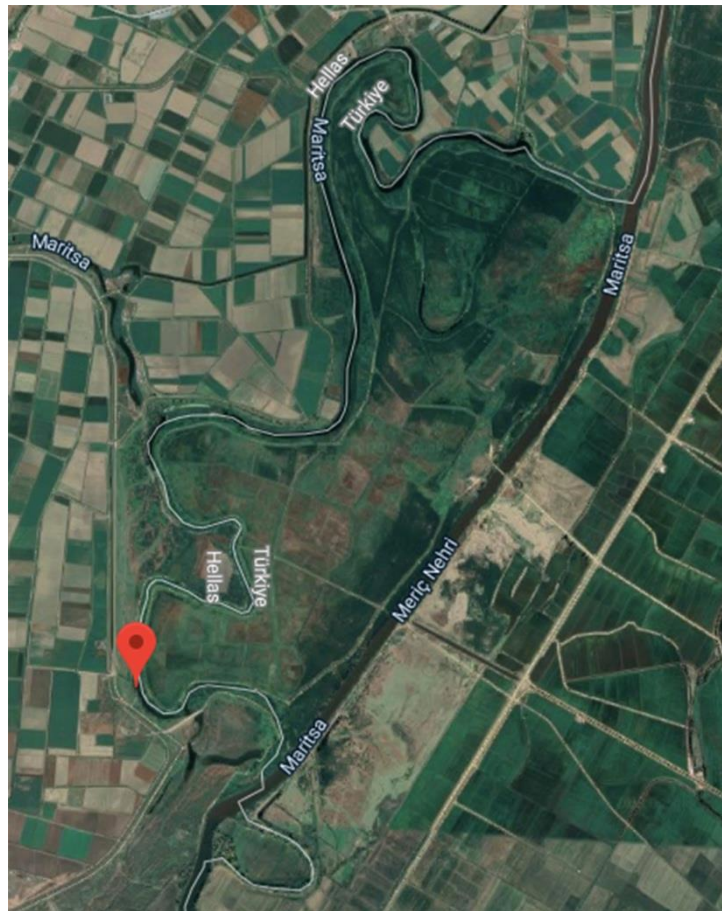


Figure 17 Geo-location of photographs taken during research in the Delta near Feres. The border line remains on the old meandering course while the river itself has been straightened (Ifor Duncan and Stefanos Levidis).

³²⁷ Pavlidis and Karakasi, (2019) p. 269.

³²⁸IOM, *Missing Migrants: Tracking Deaths Along Migrant Routes*, [<https://missingmigrants.iom.int/region/europe>] [accessed August 2019] 1 case on March 24th [<https://bit.ly/2Gah8PN>]; 1 case on March 29th, and 1 case on July 28th [<http://bit.ly/2SNfCYT>].

³²⁹ Ramsar refers to the international fresh water ecosystem conservation agreement made at the eponymous town in Iran in 1986.

We record in a stretch of still water, the flow, which is stronger upstream, is massively dissipated across the entire ecosystem of the delta. Imperceptibly moving towards the Mediterranean.

A “Hup” “Hup” “Hup” sound comes regularly from beyond the trees. I assume it is the shepherd we spotted from the road calling to his sheep (the road is located on a berm). But instead, as Stefanos points out, it is the sound of a military training exercise going on beyond the trees on the other side of the river. Then we hear rounds fired. The braided border is most evident here in the delta.



What I find out later that day, when I consult the geo-tagged images I took at the delta, is that after all of these days of skirting around the river the stagnant water we had been recording is the border itself, the river has been redirected a short distance to the east. Knowing that the river has been straightened in the delta at different junctures over the previous century we had assumed this to be one of many smaller branches. This meandering still water, however, had been the main course when the Lausanne treaty was signed in 1923. Although the simple Google satellite searches we make only show barren waterlogged land the training field on the other side of the water must be a Turkish position. What the map calls the Evros is merely a trench of standing water. After days driving on the fringes of the buffer zone in search of what we imagined to be a wide expanse of flowing water this still water produces an odd feeling of disappointment.

In addition to the deaths of border crossers this meander has also been found to be a particularly polluted part of the river.³³⁰ Is this merely coincidence, or the concentration of multiple politics at a strategic point? Perhaps it is exactly the paradox of the avulsion, where river and borderline

³³⁰ Angelidis & Albanis, (1996) p. 38.

separate, that the confluent politics of the fluvial frontier become concentrated and begin to show themselves more clearly.³³¹

CONCLUSION

The violence of the border regime is faintly veiled within the currents of the river. Considering flood risk, as we have done here, might be misconstrued as naturalising or reproducing nationalist and racist discourse. Our point, to the contrary, is to disambiguate the ways that this fluvial corridor, itself seasonally expanding and contracting, has been both discursively and materially weaponised against migrants. By making this claim we do not suggest that the river is itself inherently deadly, it does not kill, rather it is the “naturalised” weapon through which the border regime acts with impunity (The concept of “nature” is explored further in the obfuscation of trace in Part III). We have consequently chosen to de-naturalise the river by untangling the confluent politics of border waters so that “nature” can no longer be used as a mask to hide violent bordering practices.

Through these fieldwork notes, sketches and images we have relayed the experience of thinking within a tense and ambiguous border regime. Driving atop mud impacted berms and recording in the river we have produced insights into a riverine condition of denial: denial of access to the river, and even the use of flood events to deny pushbacks. In this way we identify the obscure methods by which the state and Frontex uphold their innocence despite the conspicuousness of the unidentified forces and unmarked vans accused of performing pushbacks.

The fluvial frontier operates across the floodplain merging water control and military infrastructure. Perceiving this space as a watery spectrum becomes productive for narrating the fatal affects of border conditions. It challenges the river as a ‘natural’ boundary, enabling the perception of the river as a space of contestation and weaponisation: from the level of diplomatic discord to the microscopically decreased scale of pollution and waterborne pathogens. The confluent politics of the frontier produces its own water, separated from local

³³¹ On the trend of using GPS to mark a river boundary see Donaldson, p.157.: ‘While not physically fixing the river itself, cementing a river boundary line through a series of coordinates effectively unlinks the boundary from the river.’

communities through militarisation, vulnerable to pollution due to geopolitical tension, and made deadly to border crossers by changes in the border regime elsewhere. As a condensation of this hydro-social condition of discord, the river is *made* deadly.

PART II

FLUVIAL TERROR

THE HIDROITUANGO MEGADAM AND THE CAUCA RIVER

... what is to be done with this river, once mute, which is starting to burst its banks? Does the swelling come from the springtime or from the squabble? Must we distinguish two battles: the historical war waged by Achilles against his enemies and the blind violence done to the river? A new flood: the level is rising.

Michel Serres³³²

... as when any river is damm'd up above, and a passage made to convey the waters another way, 'tis no more the same, but a new river.

Hugo Grotius³³³

The dreaming stopped and the rituals stopped, no more bodies covered in gold dust, no more fruits and flowers, no more children playing in my swirls, no more pagamentos (ceremonies) in my banks ... instead dead bodies, thousands of them, tied up, mutilated, beheaded, bodies and body parts ... they kept coming.

The time of dreaming gave way to the time of war on humans and on nature ...

Carolina Caycedo³³⁴

³³² Michel Serres, *The Natural Contract*, trans. by Elizabeth MacArthur & William Paulson (Ann Arbor MI: University of Michigan Press, 1995) p.2.

³³³ Hugo Grotius, (1715) p.73.

³³⁴ Carolina Caycedo, *One Body of Water* (Los Angeles CA: Clockshop, 2015) p.11.

Introduction

In January 2018, a mission convened by Movimiento Ríos Vivos Antioquia (MRVA), comprised of human rights lawyers, activists, artists and forensic scientists, surveyed a section of the Cauca river valley, the second biggest river in Colombia, recording testimony from witnesses to the disappearance of over 600 people in the area directly affected by the construction of the Hidroituango mega-dam.³³⁵ Located in Antioquia department, 170km by road north of Medellín, Ituango has a troubled past, including massacres perpetrated by the paramilitary United Self-Defense Forces of Colombia (AUC) in June 1996 and October 1997; acts that implicated state agents.³³⁶ Rivers have been one of the prevailing methods of disappearance during the half-century long conflict in Colombia.³³⁷ In this section of the Cauca the bodily remains contained within the river's flows are juxtaposed by the construction of the major hydroelectric facility and its potential failure.³³⁸ This part identifies an accumulation of violence around the object of the megadam. Through the transformation of the valley this accumulation includes ongoing conflict and intimidation as well as the abstraction of the river

³³⁵ Colectivo de Abogados, 'Verification mission calls for urgent plan to search for missing persons in the area of influence of Hidroituango,' (January 23, 2018) available at, <https://www.colectivodeabogados.org/?Mision-de-verificacion-pide-plan-urgente-de-busqueda-de-personas-desaparecidas> (accessed February 2018). PDF of mission report: 'Misión De Observación Y Verificación Sobre Las Condiciones De Búsqueda De Personas Desaparecidas Y Preservación De Las Zonas Donde Se Presumen Están Inhumados Los Cuerpos Sin Identificar A Lo Largo Del Cauce Del Cañón Del Río Cauca, Antioquia, Colombia' [translated by Carolina Caycedo]. From here on: 'Misión De Observación,' (2018).

³³⁶ Ituango Massacres v. Colombia, Inter-American Court of Human Rights (July 1, 2006) available at, http://www.corteidh.or.cr/docs/casos/articulos/seriec_148_ing.pdf (accessed 2019), p.3; 4; 13.

³³⁷ The January 2018 the mission observed testimony that between 1990 and 2000 the Cauca 'Misión De Observación,' (2018); See also the Rios de Vida y Muerte project which has investigated the paramilitary practice of river disappearances in Colombia identifying 1,080 bodies found in at least 190 Colombian rivers with the use of figures from the Centro Nacional de Memoria Histórica (CNMH). 'More than a Thousand Bodies Recovered in 190 Rivers,' available at: <http://rutasdelconflicto.com/rios-vida-muerte/especial/mil-cuerpos.html> (accessed: June 2019); EQUITAS, 'Primer Documento Sobre Búsqueda Forense De Cadáveres Y Restos Humanos En Ríos Colombianos' ['First Document On Forensic Search Of Corpses And Human Remains In Colombian Rivers'] (February 28, 2007), Available at, <http://equitas.org.co/sites/default/files/biblioteca/20070228BusquedaRios.pdf> (accessed February 2019).

³³⁸ Achille Mbembe might call this a 'negative moment': 'a moment when new antagonisms emerge while old ones remain unresolved. It is a moment when contradictory forces – inchoate, fractured, fragmented – are at work but what might come out of their interaction is anything but certain.' The dam's failure figures as a 'negative moment' in physical form, with the uncertainty of collapse compounding historic and contemporary territorial disputes, ongoing violence, and displacement. Mbembe, "Decolonizing Knowledge And The Question Of The Archive" *Africa Is A Country* (2015) available at: <https://africaisacountry.atavist.com/decolonizing-knowledge-and-the-question-of-the-archive> (accessed January 2018).

from biodiverse ecosystem and source of life to a necro-hydrological reservoir precluding the survival of the multi-species life which existed prior to construction.

MRVA's original opposition to the construction was based on four key concerns: firstly, its environmental impact on the river; secondly, to protest the construction's displacement of tens of thousands of people³³⁹; thirdly, its radical change on the ways of life of communities living alongside the river. The fourth, and final, point concerns the dam's obstruction of any possible recovery and identification of those disappeared into the river and buried on its now, or soon to be, submerged banks.³⁴⁰

The Cauca near Ituango was originally identified as a possible site for hydropower development in 1969. The plan was mothballed due to a lack of demand for the scale of electricity production intended for the site. In 1998, only a year after the massacres of 1996 and 1997, the plan re-emerged. Eventually Empresas Públicas de Medellín (EPM) took over the construction in 2008.³⁴¹ Despite protests from groups such as MRVA, the project progressed until spring 2018 when, during the final phases of construction, a succession of blockages in the dam diversion tunnels resulted in a month of uncertainty. After a week of heavy rain and mounting pressure a succession of failures in the dam's auxiliary tunnels resulted in the flooding and destruction of the dam's turbine halls and generation units, with craters opening up on the side of the canyon. This culminated on the 12th of May when a seal on one of the tunnel openings failed and released a volume of 6000 m³/s of water downstream for 4 hours destroying bridges (figure 22) and causing flooding in nearby towns.

³³⁹ The Centre for International Environmental Law (CIEL), claim that the dam will have an impact on 180,000 people, with an estimated 700 families already being displaced. CIEL, 'Comment on Movimiento Ríos Vivos Antioquia's Activism Regarding Hidroituango.' (18 May 2018).

³⁴⁰ In March 2019, the Jurisdicción Especial Para la Paz (JEP), the body set up as part of the peace agreement between the Colombian Government and FARC to administer transitional justice in 2016, opened proceedings directed towards EPM, and the Governor of Antioquia regarding access to sites where the bodies of victims might be found (including Ituango). Jurisdicción Especial Para la Paz (JEP), 'Avanzan actuaciones por solicitud de medidas cautelares de 16 lugares donde habría fosas con personas desaparecidas' (March 6 2019) available at: <https://www.jep.gov.co/Sala-de-Prensa/Paginas/Avanzan-actuaciones-por-solicitud-de-medidas-cautelares-de-16-lugares-donde-habr%C3%ADa-fosas-con-personas-desaparecidas.aspx> (accessed March 2019).

³⁴¹ El Colombiano, 'The Facts that Marked the Course of History in Hidroituango,' *EL Colombiano*, (11 February 2019) Available at: <https://www.elcolombiano.com/antioquia/obras/historia-de-hidroituango-cronologia-del-proyecto-DJ10198586> (accessed March 2019).



Figure 18 A bridge destroyed in May 2018 by water from the dam. ‘Impactantes imágenes de Hidroituango’ Germán Mendoza Bueno, YouTube video. available at: https://www.youtube.com/watch?v=Otrt4wMFALg&list=PL61JS0GLUt_KlQuzU7yKY6wdCvlt0Ixdn&index=12 (accessed March 2019).

Alarms returned on the 20th and 21st as water started to flow once more from the damaged tunnels, leading to the evacuation of 24,000 people from the towns and municipalities downstream. Some of those evacuated only returned after the alert level dropped in August 2019. EPM have maintained that the events of March and April 2018 were the result of unforeseen geological weaknesses.³⁴² These claims, however, have been disputed by a number of bodies including MRVA and other river defenders, as well as multiple bodies investigating inadequate surveys, suspicions regarding the granting of environmental licenses, and accusations of financial irregularity.³⁴³

Complete failure in future would be devastating, releasing 2,720,000 m³ of water from the reservoir to flood the town of Puerto Antioquia to a depth of 30 metres, with potential impacts

³⁴² According to the EPM commissioned report from SKAVA consultancy: after a week of heavy rain and mounting pressure, on the 30th of April 2018, a 100m in diameter crater opened directly above the blocked Auxiliary Diversion Tunnel. The blocked tunnel contributed to the partial failure of the dam in May and the flooding of the turbine hall. SKAVA Consultancy, “Informe De Estudio De Causa Raíz Física” Proyecto Hidroeléctrico Ituango, (28th of February, 2019), p. 15. Available at: <https://caracol.com.co/descargables/2019/03/02/c3da36a23d40b22bbdc9bcceec13a017.pdf> (accessed May 2019).

³⁴³ Fiscalía General de la Nación (FGN), ‘Hidroituango: el pecado original,’ (February 27 2019) available at: <https://www.fiscalia.gov.co/colombia/fiscal-general-de-la-nacion/hidroituango-el-pecado-original/> (accessed March 2019). This also includes concerns about the acceleration of the project.

for communities stretching for hundreds of miles downstream.³⁴⁴ This produced a whole new element of terror in relation to the river and the reservoir. In response to this threat, Ríos Vivos have focused on the urgent prospect of full failure, calling for EPM and the government to recognise the threat to life posed by the dam and instigate the controlled abandonment of construction.³⁴⁵ Subsequently, two members of Ríos Vivos were assassinated and ongoing death threats have been made resulting from opposition to the project.³⁴⁶ As recently as August 26th 2019, Colombian human rights organization, *Collectivo de Abogados* released an urgent statement concerning the safety of MRVA members in the context of ongoing efforts made by political opponents to undermine and vilify the validity of MRVA and other river defenders in their struggle to oppose the dam and its impacts.³⁴⁷ The terror produced in the conflict over the river follows a pattern of intimidation of groups opposing major infrastructure projects, particularly hydropower projects, in Colombia, the Americas and around the world,³⁴⁸ and is the result of a spatial and territorial politics contested by asymmetrically weighted political

³⁴⁴ Alsema, A, 'Colombia preparing for possible rupture of country's largest dam.' *Colombia Reports*, (9 June 2018) Available at: <https://colombiareports.com/colombia-preparing-for-possible-rupture-of-countrys-largest-dam/> [accessed March 2019]; Germán Vargas Cuervo, 'Ten threat zones of the Cauca River in face of the scenario of a Hidroituango disaster,' *UN Periódico Digital* (15 June 2018). Available at: <http://unperiodico.unal.edu.co/pages/detail/ten-threat-zones-of-the-cauca-river-in-face-of-the-scenario-of-a-hidroituango-disaster/> (Accessed February 2019).

³⁴⁵ One of the leaders of MRVA, Isabel Cristina Zuleta, brought the case to the Tribunal Latinoamericano del Agua in Guadalajara Mexico in October 2018. The tribunal found that the Hidroituango project violated the economic, social and cultural rights of the people of Antioquia. Considering the threat of collapse they recommended, as have others, that the state and government of Antioquia dismantle the dam and remediate the river with the consultation of affected communities. Tribunal Latinamericano del Agua, 'Posible violación de los derechos económicos, sociales, culturales y ambientales de las poblaciones de Antioquia, Colombia, por la construcción de la represa Hidroituango' XI Audiencia Publica TLA, (22-26 October, 2018).

³⁴⁶ On May 21st 2019 Rios Vivos posted on their instagram account the image of an anonymous threat circulating in the affected areas. The flyer is headed by crossed AK47 rifles with a sinister message calling for the river defenders to "come out to play!" and stating that they intend to protect the territory. Available at: <https://www.instagram.com/p/BxvEBdTAwJ9/> [accessed May 2019].; See also, Centre for International Environmental Law (CIEL), 'Comment on Movimiento Ríos Vivos Antioquia's Activism Regarding Hidroituango.' (18 May 2018) Available at: <https://www.ciel.org/news/comment-movimiento-rios-vivos-antioquias-activism-hidroituango/> [Accessed March 2019].

³⁴⁷ *Collectivo de Abogados*, 'Urgent Early Warning about a situation of imminent risk for members of the Ríos Vivos Movement, especially for its spokeswoman Isabel Cristina Zuleta López,' (26/08/2019) available at, <https://www.colectivodeabogados.org/?Alerta-Temprana-urgente-sobre-situacion-de-riesgo-inminente-para-integrantes> [accessed August 2019].

³⁴⁸ Macarena Gómez-Barris, *The Extractive Zone: Social Ecologies and Decolonial Perspectives* (Durham NC: Duke University Press, 2017); Patrick McCully (2001), pp. 263-8.; Rob Nixon addresses this prominently in *Slow Violence* and more recently on the subject of 'Environmental Martyrdom and the Fate of the Forrest,' research he presented at the Centre for Research Architecture on the 16th of May 2016.

actors: the State and global investment and construction firms on one side, and local communities and river activists on the other.³⁴⁹

The concerns raised by Ríos Vivos above meet with the Inter-American Commission on Human Rights (IACHR) *Truth, Justice and Reparation: Fourth Report on Human Rights Situation [SEP] in Colombia*, which recognises that although a state has the right to ‘exploit its natural resources,’ infrastructure projects such as ‘hydroelectric dams’ are required to ‘respect and ensure the human rights of the individuals affected.’³⁵⁰ Here, I want to draw attention to Ríos Vivos’s fourth point, the recovery of the disappeared, by identifying two obfuscating acts: the initial throwing of bodies into the river, and the dam project’s secondary-obfuscating effect of submerging a section of river containing the remains of the initial violent acts.³⁵¹

³⁴⁹ Hidroituango exists within a trend of hydroelectric projects being constructed throughout Colombia. Most notably the Magdalena River Master Plan, a project proposing the construction of 11-15 dams on the Magdalena, Colombia’s largest river and into which the Cauca discharges. The plan is a collaboration between POWERCHINA and HYDROCHINA corporation as well as state subsidiary CORMAGDALENA. (The Republic of Colombia, ‘The Magdalena River Master Plan,’ 2013).

³⁵⁰ Inter-American Court of Human Rights (IACHR), ‘Truth, Justice and Reparation: Fourth Report on Human Rights Situation in Colombia’ (2013) available at: <http://www.oas.org/en/iachr/reports/pdfs/colombia-truth-justice-reparation.pdf> [accessed March 2019], p.328, para.828.

³⁵¹ In the Human Rights Everywhere (HREV) report they refer to the dam’s role in disappearing the disappeared as a process of revictimisation, *Hidroituango: Desaparacer a los Desaparecidos* (May 21 2018) available at, desaparicionforzada.co (Accessed March 2019) p.2-3.



Figure 19 Map indicating the sites of completed surveys within the region affected by the megadam, although the presence of many more sites and bodies are expected. <https://riosvivoscolombia.org/la-esperanza-de-encontrar-a-nuestros-desaparecidos-renace-en-hidroituango-gracias-la-jep/> (accessed March 2019).

The above map produced by MRVA locates the exhumations conducted between 2014 and 2018 during the construction of the dam: 159 bodies were exhumed with 84 identified. The points indicated by “1” in the direct shadow of the dam are locations where Geo Radar visual surveys of the dry riverbed were conducted by the Group for the Search, Identification and Delivery of Missing Persons (GRUBE) with the support of the Attorney General’s office (FGN) in 2014. However, the FGN and EPM then stated in a hearing at the IACHR that “there are no bodies in the filling area”. This statement is contested by the Human Rights Everywhere (HREV) report, which estimates that between 500 and 900 disappeared persons remain unexhumed within the 12 affected municipalities of the dam.³⁵² Figures and time frames of the disappeared in the region of Hidroituango vary between multiple sources,³⁵³ nevertheless, a consensus persists that many hundreds of disappeared persons, victims of paramilitary and state violence remain permanently submerged within the deep reservoir waters.

³⁵² HREV, *Hidroituango* (2018).

³⁵³ ‘Misión De Observación,’ (2018) p. 5. Here the Mission’s report identifies three key sources: Unit for Victims’ Comprehensive Attention and Reparation (UARIV), which identifies 621, the National Registry of Disappeared Persons (RND) 659, and the National Center for Historical Memory (CNMH) cites 643 disappearances in the affected municipalities of Hidroituango up to November 2017.

In a separate paragraph of the IACHR report the obfuscation of crimes and disappearances produced by hydropower and major infrastructure is directly addressed:

The IACHR has also received information on difficulties recovering the bodies in those cases in which the victims were cast into rivers or the sea, or incinerated in crematoria or given over to wild animals so as not to leave a trace; and on the negative impact of the construction of dams in the middle of the conflict and in areas where bodies or persons disappeared and assassinated, and common graves, may be found. The Commission considers that the State should address these situations without delay, seriously and with due diligence, so as to prevent obstruction of the recovery of bodies in those places.³⁵⁴

Here the IACHR anticipates the obfuscating potential of hydropower. The paragraph resonates powerfully with the concerns of Ríos Vivos in a statement made by MRVA activist Genaro Graciano that "We need to know the truth about the interests behind the massacres that we suffered in the territories in the 90s, we need to know what happened to all those cemeteries that are now flooded by Hidroituango."³⁵⁵ Graciano alludes to the established correlations between paramilitary violence and the production of conditions for the development of extractive and environmentally degrading megaprojects.³⁵⁶ Graciano's words echo Michel Serres's sentiment stated above.³⁵⁷ In this case it is not only necessary to question whether the two prominent forms of violence – the history of paramilitary and guerilla war, and the dam construction itself – can be distinguished. With the prospect of failure and continuing conflict between multiple actors, it becomes almost impossible, to separate hydropower's displacing of riverside populations and the 'blind' violence enacted upon the river itself.³⁵⁸ Here the dam operates both in the obfuscation of traces of violence *and enacts its own*. Both in the aftermath of paramilitary terror and through the dam's *own* production of terror, hydropower becomes a cog in the war machine operating within this contested territory.³⁵⁹

³⁵⁴ IACHR, (2013), p.76, para. 115.

³⁵⁵ Movimientoriosvivos, Instagram post, May 5 2019, available at: <https://www.instagram.com/p/Bx5JvBQAo8K/?igshid=oVD9g8ey1sax> (accessed May 2019).

³⁵⁶ Michael Taussig, *Palma Africana* (Chicago IL: University of Chicago Press, 2018) p.23; One of the most violent such cases is the Chixoy massacres between 1980 and 1982 in Guatemala. When the Maya Achi community refused to be displaced from the submergence zone of the Chixoy dam, paramilitary forces associated with the Guatemalan military government, killed 378 members of the Maya Achi community. McCully, (2001) p.74-76.

³⁵⁷ Serres, (1995) p.2.

³⁵⁸ These are the destructive results of what Jason Moore conceives of capital's organization of nature where it violently intercedes into the "web of life." Jason W. Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (London: Verso, 2015).

³⁵⁹ The conflict between paramilitary and guerilla forces in Colombia is typical of the nomadism of Deleuze and

The forms of violence submerged within the reservoir are organised around two appropriations of the river's flow-rate: firstly in the removal of human bodies by throwing them in the river, and the second slower method of extracting the river's labour through the dam and its turbines. One employs the river as sewer, to produce a material distancing between perpetrator and remains through the ambiguity of watery space. The second hydro-forms the territory, an act that attempts to further erase the material traces of violence perpetrated by the state, and paramilitary groups.³⁶⁰ This transformation occurs through the extraction of the Cauca's flow rate to produce electricity. This is symbolic of the dam's metabolic exchange of water and its corporeal contents and associated memories – those with the potential to incriminate the State – into an energy form itself mobilised to champion State development.³⁶¹ This extractive process overlaid onto these spaces of disappearance resonates with black studies scholar Christina Sharpe's concept of 'residence time,' in her influential book *In the Wake: On Blackness and Being* (I discuss this concept further in part III of this thesis). Residence time is the time-period within which particles break down in oceans. In particular, it calculates the 260 million years it might take for the bodies thrown into the Atlantic ocean during the triangular slave trade to remain present within the ocean's biological and chemical afterlives. Sharpe uses this continuing presence of trace to think through the irresolvable traumas that remain current in black experience.³⁶² The transformation of the Cauca's waters, laden with its own materials and memories of disappearance, into the abstraction of gigawatthours represents a vicious acceleration of the degradation of submerged remains from the decades of terror that has

Guattari's 'war machine.' Here, the dam figures as the merger of aim and object in the production of a total-war. Deleuze & Guattari, (1987). Michael Taussig, *Law in a Lawless Land: Diary of a Limpieza* in Colombia (Chicago IL: University of Chicago Press, 2003) p.11.

³⁶⁰ EQUITAS, 'Primer Documento Sobre Búsqueda Forense De Cadáveres' (2007).

³⁶¹ I use metabolism in light of Marx's reference to the damage caused to social metabolism by the emergence of intensive practices during the industrial revolution (practices that despoiled both 'natural' resources and the communities living interdependently with them). Karl Marx, *Capital*, vol. 3 (New York: Vintage, 1981), pp. 949-50. The dam's production of a rift in the mutual processes of social metabolism is evident in the 2015 protests of fishermen in Puerto Valdivia, downstream from the dam. They were concerned that the dam will destroy their livelihood (Rios Vivos, 'Suspender Hidroituango Exigencia de Pescadores y Barequeros del Bajo Cauca' (September 28 2015) available at: <https://riosvivoscolombia.org/suspender-hidroituango-exigencia-de-pescadores-y-barequeros-del-bajo-cauca/> (accessed February 2019). The dam's extraction of energy obscures the remains of the disappeared. This in turn contributes to the possible production of a rift between memory communities and the spaces of remembrance. This might be termed a rift in mnemonic metabolism.

³⁶² Christina Sharpe, *In the Wake: On Blackness and Being* (Durham NC: Duke University Press, 2016), p.41.

gripped the region. The megadam thus embodies, or rather it does not embody, but embanks and extracts a complex matrix of material, bodily, temporal, and epistemological violence.

Undercurrents

Major infrastructure projects on the scale of Hidroituango spread out and produce a mesh of multiple affects.³⁶³ In February 2019 when the dam was officially closed the dramatically lowered river flow, plummeting from a volume of 450 m/s³ to just 35 m/s³, left tens of thousands of fish stranded and writhing on the newly exposed riverbeds downstream – a sign of the coming ecocide of the river ecosystem.³⁶⁴ This was followed in April by the rapid growth of Water Hyacinths across the reservoir.³⁶⁵ These developments are connected. The beautiful flowers grow voraciously on the surface of eutrophic waters, often the result of dam's withholding nutrients otherwise transported downstream. The expansive carpets of flowers deoxygenate the water within the reservoir with severe consequences for biodiversity and thus the capacity for the river to sustain fish and other life downstream. The hyacinth, however, is not the cause of the degradation of the ecosystem, as it is so broadly cited as a parasitic invasive species, rather its flourishing is a symptom of an ecosystem in crisis.³⁶⁶ The dams submerged and, indeed, confluent politics have produced a hydrosocial impounding of fatal multi-species

³⁶³ The scale and the sustainability of gigantic hydropower projects has long been contested within nationalist development discourse. Perhaps most famously in 1954, the first Prime Minister of India, Pandit Jawaharlal Nehru famously proclaimed the Bhakra dam a temple of the national development project: 'where thousands and lakhs [hundreds of thousands] of men have worked, have shed their blood and sweat and laid down their lives as well? Where can be a greater and holier place than this, which we can regard as higher?' [J. Nehru, *Speeches*, Vol. III. March 1953 August 1957, (Publications Division, Government of India, Calcutta, 1958), pp. 2-3.; McCully, (2001) p.2.] This modernist ideal faintly veils the violent and inefficient realities of the projects. Incredulity towards the temple ideal has been extensively explicated by Arundathi Roy, Rob Nixon, and Patrick McCully, who identify these huge embankments and concrete structures as floating or even false signifiers of modernity. For example, by 1958 even Nehru began to doubt the efficacy of mega-dams: 'I have been beginning to think that we are suffering from what we may call a "disease of gigantism."' McCully, (2001) p.20-1.

³⁶⁴ At least 10% of the previous annual run off rate should be maintained to ensure the possibilities of life within a river, anything less would contribute to the production of a 'dead environment.' Shaeri Karimi S., M. Yasi, S. Eslamian, 'Use of hydrological methods for assessment of environmental flow in a river reach,' *International Journal of Environmental Science and Technology*, (2012) 9 pp.549–558, p. 555.; Flow rate figures quoted in Roberto Peckham, 'EPM Shuts Last Water Tunnel To Hidroituango Hydroelectric Dam,' *Medellín Herald*, 5th of February, 2019, available at: <https://www.medellinherald.com/antioquia/mmn/item/680-epm-shuts-last-water-tunnel-to-hidroituango-hydroelectric-dam-today> [accessed February 2019].

³⁶⁵ McCully, (2001) p.39.

³⁶⁶ For further discussion of the politics of water hyacinths and a re-assessment of the importance of invasive species see Fred Pearce, *The New Wild: Why Invasive Species will be Nature's Salvation* (London: Icon Books, 2015), pp.46-51.

affects. With this in mind, I argue that to assault rivers where people live in ways that bear close affinity with them is an assault on senses of place and community. In this way, these rivers become a complex locus of human and non-human death. This is exactly what Ríos Vivos challenge in their clarion call, “¡Ríos para la vida, no para la muerte!” [Rivers for life, not for death!]³⁶⁷

Here lie the principal stakes of this part: firstly, the complex interconnection between the use of the river for disposing of bodies and the assumed impunity this produces for the perpetrator, and, conversely, how the river acts as an archive of political violence, offering the possibility of memory work akin to a ‘funerary hydrology.’ Finally, the implications of the state with extractive capitalism in the further obfuscation of these crimes amounts to a hydro-social order marked as ‘necro-hydrological.’ In this order, the histories of conflict and rural communities living alongside the river as well as river’s entire ecosystem are the casualties of the territorial transformations of state-backed extractive capitalism.

The Hidroituango project and the wider hydropower Master Plan for the Magdalena river reflect what anthropologist of Colombian infrastructure projects Austin Zeiderman has elsewhere analysed as a policy of ‘concrete peace.’ Where, in contradistinction to the aims, if not the results, of Truth and Reconciliation tribunals, major infrastructure projects gloss over many of the contentious issues present in post- (and ongoing) conflict scenarios.³⁶⁸ This can often be a superficial process, however, in the case of mega-dams it is anything other than superficial, it is the embankment of a major river with earth and rubble, and an irrevocable physical, social, cultural, economic, and memorial transformation. In Macarena Gómez-Barris’s book project *Where Memory Dwells* she explores memory cultures in the aftermath of disappearance of the Chilean dictatorship. In this work she attempts to consolidate scattered and multiple testimonies to ‘disarticulate the impact of hegemony’s denial of the human debris.’³⁶⁹ This speaks to Achille Mbembe’s assertion that States need to continually ‘destroy

³⁶⁷ Ríos Vivos, available at: <https://riosvivoscolombia.org/> (accessed June 2019).

³⁶⁸ ‘Concrete peace’ is a phrase coined by the Ministry of Transport’s Twitter account as #PazEnConcreto in the promotion of the Pacific II project, a major road infrastructure development on Colombia’s pacific coast: <https://twitter.com/hashtag/pazenconcreto> (23/09/2017). Austin Zeiderman’s approach attempts to critique the production of such a peace through the very materiality of concrete. Austin Zeiderman, ‘Low Tide: Submerged Humanism in a Colombian Port’ in Gregg Hetherington ed., *Infrastructure, Environment, and Life in the Anthropocene* (Durham NC: Duke University Press, 2019) pp.171-192.

³⁶⁹ Macarena Gómez-Barris, *Where Memory Dwells: Culture and State Violence in Chile* (Berkeley CA:

the ‘debris [in their archives]’ and ‘tam[e], by violence if necessary, [...] the demon that they carry.’³⁷⁰ With this in mind, if rivers perform the role of what Neimanis calls *memory-keeper* or *archive*, then the dam’s reduction of the Cauca, and its social and material contents, to resource acts as such a form of denial.³⁷¹

Where it is accepted that archiving is a requisite of nation building, the construction of Hidroituango equates to an obfuscating and *anarchival* act in the attempt to ‘destroy the [human] debris,’ or ‘tame the demon’ of violence dating back to the Ituango massacres and further. This dam produces a further act of archiving deep within the reservoir but this is paradoxically an archive that is further dam(n)ed from possible access within the river. The authors of the Centre for Environmental Law’s campaign update of June 2018 articulates the impact of the dam as the ‘Drowning of Transitional Justice’.³⁷² These two phrases – ‘concrete peace’ and ‘drowning justice’ – torque around a profit driven attempt to produce the resolution of conflict through development. The impact in the case of Hidroituango is the transformation of the riverine archive through the erasure of inconvenient sites and topologies. The global neo-liberal development of mega-dams, so thoroughly explicated by Arundhati Roy in the ‘Greater Common Good’ and further extrapolated by Rob Nixon, are here entangled in the eradication of the traces of political violence.³⁷³ Perhaps then the control and extraction of flow rate is also an attempt to control and erode memory as a social process. I employ the register of memory at points in this chapter because of its pertinence for dealing with the conditions of disappearance. Here memory, as elsewhere in the thesis, relates to pasts continually

University of California Press, 2008) p.155.

³⁷⁰ Achille Mbembe, ‘The Power of the Archive and its Limits.’ Trans. by J. Inggs, in Hamilton, C., Harris, V., Taylor, J., Pickover, M., Reid, G. and Saleh R. (eds.) *Refiguring the Archive*, (Dordrecht, Kluwer Academic Publishers, 2002), pp. 19-26, p.26.; Indeed Gómez-Barris imagines the possibility that rivers might possess their own form of memory, as a witness to a dialectic between life and death of damming’. Gómez-Barris, *The Extractive Zone* (2017) p.95.

³⁷¹ Astrida Neimanis, ‘Water and Knowledge,’ (2016), p.53.

³⁷² The process of burying the remains of a nation state’s past in this way is similar to the method of hegemonic disarticulation Gómez-Barris introduced in *Where Memory Dwells*. The method was intended to reflect on the ‘social organization of survival’ but just as importantly to identify ‘the nation’s remaking of itself as an amnesiac and obliating performance.’ Gómez-Barris, (2008) p.155.; CIEL, ‘Ituango Hydroelectric Project: Drowning Transitional Justice in Colombia’ (June 2018) Available at: <https://www.ciel.org/project-update/ituango-hydroelectric-project-drowning-transitional-justice-in-colombia/> (accessed August 2018).

³⁷³ Arundhati Roy, *The Greater Common Good* (Bombay: India Book Distributor Ltd., 1999).

recomposing through events and changes in the present.³⁷⁴ Thus, through current violence, Hidroituango does not only attempt to erode the memory of past crimes, but re-produces the terror that has so marked these communities and river ecosystems.

The violent sequence of territorial contestation of Hidroituango reflects a wider conceptualization of terror as a mode of control and challenge to territory. Stuart Elden extensively addresses the etymological overlaps between *terror* and *territory* in the introduction to his book of the same name. Here he identifies the root of territory in the Latin ‘territorium’. This, in turn, produces a route to *terrēre* as ‘a place from which people are warned off’³⁷⁵ (resonating further with the territorial concept of the *arcifinious* a ‘natural’ boundary ‘fit to keep the enemy out’ explored in part I). Moving from the etymological to the practical frame, Elden states that to ‘control a territory is to exercise terror [and] to challenge territorial extent is to exercise terror.’³⁷⁶ As Elden continues, terror exerted as a mode of control by sovereign states is obscured by a ‘state-centric international system,’ while terror that challenges nation state sovereignty is branded ‘terrorism’ by the very same geopolitical context.³⁷⁷

In relation to the latter, Colombia has a recent history of guerilla regularly targeting water supply infrastructure. For example, in 2002 the Revolutionary Armed Forces of Colombia (FARC) attempted to blow up gate valves in the Chingaza Dam, which provides much of the drinking water for Bogotá.³⁷⁸ In his study of water and terrorism Gleick leans heavily on FBI definitions of Terrorism, working under the limited, and expected, scope of the challenge to the state outlined by Elden above.³⁷⁹ I argue that terror, in the case of Hidroituango is threefold: firstly, the paramilitary method of throwing bodies into rivers and their unpredictable

³⁷⁴ I shall explore this further in part III.

³⁷⁵ Stuart Elden, (2009), p. xxix.

³⁷⁶ *Ibid*, p.xxx.

³⁷⁷ *Ibid*.

³⁷⁸ Peter Gleick & Matthew Heberger, ‘Water Conflict Chronology,’ *The World’s Water*, 8 (Washington DC: The Island Press, 2014) p.197. There are numerous other examples of water and terrorism in Colombia cited below. The ‘Water Conflict Chronology’ platform is maintained on <http://www.worldwater.org/conflict/map/> (accessed: August 2019).

³⁷⁹ Gleick, ‘Water and Terrorism,’ *Water Policy* (2006) 8, pp.481–503. Gleick produces a definition of terrorism in the context of water, emphasizing the symbolic power of water as a target for terrorism. p.484-5.

resurfacing downstream. Secondly, threats and attacks against river defenders. And thirdly, anxiety produced by the scale of the dam and its seemingly imminent collapse. In each element both the community and river are targeted in the process of territorial control, contributing to a hydro-social condition of fear. As the interests and objects of hydropower gain increasing weight within this trinity, the politics of development becomes a politics of terror.

II.i

WATERBORNE TERROR / NECRO-HYDROLOGY

Terror enacted through water has a long history in Colombia. Political geographer Ulrich Oslender's research on the 2001 El Firme massacre of fishermen on the Yurumanguí river, an upstream tributary of the Cauca near to the Pacific coast, reveals the impact of terror transmitted through rivers on community sense of place. An activist, interviewed by Oslender, who was displaced to Bogotá by El Firme said that "we concluded that the strategy was to terrorize people in the river, so they would leave".³⁸⁰ Oslender unfolds from this that the violence was performed in direct relation to the water to sever ties, collective memories, and "aquatic sense of place" by which rural communities, particularly those reliant on fishing, identify with rivers. This is a sentiment repeated elsewhere in Colombia, such as in testimony collected by the Centro Nacional de Memoria Histórica (CNMH). In 2016 they published a report on the memory of terror in Colombia: *Basta Ya! [Enough!]*. After the 1991 El Tigre massacre in Putumayo one survivor, quoted in *Basta Ya!*, stated that "We called off our parties, our sports events, we stopped going to the river because the paramilitaries threw the dead in there, and the river became polluted. Also, it is sad to pass by that place."³⁸¹ If, as Cecelia Chen states, the formation of a sense of place is always 'permeable and permeated with water',³⁸² then these examples of fluvial terror are particularly impactful, producing *dis*-placement in contexts where place and water are themselves closely connected. With this in mind, this section, *Waterborne Terror / Necro-Hydrology*, asks why bodies are thrown into rivers in

³⁸⁰ Ulrich Oslender, 'Spaces of Terror and Fear on Colombia's Pacific Coast,' Derek Gregory and Allan Pred (eds) *Violent Geographies: Fear, Terror, and Political Violence* (New York: Routledge, 2006), pp. 111-132, p.121.

³⁸¹ CNMH, 'General Report. Basta Ya! Colombia: Memories of War and Dignity' (2016), p. 295. available at: <http://www.centrodememoriahistorica.gov.co/descargas/informes2016/basta-ya-ingles/BASTA-YA-ingles.pdf> [accessed May 2019].

³⁸² Chen, (2013), p.275.

Colombia and considers the implications of the dam for the memory cultures of the disappeared?

Hidroituango impounds flows that had previously been used as a technology of paramilitary terror. The ongoing prospect of the dam's failure works in the opposite direction and is equivalent to the catastrophic un-impounding of infrastructural terror. What I am concerned with here are the ways in which fluvial forms are mediums for atmospheric and intangible violence. In his writings on radioactivity and gas warfare German theorist Peter Sloterdijk coined the concept of 'Atmoterrorism' to accommodate the mediation of violence through the air.³⁸³ In the case of Hidroituango the river becomes a central figure and medium in the production of its own terror. Here terror is *waterborne*.

Terror, as Oslender and the *Basta Ya!* testimonies suggest, attempts to cleave community and river apart. Indeed, the concentration of affects revolving around Hidroituango bears the hallmarks of Richard Falk's pioneering definition of environmental warfare as: 'including all those weapons and tactics which either intend to destroy the environment *per se* or disrupt normal relationships between man and nature on a sustained basis.'³⁸⁴ As Sloterdijk identifies the pursuit of conflict through the insidious and pervasive milieu of the atmosphere, of air, we can understand this as a radical disruption of the relationship between 'man and nature.' This has a similar if materially distinct correlation with violence transmitted through water. In both cases it is not only a disruption of the above relationship that occurs but an altogether terrifying collapse of the notion of nature, in both cases, air and water, become technologized and the concept of 'nature' disappears into what Helmreich calls an *infranature*³⁸⁵ or others, including

383 Peter Sloterdijk, *Terror from the Air* (Los Angeles CA: Semiotext(e), 2009), p.23.; Susan Schuppli has also discussed the fear produced by the sonics of drone warfare in 'Uneasy Listening' in *Forensis: The Architecture of Public Truth* (Sternberg Press, 2014).

384 Richard Falk, 'Environmental Warfare and Ecocide: Facts, Appraisals, and Proposals,' *Bulletin of Peace Proposals*, (1973) 4:1, pp.80-96. p.88-9; see also Jim Glassman, 'Counter-Insurgency, Ecocide and the Production of Refugees: Warfare as a Tool of Modernization,' *Refuge*, (1992) 12:1, pp. 27-30.

385 Stefan Helmreich, 'How to Hide an Island' in Daniel Daou and Pablo Pérez-Ramos (eds.) *New Geographies 8: Island* (Cambridge MA: Harvard Graduate School of Design, 2017) pp.82-87.p.84.

Swyngedouw³⁸⁶, Bakker³⁸⁷, and Linton and Budds³⁸⁸ call ‘socio-nature’. Central to my thesis, however, these infra- or socio-natures are specifically designed to instill terror.

In the context of counter-insurgency warfare Falk identifies the parallel tendencies of genocidal practices with environmental destruction. This is certainly present within the context of political violence in Colombia.³⁸⁹ The El Firme and El Tigre massacres, as well as many others, suggest that perpetrators are already aware of the power of abusing connections to place and environment that reflect a cultural and material relationality. The dam as counter-insurgent technology also produces its own ecocidal impacts on the river. Thus, fluvial terror enacted by paramilitaries but also in the form of the dam – its threat to riparian conditions and life – is all the more prominent in places where hydrosocial relations are more intimately produced. This equates to a hydrosocial condition that I describe as necro-hydrological. Necro-hydrology is developed from Achille Mbembe’s necropolitics, around which he raises the following questions:

To exercise sovereignty is to exercise control over mortality and to define life as the deployment and manifestation of power. [...] Imagining politics as a form of war, we must ask: What place is given to life, death, and the human body (in particular the wounded or slain body)? How are they inscribed in the order of power?³⁹⁰

Building on Mbembe, Deborah Posel and Pamila Gupta similarly consider sovereignty’s pursuit of war on both life and on the corpse: ‘How to dispose of the dead is as politicised, and as integral to the practice of sovereignty, as the act of determining who dies and how.’³⁹¹ The ongoing necropolitical order of power of the Cauca involves the control the territory through terror where bodies are mutilated, dismembered and discarded into the river. In this way both

³⁸⁶ Swyngedouw, (2004).

³⁸⁷ Karen Bakker, ‘Water: Political, biopolitical, material’, in *Social Studies of Science* (2012) 42:4, pp.616-623.

³⁸⁸ Jamie Linton and Jessica Budds, ‘The Hydrosocial Cycle: Defining and Mobilizing a relational-dialectical approach to water,’ in *Geoforum* (2014) 57, pp.170-180, p.173-4.

³⁸⁹ Hannah Meszaros Martin, ‘Defoliating the World’: Ecocide, Visual Evidence and ‘Earthly Memory,’ *Third Text* (2018) 32:2-3, pp.230-253.

³⁹⁰ Mbembe, (2003) p.11.

³⁹¹ Deborah Posel & Pamila Gupta, ‘The Life of the Corpse: Framing Reflections and Questions.’ *African Studies*, 2009, 68:3, pp. 299-309, p. 301.

megadam and body are inscribed into the territory by power in diverse yet contributive ways. Elsewhere, in his study of the necropolitics of the border regime of the Sonoran desert anthropologist, Jason De León emphasises the extension of a violent necropolitics beyond the moment of death, where violence towards the corpse itself equates to ‘necroviolence’. This takes the form of a ‘specific treatment of corpses that is perceived to be offensive, sacrilegious, or inhumane by the perpetrator, the victim (and her or his cultural group), or both’.³⁹² De León identifies this form of violence as an assault aimed at the victim’s spirit, soul or afterlife. This has particular importance for the families of the disappeared. Indeed, he goes on to state that mourners denied the finality of the corpse and the rituals of mourning are placed in a state of ‘ambiguous loss’ across the mortal divide. Citing clinical psychologist Pauline Boss, he states that the ambiguity is itself traumatising, it “freezes the grief process” and renders closure impossible. It is the form of necroviolence that is seemingly without end.³⁹³ Disappearance maintains a prolonged grip over the living. More nuanced than display, disappearance takes on the sinister weight of “confinin[ing] the traces of ... repression purely to the discursive domain.” Eradicating flesh and bone is now, as De León and others have suggested, part of the postmodern “politics of disappearance.”³⁹⁴ The uncertainty of the disappeared holds the living in the firm grip of not knowing whether their loved one is dead or alive, a terror different but perhaps *as* affective as the gruesome display of the dead body. The ambiguity of the riverine space and its transportation pathways expands the spatio-temporal scale of the trauma of disappearance. Despite the possibilities for retrieval offered by forensic taphonomy (the study of postmortem decay), the contingencies of the river, as space of disappearance, produces an ongoing ambiguity that contributes to the production of fluvial terror.

What then is the necropolitics of hydroelectric infrastructure? In the struggle against the dam, the rights of the living and the dead are at the mercy of the multiple parties wrestling for resources: the government, its subsidiary EPM, paramilitaries, and guerrillas. In addition to

³⁹² De León, (2015) p.68 - 69.

³⁹³ De León, 2015, p.71; Cites Pauline Boss, “Ambiguous Loss Theory: Challenges for Scholars and Practitioners.” *Family Relations* (2007) 56, pp.105–111, p.105.

³⁹⁴ Antonius Robben, ‘How Traumatized Societies Remember: The Aftermath of Argentina’s Dirty War,’ *Cultural Critique* (2005) 59, pp. 120-164, p.131-132.; De León cites Robben alongside Crossland in the discourse of the politics of disappearance and the necessity of recovery for achieving ‘closure’ for relatives. A situation that often incorporates the scope of Truth and Reconciliation commissions. De León, p.71. See Zoë Crossland, ‘Buried Lives: Forensic Archaeology and The Disappeared in Argentina,’ *Archaeological Dialogues* (2000) 7:2, p.146-159, p.153-155;

processes that disappear, obfuscate, and enact violence upon corpses the dam itself severs all connection to these waterways for the people who live, work and remember on their banks, and amongst their flows. This severing is made evident by MRVA's use of the necessary recovery of the disappeared as a challenge to the Hidroituango dam development.³⁹⁵ The dam's fundamental denial of all chance of return or recovery reproduces the potential terror of further disappearance. In these ways, the dam is an infrastructural element, at least in its physical sense, to the concept of necropolitics. Within this order of power the body of the disappeared and dispossessed is inscribed within the embanked walls of the dam.

The dam's transformation of the landscape has a further territorial significance in relation to the claims to resource. Michael Taussig weaves the territorial implications of terror into the double act of dismemberment and submersion of both body and territory:

A body is the ultimate territory and a chopped up corpse adrift in the river is the absolute denial of such territory, the deepest possible exile of the soul. Thus, does deterritorialization achieve its most definitive state of nonbeing. Could this be why the counterforce claiming territory as mythical power is now every day ascendant in Colombia, after two decades of paramilitary violence aimed at dismembering both land and body?³⁹⁶

The swamps through which Michael Taussig travels are the spaces of internal colonial expansion.³⁹⁷ Violence is drawn to these swamps as territorial interstices where the suspension of law is *unexceptional* and human lives and bodies are subject to brutal practices.³⁹⁸ In his genealogy of governmentality, Foucault traces the shift from Machievelli's construction of the territory as the fundamental element of sovereignty to Guillaume de La Perrière's 16th century writings in which "men" are positioned as the central concern of government. Specifically, 'their imbrication with those other things which are wealth, resources, means of subsistence,

³⁹⁵ Indeed, this campaign has achieved greater weight in the summer of 2019 with *#LibertadParaElRioCauca* and *#dismantlehidroituango* trending on social media as the Antioquia branch of MRVA increases the intensity of its campaign.

³⁹⁶ Taussig, 'Excelente Zona Social,' 2012, p.513.

³⁹⁷ See Taussig's recent book on oil plantation mega projects draining Colombian swamps and the role of paramilitaries in clearing the swamps of the Afro-Colombian populations who live there. *Palma Africana* (Chicago IL: University of Chicago Press, 2018); See also Taussig's book *My Cocaine Museum* on swamps and Miasma, (Chicago IL: University of Chicago Press, 2004) p.175.

³⁹⁸ Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, trans. by Daniel Heller-Roazen (Stanford CA: Stanford University Press, 1998), p.159.

the territory with its specific qualities, climate, irrigation, fertility, etc.³⁹⁹ Taussig, above, reads the violence occurring within the swamps, as a territorial claim to space that is considered to lack qualities of territory (specifically extractable resource). In direct response to this lack the swamp has become a frontier where violence has long dismembered the territorial complex of land and body. It is such violence that lays the groundwork for irrigation in preparation for the development of palm forest monoculture.⁴⁰⁰ In the case of Hidroituango both living and dead populations are also imbricated in the control of resource and transformation of the war-torn landscape into an extractable territory. The dam figures as the amputation of the river like a limb from the human body; an amputation from the riverine territorial body. By dismembering the river, the dam further dismembers the region into an extractable territory.

The dam is the central figure in this hydro-territorial matrix. As Gómez-Barris outlines, extractive capitalism ‘violently reorganizes territories as well as continually perpetuates dramatic social and economic inequalities.’⁴⁰¹ With Hidroituango this re-organisation takes on a specifically necropolitical resonance where the abstraction of water, and extraction of flow-rate, have become co-opted and made complicit in a mode of governance that tries to erase traces of its own crimes. With this internal colonial act EPM, as *de facto* state actor, displaces and hydro-forms the region through the infrastructural action of necro-hydrology. Thus, the aftermath of this terror as sovereign claim to territory opens space for extractive possibilities symbolised by the Master Plan and Concrete Peace.

II.ii

FUNERARY HYDROLOGY

³⁹⁹ Michel Foucault, ‘Governmentality’ [Lecture originally given at the Collège de France in February 1978] in Burchell, B., Gordon, C., Miller, P., eds., *The Foucault Effect: Studies in Governmentality: with Two Lectures by and an Interview with Michel Foucault*, Chicago IL: University of Chicago Press, 1991) pp. 87-104, p. 93.

⁴⁰⁰ Taussig, (2018) p.23.

⁴⁰¹ Gómez-Barris, 2017, p.xviii. These inequalities are particularly directed towards indigenous and afro-Colombian communities.



Figure 20 Gabriel Posada and Yorlady Ruiz, *Magdalenas por el Cauca*, 2010, photograph Rodrigo Grajales, Trujillo (Valle del Cauca) 2010.

As I will explore further in this section it is not only through disappearance that rivers are used in the production of terror – they are also involved in transmitting bodies as what De León calls ‘a vector for violent messages directed at the living.’⁴⁰² River disappearances present an extra discursive element, namely the unpredictability of reappearance, or re-presence, of visceral remains. Some reappear where others do not. Some receive funeral rites, others do not, while a further category receive funerary rites but with ‘No Name’ (NN). Within these dualities, perhaps paradoxically, the river’s pathways become a space in which return is calculated.

Through displacement the dam severs the dead from situated communities of memory in another way. This perhaps moves beyond ambiguity and towards an inter-generational process of forgetting. Rob Nixon addresses such mnemonic violence as a ‘temporal violence’ and a ‘spatial amnesia’ produced by displacement in his work on megadams:

When a megadam obliterates a flood plain whose ebb and flow has shaped the agricultural, fishing, fruit and nut harvesting – and hence nutritional – dynamics of a community, it also drowns the past: the submergence zone swallows place-based connections to the dead, the dead as living presences who move among past, present, and future, animating time with connective meaning.⁴⁰³

⁴⁰² De León, (2015) p.70.

⁴⁰³ Rob Nixon, ‘Unimagined Communities: Developmental Refugees, Megadams and Monumental Modernity’ in *New Formations* 69: ‘Imperial Ecologies,’ 2009, pp.62-80, p.72-3.

The transformation of the landscape by the dam produces the temporal disjunction that makes it appear as though the dam had always been there, and consequently nothing else ever could.⁴⁰⁴ This is a further assault on memory and ‘aquatic sense of place’ – both the constructive sense of place in community formation and the sense of place conditioned by violent events.⁴⁰⁵ The MRVA mission identified three bridges where torture and execution had occurred: ‘Pescadero bridge, between Ituango and Toledo; la Garrucha bridge between Sabanalarga and Peque; and the Old bridge in the village of Puerto Valdivia.’⁴⁰⁶ They visited and took testimony regarding the events on the bridges before the reservoir flooded them. The dam can thus be seen as an attempt to remove the politically volatile past of disappearance.

In the previous section I showed how Colombia’s ‘concrete peace’ powered by major infrastructure projects – including the Magdalena River Master Plan and major projects such as Hidroitango – are themselves acts of violence against the living, displaced or dispossessed, and the dead. The living are displaced, the disappeared, un-inhomed or inhomed, are submerged yet deeper within the silt sedimenting at the bottom of the steep valley submerged by the reservoir. Elsewhere in Colombia, Zeiderman has considered a ‘submergent politics’ as an analytical tool in identifying the sociomaterial racial precarity of late liberalism, as it manifests within the context of inter-tidal zones of the major seaport development at Buenaventura on Colombia’s pacific coast.⁴⁰⁷ Macarena Gómez-Barris has also addressed submergence produced by megadam projects not only as a physical situation resulting from flooded reservoirs but as a multiplicity of perspectives that resist dominant territorial and extractive epistemologies. These include aesthetic practices that attempt to perceive and make sensible the material but also social and political opacities and entanglements produced by power in the Americas.⁴⁰⁸ In this section I want to explore the very memory practices of resistance that involve the river in retaining the presence of the disappeared both above and below the line of submergence.

⁴⁰⁴ *Ibid.*

⁴⁰⁵ Oslender, ‘Spaces of Terror,’ (2006), p.121.

⁴⁰⁶ ‘Misión De Observación,’ (2018).

⁴⁰⁷ Austin Zeiderman, ‘Submergence Precarious Politics in Colombia’s Future Port-City,’ *Antipode*, (2016) 48:3, pp. 809-831.

⁴⁰⁸ Macarena Gómez-Barris, *The Extractive Zone*, p. xiv, 12.

What I identify as a funerary hydrology is a form of memory work as resistance. The term is inspired by Bruce Lincoln's 'funerary geography' – the mythologisation of water as substance of the underworld within Indo-European cosmologies.⁴⁰⁹ My use of funerary hydrology relates to contemporary memory practices concerning corpses and other remains of violent conflict that adopt riverine processes as a space of memory rather than oblivion. In this predominantly Catholic area of Colombia theology and scriptural teachings (and local interpretations of these) provide a frame for the specific memory work in this context. Funerary hydrology takes multiple forms, some specific to their context, such as the knowledge of the behaviour of a river at a particular location, including the practices portrayed in Juan Manuel Echavarría's 2013 film *Requiem NN* and the experiences of a young survivor of massacre in Alberto's Molano's book *The Dispossessed: Chronicles of the Desterrados of Colombia*. Others involve aesthetic representational interventions adopted more broadly, most vividly present in the case of ongoing memory projects such as Gabriel Posada and Yorlady Ruiz's 2008, and ongoing, *Magdalenas por el Cauca* (figure 20), beginning as a memorialisation of the Trujillo massacres.⁴¹⁰

Funerary hydrology relates to the dual mnemonic functions of rivers, both that of forgetting and of memory. In her article on the material imagination of water, environmental studies scholar Janine MacLeod makes a similar gesture towards rivers possessing the dual capacity to contribute to both forgetting and remembrance, drawing into conversation Lincoln's work with modernist treatments of memory in the writing of Virginia Woolf and Marcel Proust. MacLeod writes, 'the histories that Lēthē washes away are always retained. They are thus potentially accessible to recovery.'⁴¹¹ These seemingly analogous renderings of memory with bodies of water reflect a basis of metaphor in material form. MacLeod evokes the Proustian

⁴⁰⁹ Bruce Lincoln, 'Waters of Remembrance and waters of forgetfulness.' *Fabula* (1982) 23, pp.19-34.

⁴¹⁰ Elsewhere, Estela Schindel offers a useful analysis of memory practices in relation to the death flights over the Río de la Plata and the *desaparecidos* of the Argentine dictatorship. Although she indicates that the river 'gave up the dead' such as bodies washing ashore reported in newspapers in May 1976, she also describes it as a 'space without place' and a limitless grave, which I feel feeds directly into the imaginary of the perpetrator. Estela Schindel, 'A Limitless Grave: memory and Abjection of the Río de la Plata,' in Estela Schindel and Pamela Colombo eds. *Space and the Memories of Violence: Landscapes of Erasure, Disappearance and Exception* (Basingstoke: Palgrave Macmillan, 2014) pp.188-201.

⁴¹¹ Janine MacLeod, 'Water and the Imagination: Reading the Sea of Memory against the Flows of Capital,' in *Thinking with Water* (2013) p.47-8. I discuss this idea in greater detail in the following Part (III) *Fluvial Trace*.

concept of the non-linear unpredictable return of the past triggered by objects and sensible experience, what Paul Ricoeur equates to *mneme*. In rivers *mneme* figures as the unexpected washing up or returning of objects to the surface. In such cases riverine processes hold the agentive capacity of return.⁴¹² However, through scientific study such as that of fluvial taphonomy, calculating riverine pathways, rivers can also be studied through Ricoeur's definition of *anamnesis*: the agentive capacity of recall.⁴¹³ In a fluvial context the second process, *anamnesis*, involves accessing and calculating the river's own active archival potential rather than waiting for the unpredictability of the return of *mneme*. As a caesura in the river's flow — flooding upstream and dramatically reducing flow downstream — the dam physically disrupts both of these processes.

In the context of the Cauca, Gabriel Posada and Yorlady Ruiz have engaged with the aesthetic register of re-surfacing. In their project *Magdalenas por el Cauca* they produce portraits of the disappeared in collaboration with affected communities. By floating these images with rafts on the very rivers used to disappear, the water itself becomes a mediation of cultural memory. Although the surface remains the limit of sensibility, the river becomes buoyant with the disappeared made visible once more. In this way the river, mobilised for its capacity to make invisible, becomes the very medium for processing traumatic memory by bringing, at least temporarily, the image of the disappeared back to the surface.

The initial act of throwing bodies into these rivers bears a similar dual purpose: in the unpredictable and yet, paradoxically, predictable processes of return and retrieval. The transportation of bodies measured through scientific methods and local calculations of river flows is married to the contingency that not all bodies neatly follow these pathways, as they may become caught or snagged in tree roots or deposited in the river's multiplicity of processes and temporalities. These contingencies, however, are conditioned by whether the body is complete or dis-membered, and are particular to the specific formation of the river system: the flow rate, currents, eddies, backflows, riverbed shape and gradient. By throwing bodies into rivers paramilitaries and guerilla calculate how long and where a body might wash-up

⁴¹² *Ibid*, 48.

⁴¹³ Ricoeur discusses the distinction through Aristotle's *De memoria et reminiscentia* in his own development of a phenomenology of memory. Paul Ricoeur, *Memory, History, Forgetting*, trans. by Kathleen Blamey and David Pellauer (Chicago IL: University of Chicago press, 2006), p.17-21.

downstream in the production of fear. In a counter-calculation, however, what might be described as *lay* taphonomic knowledges, or local river knowledge, develop as social processes amongst communities living close to the water downstream.⁴¹⁴ These knowledges inform survivors of how long it will take for bodies to re-emerge. As I will show in the following, through its own transformative calculations of flow, hydropower irrevocably breaks local funerary hydrographies that calculate and possibly recover the named and the ‘no name(d)’.



Figure 21 Magdalena river, Puerto Berrío, Google maps, accessed March 2019, available at: <https://www.google.com/maps/place/Puerto+Berr%C3%ADo,+Antioquia,+Colombia/@6.4826977,74.4335141,12134m/data=!3m1!1e3!4m5!3m4!1s0x8e43c80911062e5f:0x9630491f0fc16a58!8m2!3d6.477755!4d-74.4088> (accessed March 2019).

Bodies discarded upstream tend to wash up downstream at specific spots where the river meanders acutely against the direction of the current. For example at towns like Puerto Berrío, central to Juan Manuel Echavarría’s 2013 film *Requiem NN*.⁴¹⁵ Situated at a bend of the Magdalena with islands and inlets in the riverbank, submerged remains collect at Puerto Berrío and as elsewhere the cemetery has become the location for the interment of anonymous

⁴¹⁴ We might also call this a local forensic memory. This lay taphonomic knowledge speaks to Shanon Dawdy’s assertion, writing in the aftermath of Katrina, that ‘Taphonomic processes are not simply an archaeological mirror of social processes—they are social processes.’ Shannon Dawdy, “The Taphonomy of Disaster and the (Re)formation of New Orleans.” *American Anthropologist* (2006) 108:4 pp. 719–730, p. 728.

⁴¹⁵ A large town on the Magdalena river around 100 km east of Medellín in Antioquia.

bodies.⁴¹⁶

In journalist Alberto Molano's study of the history of dispossession in Colombia he includes an interview with a child who narrates traumatic experiences from his young life, including river disappearances. In the chapter 'The Turkish Boat',⁴¹⁷ Toñito describes his miraculous survival of a massacre by 'Paisa' (a term used for paramilitaries and drug cartels identified, rightly or wrongly, as coming from near Medellín) in his hometown on the Chajeradó river, a tributary of the Atrato.⁴¹⁸ Toñito describes the tying together of bodies like 'pieces of wood' to be thrown into the river.⁴¹⁹ He recounts his journey downriver on a boat where others on board speak of the practice of lacerating the bodies so they would not float. This is one of the many obstacles to recovery for local communities. The lacerating of bodies involves a rudimentary knowledge of Boyle's law whereby buoyancy increases and decreases as bodies descend and ascend respectively. As putrefaction takes place gasses are released in the body and buoyancy is increased. If parts of the anatomy where volumes of gas are stored in the body are lacerated, however, then they will not ascend to the surface and instead will be carried along the bottom preventing the possibilities for recovery.⁴²⁰ Toñito's expression of his fear that either birds or the murderers themselves would interrupt the possibility of recovery is an expression of Boyle's law:

They said vultures sat on the bodies as they floated along. They were swollen up like bladders, and the birds picked at them with their beaks until they'd burst and sink down out of sight [...] When I heard that, I started to pray my parents hadn't been cut open or picked open by vultures and that I'd be able to pray over their bodies.⁴²¹

⁴¹⁶ EQUITAS, 'Primer Documento Sobre Búsqueda Forense De Cadáveres' (2007), p.2.

⁴¹⁷ Alfredo Molano, *The Dispossessed: Chronicles of the Desterrados of Colombia* trans. by Daniel Bland, Foreword by Aviva Chomsky (Chicago IL: Haymarket Books, 2005).

⁴¹⁸ The border between Choco and Antioquia states.

⁴¹⁹ Molano, (2005) p.104.

⁴²⁰ Stephen P. Nawrocki, et al., 'Fluvial Transport of Human Crania' in Marcella H. Sorg, William D. Haglund, *Forensic Taphonomy: The Postmortem Fate of Human Remains* (Boca Raton FL: CRC Press, 1996) pp.529-553, p.531.; see also Haglund, William D. & Marcella H. Sorg, 'Human Remains in Water Environments,' in Haglund and Sorg (eds.), *Advances in Forensic Taphonomy: Method, Theory, and Archaeological Perspectives* (Boca Raton FL: CRC Press, 2001) pp. 200-218.

⁴²¹ Molano, (2005) p.107.

Animals are often an element in the processes of the necroviolence of disappearance. These are often considered “bad deaths.”⁴²² Jason De León calls the assemblage of elements and factors occurring, calculated, or even collated to destroy evidence a ‘hybrid collectif’: citing dogs, rotting in place, and cremation. These act as intermediaries in the “(mis)treatment’ between the human perpetrator and the victim.”⁴²³ De León considers the ethical concerns of such ‘(mis)treatment’ and destruction *by* the environment as ‘sanitis[ing] the killing ground,’ making the possibility of producing accurate figures as to the number disappeared nearly impossible.⁴²⁴ By comparison, in fresh water aquatic environments bodies tend to float with their backs exposed above the waterline and head and limbs below. This leaves the body above the water exposed to birds, and the body below to fish and other aquatic life forms.⁴²⁵ These are incorporated as tools for the evasive powers of denial. In the case of rivers, however, they also produce the unpredictability and ambiguity of the river’s return in the production of fear for the immediately affected survivors. This is where the river is once more employed as a medium of terror.

Others on Toñito’s boat specified the very town and day that the bodies thrown in “whole” would arrive at a confluence with another river downstream.⁴²⁶ Such knowledge reflects the frequency of events as well as the knowledge of the river’s behaviour. EQUITAS, a major forensic NGO working in Colombia, outline four principals for calculating such riverine transport. Firstly, river flow: the volume of water calculated against time at a particular point. Secondly, depth: including changing flow rates at different depths (objects tend to travel further at the surface as there is less friction both on the object and acting on the flow itself).⁴²⁷ Thirdly, rain: precipitation affects the depth and consequent flow of rivers. Finally, sedimentation and river shape determine the possibilities of waterlogging and clogging points.⁴²⁸ The material

⁴²² De León, (2015) p.82-3.

⁴²³ *Ibid*, p.83, p.71.

⁴²⁴ *Ibid*, p.83.

⁴²⁵ William D. Haglund & Marcella H. Sorg, ‘Human Remains in Water Environments,’ (2001) p.205. They include an illustration of the floating position of a human body.

⁴²⁶ Molano, (2005) p.106.

⁴²⁷ This is also evident in relation to the speed of water at the thalweg of the Evros/Meriç river as an arcifinious characteristic of the fluvial frontier, discussed in detail part I.

⁴²⁸ EQUITAS, 2007. At least in form the above principals echo Neimanis’s hydro-logics, whereby ‘bodies of water’ make themselves ‘sensible and intelligible.’ Neimanis, ‘Water and Knowledge,’ (2017) p.54.

scope of these elements correlates with a forensic approach applied through the watery spectrum, which incorporates the flow but likewise varying sediment levels and the effects of rainfall. These principals inform the study of rivers where massacres have taken place, and are ingrained in local knowledge and memory of places where bodies will re-appear. In a coincidental mirroring it is these same fluvial characteristics that are calculated into the very surveying of suitable locations for the siting of dams.

While flow and flow-rate can be instrumentalised in the obfuscation of crime, they can also be employed in the sensing of the archival capacities of bodies of water. This can occur either within what Gómez-Barris calls ‘an anti-dam counterlogics’ or as a riverine counter-forensic technology for humanitarian purposes: inverting the forensic gaze or inverting the forensic calculation.⁴²⁹ This involves knowledge of how rivers transport objects. There is a broad and diverse literature relating to rivers, both engineered and ‘naturally’ possessing machine like processing qualities, particularly in relation to flow and transport.⁴³⁰ My aim here is to unpick the complex matrix by which flow has become contested, appropriated and manipulated in the calculations of multiple actors.

For Toñito local knowledge of the Atrato river is held by fishermen, as well as by those living with the constant fear of massacres (in parts of Colombia like Antioquia these are not mutually exclusive). Overtime river communities learn their own fluvial taphonomy. For example, on arrival at the town Toñito finds others from his village there:

⁴²⁹ Gómez-Barris, (2017), p.92. The above articulates the double meaning of ‘counter-forensics’ outlined by Forensic Architecture, as both efforts to impede forensic investigation of scenes of crimes – such the river used to discard bodies – and in the way Allan Sekula uses it as the mobilisation of forensic methods by activists and civil society as a form of political resistance. This is discussed further in Part III in relation to *Fluvial Trace*. Forensic Architecture provide an outline of these definitions in their Lexicon, *Forensis*, (2014) p.743.

⁴³⁰ Richard White identifies the process of major hydroelectric projects as the production of an ‘organic machine’, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995); In his review of White’s book Philip Scarpino refers to this as the production of a ‘cyborg river’ Philip V. Scarpino, ‘The Organic Machine: The Remaking of the Columbia River,’ *Technology and Culture* (1996) 40:2, pp. 419-420. Manuel DeLanda describes rivers as ‘hydraulic computers’ sorting their contents by size, however, he then equates this process to social and class strata. I read this as an overly naturalising move. *A Thousand Years of Nonlinear History*, (New York City NY: Swerve Editions: Zone Books, 1997) p.60; Michel Serres equates river flow to a ‘homeorrhetic’ ordering constantly shifting as opposed to static systems (homostasis). *Hermes: Literature, Science, Philosophy*, ed. by Josue V. Harari & David F. Bell (Baltimore MD: The Johns Hopkins University Press, 1982) p.73-4. Elsewhere, Taussig suggests that a scientist might well be able to draw up an equation to measure the ‘infinitesimal gradation in size’ of pebbles at the bottom of the Timbiquí river in Colombia getting gradually smaller as they progress to the sea. Michael Taussig, *My Cocaine Museum* (Chicago IL: University of Chicago Press, 2004), p.245.

The women were praying at an altar they'd set up to the Señor Milagroso, and the men were drinking biche and talking quietly. Everyone was waiting to pick up their loved ones and bury them. One of my neighbours named Doña Edelmira swore that bodies that sink in the river turn into fish.⁴³¹

Becoming fish is the metamorphosis that takes place in the invisible, mysterious, fable space of the river's insensible depths. Those that remained buoyant, began to float by and were pulled out in pieces, some are recognized, including one of Toñito's cousins, and buried. Eventually, however, the river became full of bodies so that there was no longer enough space in the graveyard. As Toñito mourns for other family members who did not wash up, he explains that 'You need to see the body of a person who dies, so you can cry for him and put the rage that death makes you feel inside to rest. Without a body, the dead person stays alive, hovering around the living like horseflies around cattle.'⁴³² This reflects the fear of the missing body being spiritually unmoored and unable to find peace common to cultures that have experienced mass disappearances, especially in cases of bodies lost in rivers.⁴³³ This absent presence of disappearance in water is certainly what lies behind the representational impulse in Gabriel Posada and Yorlady Ruiz's *Magdalenas por el Cauca*.

Elsewhere, after the El Tigre massacre (Putumayo 1999) local funerary hydrology practices considered the river to be the location of submerged afterlives, as a witness described to the Centro Nacional de Memoria Histórica:

"We don't know how many people they threw into the river, and that's why we say "those who live in the river". It is impossible to know how many people live in that river. That makes us very sad. We found this bridge full of blood, and some things from the dead, like sandals and clothing, were thrown on the bridge."⁴³⁴

Here the dynamic flows of the river became a site for an afterlife, not metamorphosing into fish, but an ongoing life within the river itself, perhaps within the river's nutrient cycles. Despite this sense of an afterlife, the funerary hydrology elsewhere on the Cauca and

⁴³¹ Molano, p.107.

⁴³² *Ibid*, p.108.

⁴³³ As discussed earlier in relation to necroviolence.

⁴³⁴ CNMH, (2016) p.341.

Magdalena rivers equates the submersion of the body to a double death. *Requiem NN*, for example, focuses on the tradition of adopting unidentified bodies that wash up at Puerto Berrío. These anonymous remains retrieved from the river take on a reliquary status. The anonymous corpse cannot be reunited with its loved ones but instead is adopted to stand-in for someone else who has likewise had loved ones disappeared elsewhere. The adopted *NN* are often given the names of saints. This is a common practice in Colombia and even practiced on the banks of the Cauca near Hidroituango, as Carolina Caycedo relayed to me regarding the testimonies she took as part of the MRVA Mission in 2018,

The floating bodies they would kind of adopt. They would pull them out, or sometimes they [the bodies] would arrive there because the river comes into this whirlpool where they are washing [gold] or fishing. They would just arrive to their hands and they would pull them out and bury them. They would call them mi muertos [my dead] they were not their [dead].

This forms a posthumous exchange: if the disappeared cannot be retrieved then an anonymous person stands in their place. With adoption the living project subjectivity onto the dead as a process of retrieval from the darkness of disappearance.⁴³⁵

Between the river as grave and the cemetery, Echavarría's film depicts the town of Puerto Berrío as an extension of the river grave. In an early scene local fire captain Carlos Vega speaks to camera about the process of retrieving bodies washed-up at the town:

The remains of those taken out of the Magdalena river are in the cemetery. But those who were not taken out, due to other circumstances, it's hard to know where those people are, what happened to them. Their families are waiting for them, but the Magdalena River is their grave.

As the shot cuts to a view from the bridge onto the foaming eddies of the river below, Vega continues, "That makes it even crueler. After killing them, they throw them into the river. It's a double murder."⁴³⁶ Contemplating the river, Vega's words echo eighteenth-century Neapolitan philosopher Giambattista Vico's reading of the etymological root of *humanitas* from the Latin for burial, *humando* (which I will return to in the next part – *Fluvial Trace*).

⁴³⁵ Thus, the dead become what Zuzanna Dziuban might call 'meaningful subjects' in relational memory practices that resist the oblivion of disappearance. Zuzanna Dziuban, 'Between Objectification and Subjectification: Theorising Ashes' in Zuzanna Dziuban (ed.) *Mapping the 'Forensic Turn': Engagements in Materialities of Mass Death in Holocaust Studies and Beyond* (Vienna: New Academic Press, 2017) pp.261-290. p.269

⁴³⁶ Quoted from the film's English subtitles.

Vico's etymology is famously referenced by Robert Pogue Harrison, in *The Dominion of the Dead*, as a notion of humanness defined by the promise of burial and its associated rituals:

humans bury not simply to achieve closure and effect a separation from the dead but also and above all to humanize the ground on which they build their worlds and found their histories [...] to be human means above all to bury.⁴³⁷

Evident in this claim is a merger of nature/culture requiring humans, at least in cultures specifying such funerary practice, to be inhumed in the ground as a reaffirmation of the connection between the two. Michael Taussig similarly adopts Vico's etymology in 'Excelente Zona Social,' one of his studies of the swamps of northern Colombia.⁴³⁸ As he and his companions traverse the swamps by boat taxi, his river guide sings a violent *vallenatos* [protest song] about bodies thrown by paramilitaries into the very river upon which they are afloat:

Why do they put the bodies in the river? I ask. Because they won't let them be buried, [a fellow traveller] replies. [...] Life is important, but I get the feeling burial is more so. Don't Vico and Bataille see in burial the first sign of culture, the first sign of being human? Therefore not to bury and, even more, to refuse burial, strikes at the heart of life, human life that is, what separates whatever it is we designate "human" from nonhuman, meaning not only animal but also the inhuman. Yet the inhuman is every bit as religious, every bit as sacred, as the pious rites that help move the corpse from its frightening negative state to that of hallowed ground.⁴³⁹

In Taussig's questioning of the river as method of disappearance he echoes the impulse to bury practiced at Puerto Berrío and in affected communities elsewhere. By adopting these remains they shift the body, and soul, from a negative state (the river), to the 'hallowed *ground*' of the cemetery. Puerto Berrío's devoutly catholic community refer to the submerged, un-inhumed, dead as being in purgatory, in a space that cannot be human. In this way, the river is not just the route to the otherworld but is a space of long and torturous interruption or suspension. It is thus the murderer's last de-humanising act, until the river returns the remains once more. To take this a step further, in the dismemberment of the Cauca by the earth embankment, the dam inhumes the river and all its contents in its own un-hallowed ground of aggregates and sediment build-up.

⁴³⁷ Robert Pogue Harrison *The Dominion of the Dead*. (Chicago IL: University of Chicago Press, 2003), p.xi.; I came to this etymology through the relation between the dead body and the watery site of Hurricane Katrina in Ann Fabian's chapter 'Seeing Katrina's Dead', *Katrina's Imprint: Race and Vulnerability in America*, eds. Keith Wailoo, Karen M. O'Neill, Jeffrey Dowd, and Roland Anglin (New Brunswick, Rutgers UP: 2010), p.62.

⁴³⁸ Taussig, (2012).

⁴³⁹ *Ibid*, p.512.

As the verification Mission argues the dam itself produces an irrevocable intervention into the local funerary hydrology. The earth embankment of the dam thus becomes enfolded with the engineered burial of the un-recovered disappeared but also as a burial of the river itself. By engineering the landscape from a powerful river into a series of reservoirs and streams, Hidroituango is weighted with both the co-option of the river's agency by paramilitaries and irrevocable violence *against* the river ecosystem. As I explore in the next section, the large numbers of fish dying as a result of the blockage of reproductive routes and the eutrophication of the water associated with water hyacinths represent the transformation of Cauca into a necro-hydrology. Such a necro-hydrology, following patterns elsewhere, involves not only the presence of dead humans, flora and fauna but also the possible death of the river itself. Here the ambiguity of what Captain Vega describes as "double murder" confronts the metabolisms of memory and reduction of the possibility for multi-species life in the interest of profit, and the further complication of the dam's possible failure.

II.iii

*EXTRACTING THE "ALIMENTOS PARA LA VIDA"*⁴⁴⁰

Dams are the most muscular manifestations of the hegemonic ways of knowing water. They are interventions in rivers and minds that come at the cost of all other possibilities. Political geographer Jamie Linton diagnoses this as 'Modern Water': the reduction of water to resource, consequently making it '*deliberately* non-social and non-historical.'⁴⁴¹ Such methods have attempted to make water physically and epistemologically malleable and through this process extractable. This reduction is sublimely manifest in the 'dominant ideology' and physical imposition of the mega-dam structure.⁴⁴² In his social and material history of hydropower in the Columbia river valley, north western United States, Richard White attributes his own fascination with dams to his first encounter with a turbine room, he describes how it was both evidently a human creation and yet so devoid of humans that it became an eerie place: 'The

⁴⁴⁰ Quoted from a statement made by the Attorney General of Colombia, Néstor Humberto Martínez Neira, concerning the ongoing ecosystem disaster of Hidroituango. Translates as: "the food", or "the nourishment for life".

⁴⁴¹ Linton, (2010) p.73.

⁴⁴² McCully, (2001) p.2-3.

turbines turn in the unseen river; the generators produce electricity. A dam seems a piece of ghost technology.⁴⁴³ The eerie space of the turbine hall is a quintessential spatialisation of both the relational and metabolic rift. Here the turbulence, turbidity, and life of water is extracted and in its place only the gigawhatthours of electricity production remain.⁴⁴⁴ This process has fatal effects for human and multi-species life in the vicinity of the dam. As we shall see in this section, the material impacts of dams, as depicted in a visual register, are direct records of the reciprocal multi-species necro-hydrological conditions produced by mega-dams.

The role of the dam as metabolic technology is reminiscent of the discourse within political ecology between thinkers such as Marxist geographers David Harvey and Erik Swyngedouw regarding the metabolism of urban space. Swyngedouw conceives of cities as metabolic assemblages that join together nature and society through technoscientific infrastructures and the circulations of flow they facilitate.⁴⁴⁵ Harvey, on the other hand, addresses the privileging of a romanticised nature by the environmental movement over the urban as itself disregarding the socio-natural formations existing outside of a limiting vision of the urban.⁴⁴⁶ Hydropower, on the other hand, takes the form of technoscientific infrastructures that privilege a converse socio-natural metabolics, servicing distant urban centres at the cost of the rural communities it directly impacts. The displacement of rural populations by megadams favours an urban vision of the world — the concrete of the dam embankment is the culminating product of such a worldview. The imposition of this technological way of knowing the river attempts to override previously imbricated human and environmental histories. In this process, the turbine hall symbolises the erasure of entire lifeworlds in the conversion of once turbulent river water into electricity outputs.

⁴⁴³ White, (1995) p.x.

⁴⁴⁴ In Mark Fisher's treatise on *The Weird and the Eerie*, the weird is that 'which does not belong,' the presence of an external element. The eerie, on the other hand, is concerned with 'the question of agency,' a doubt in the force or forces producing 'landscapes partially emptied of the human.' Fisher applies this to the workings of capital, which he claims to be 'at every level an eerie entity: conjured out of nothing, capital nevertheless exerts more influence than any allegedly substantial entity.' The dam as space of capital extraction as a ghostly architecture exhibits elements of both the weird and the eerie: weird in the vast embankment of earth that should not be there but also it is eerie in the blocking of the river's defiantly turbulent flow. Mark Fisher, *The Weird and the Eerie* (London: Repeater books, 2016) p.10-11.

⁴⁴⁵ Erik Swyngedouw, 'Circulations and Metabolisms: (Hybrid) Natures and (Cyborg) Cities,' *Science as Culture* (2006) 15:2, pp.105-121, p. 105, 118.

⁴⁴⁶ David Harvey, *Justice, Nature and the Geography of Difference* (Malden: Blackwell, 1996), p.426-7.

Patrick McCully, perhaps the foremost thinker of dam politics, describes the uniqueness of every river in terms of the physical characteristics of its flow and the specifics of the ecosystems it supports, which, in turn, result in particular requirements for the design of every dam. Hydropower is a shape shifter able to fit the uniqueness of each river ecosystem. As McCully puts it, ‘because dams alter the conditions to which local ecosystems have adapted, the overall impact of a dam will, almost without exception, be to reduce species diversity.’⁴⁴⁷ In this way dam’s produce hydro-electric monocultures, whereby the dam has molded itself to its surrounding with, in turn, the parasitic result of transforming these surroundings to fit only its purpose. This shapeshifting feeds into both the spatial and temporal ramifications of what Jamie Linton calls the discourse of ‘Modern’ or hegemonic water. This water has had all of its local political and social agency removed, reducing it to a malleable or extractable substance.⁴⁴⁸ Here the science of hydrology represents water as a universal substance unaltered by ‘the contingencies of human history.’⁴⁴⁹ Political Geographer Derek Gregory echoes this in his assertion that at the end of the 19th century,

a new discourse of hydrology and hydraulic engineering emerged which translated ‘nature’ into mathematical formulae. In these there would be no place for ‘local’ knowledge, and the hydraulics of irrigation channels and the mechanics of dam construction could be made the same the world over.⁴⁵⁰

Here engineering rejoices in a universal franchise logics. Gregory identifies a colonial worldview, one also evident in the line of the river that Da Cunha suggests was taught to colonial cartographers to wield as a weapon in processes of territorial violence on a global scale.⁴⁵¹ In her own analysis of screen technologies, scholar of the political aesthetics of science, Esther Leslie strikes a resonant tone that this separation from nature allows the human, ‘through money and the ‘exchange abstraction,’ infinite time and unlimited space.’ For Leslie, this abstraction ‘is a name for the process of shaping the world according to the needs of capital.’⁴⁵² Dams likewise become a canvas upon which such fantasies can be projected. The

⁴⁴⁷ McCully, (2001) p.31

⁴⁴⁸ For Linton ‘all water was, is, and always will be H₂O.’ Linton, (2010) p.18.

⁴⁴⁹ Linton, (2010) p.74.

⁴⁵⁰ Derek Gregory, (2001) p.97.; Gregory’s statement echoes Machiavelli’s point that soldier’s in peace time should study ‘the nature of the land,’ including rivers and swamps, whereby ‘knowledge and experience gained in one locality, one can easily understand any other.’ Niccolo Machiavelli, *Discourses*, xl, 1531.

⁴⁵¹ Da Cunha, (2018) p.12.

⁴⁵² Esther Leslie, *Liquid Crystals: The Science and Art of a Fluid Form* (London: Reaktion Books, 2016), p.14.

embankment itself forms a temporal caesura, which attempts to homogenise all past, present and future flow by removing its local, political, and social agency.

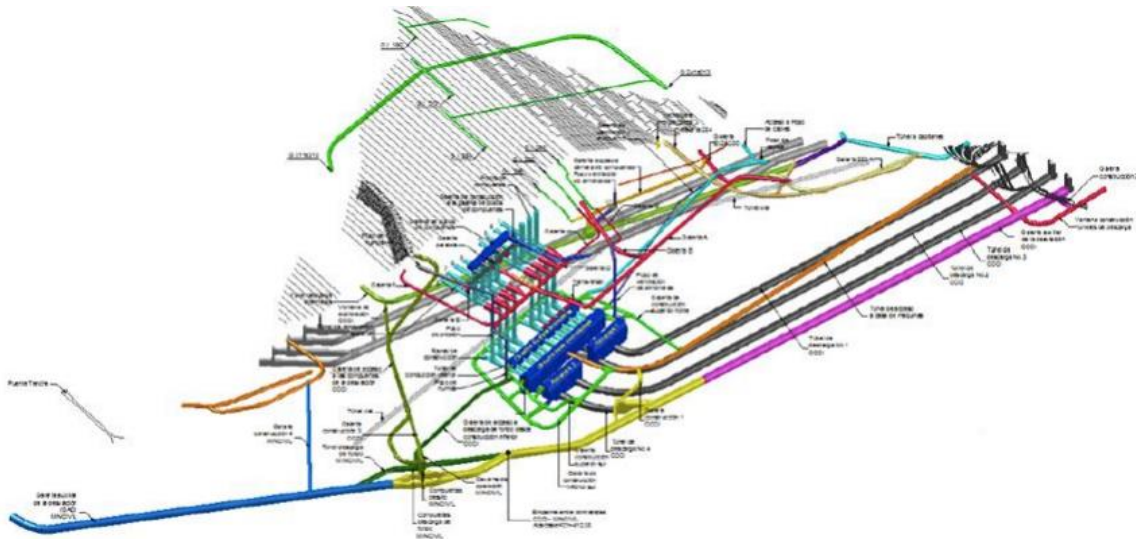


Figure 22 The embankment and Subterranean power infrastructure and tunnels of the Hidroituango Hydroelectric Project, available at: https://www.geotecniacr.com/noticias/23_Proyecto_Hidroelectrico_Hidroituango.pdf (accessed May 2019).

The above technical diagram is emblematic of hydropower's aim to abstract rivers and riverine ecosystems beyond all recognition. The fluctuations of the earth, water, and stone disappear as the surrounding territory is molded into the shape of hydropower: the universal dam and the homogenised world intended by the engineers and surveyors of extraction. Through this lethal abstraction the river itself disappears into the circulations of electricity production. Within this spectral plan the missing bodies disappear once more and their memories are themselves processed through the extraction of the flows of these waters. Thus, echoing Serres, the construction of the dam and the conflict cannot be distinguished but, instead, form a common practice of power, extraction, repression, and terror.

This reduction has lived consequences. If the universalising and dehistoricising effect of H₂O refuses all other ontologies and ways of knowing and living with water, it equates to is what philosopher Boaventura de Sousa Santos calls the 'cognitive injustice' of colonial scientific knowledge.⁴⁵³ The 'cognitive injustice' of the dams themselves centre on the control of access

⁴⁵³ Boaventura de Sousa Santos, (2014), p.15; See also a discussion of this in Gomez-Barris, (2017) p. 98. Carolina Caycedo identifies a founding cognitive injustice towards Colombian rivers in naming the Yuma river

to the possibility of life. Decolonial philosopher Vandana Shiva takes Gregory's point, regarding the production of a universal technology and its erasure of local knowledge, a step further in *Monocultures of the Mind*, where she draws a direct correlation between the method of disappearing dissidents and the disappearance of forms of knowledge in the ascendancy of the dominant political system. One example she uses is Argentina, where political disappearances contribute to the erasure of local knowledge.⁴⁵⁴ Another example Shiva uses is the split that occurred between forestry and agriculture with the emergence of industrial forestry, and consequently: 'The cognitive space that relates forestry to food production, either directly, or through fertility links, is therefore erased with the split.'⁴⁵⁵ In this way the cleavage produced by Hydropower has similarly eliminated ways of knowing water that do not conform to the cartographic or extractive 'river' paradigm.

Perhaps this cognitive injustice is no more evident than with the dam's impact on fishing practices, and on the fish themselves. Firstly, dams deny fishermen access to the river or they displace them elsewhere. Secondly, by blocking the river's flows sediment and nutrients usually transported downstream are blocked. In addition, fish get stranded, reproduction routes along the river and access to spawning pools upstream are reduced and over time the generationally formed knowledge of the location of such pools is gradually lost.⁴⁵⁶ These processes are signalled by the events of February 2019. As the Hidroituango gates began to close news media reported the death of 60,000 fish in what amounts to an ecosystem catastrophe.⁴⁵⁷ Social media sites became rife with images of dead fish and fish stranded in increasingly low levels of river water. In these images riverbeds dried to puddles pulsing with

the Magdalena in 1501 by Rodrigo de Bastidas. Rodrigo de Bastidas described the river as the 'mouths of ash.' Carolina Caycedo, *Yuma Land of Friends* (2014) available at: <https://vimeo.com/94685623> (accessed February 2019).

⁴⁵⁴ Vandana Shiva, (1993) p. 2.

⁴⁵⁵ *Ibid.* Likewise, Dilip Da Cunha identifies the ways European knowledge invented the very concept of a river (2018).

⁴⁵⁶ McCully, (2001) p. 41-43.

⁴⁵⁷ Arjun Harindranath, 'Cauca River Receded as Hidroituango dam closures threaten environmental catastrophe,' *The Bogota Post*, February 7th 2019, available at: <https://thebogotapost.com/cauca-river-recedes-as-hidroituango-dam-closures-threaten-environmental-catastrophe/36287/> [accessed March 2019].

fish as children scramble to catch them in their hands.⁴⁵⁸ Human rights lawyer Alirio Uribe Muñoz tweeted images of fish left dead on the dry riverbed 300 km downstream of the dam:



Figure 23 Uribe Muoz, Alirio (@AlirioUribeMuoz), February 6th 2019, available at: <https://twitter.com/AlirioUribeMuoz>. The distance from the dam stated in the post is double the distance yet the gravity of the impact of the dam's closure on fish life on the Cauca river is not diminished.

The long-term impacts of such ecosystem catastrophe contribute to hydroelectric extraction becoming the dominant culture and economy present in these rivers. The disruption to the river's course impacts on the relationship between man and nature that Richard Falk identifies as central to the process of ecocide.⁴⁵⁹ As the flow and course of the river itself is radically altered over time so the rendezvous of knowledge, at certain locations, between fisherpeople and the fish themselves is eroded until it finally disappears. Consequently, the ways both human and fish live with, and extract from, the river sustainably are destroyed by the dam.

Later in April, the office of the Attorney General of Colombia formed an interdisciplinary team to respond to the unfolding crisis. They made the connection between the capture of sediments and the minerals above the dam preventing the transportation of nutrients required to sustain

⁴⁵⁸ Miranda, Yair (@Yairmirandarum1), February 6th 2019, available at: <https://twitter.com/Yairmirandarum1/status/1093404230839427072>.

⁴⁵⁹ Richard Falk, 'Environmental Warfare and Ecocide: Facts, Appraisals, and Proposals,' *Bulletin of Peace Proposals*, (1973) 4:1 pp.80-96.

fish populations downstream.⁴⁶⁰ In a press conference the Attorney General, Néstor Humberto Martínez Neira announced his package for securing the safety of the river. During the conference he made the important connection between water health and the existing socioeconomic practices of the river, including gold mining. Perhaps most tellingly the very turbidity of the water was addressed. The Cauca is characterised by highly turbid waters that produce a goldish colour. This occurs because of a confluence of multiple suspended sediments including the presence of high amounts of iron from soil erosion as well as from anthropogenic practices such as industrial mining. Within these suspended sediments, however, are also the nutrients that maintain life in the river. At a crucial moment for this study, Martínez Neira calls over an ichthyologist (a scientist specialising in the zoological study of fish) to analyse the underwater filming produced to document the river’s changing biological health (Figures 28 & 29). He makes the point that in contrast to the normal gold colour of the river, the water downstream of the dam is clear (as is visible below). This is because the river has had its suspended sediments filtered by the dam, and without nutrients passing downstream the river can no longer sustain fish life — impacting on the wider ecosystem. Indeed, as if to emphasise the health implied by the normal river colour, the yellowish water is visibly teeming with tadpoles.



Figure 24 Still from “¡Viva el Cauca!”: la segunda fuente hídrica más importante del país’ YouTube video, 21.00 onwards, “Fiscalía General de la Nación – Colombia” (April 10 2019) https://www.youtube.com/watch?time_continue=1315&v=K4LBxrpwqno.

⁴⁶⁰ FGN, “¡Viva el Cauca!”: la segunda fuente hídrica más importante del país’ (April 10 2019) available at: <https://www.fiscalia.gov.co/colombia/fiscal-general-de-la-nacion/viva-el-cauca-la-segunda-fuente-hidrica-mas-importante-del-pais/> (accessed May 2019).



Figure 25 Still from ““¡Viva el Cauca!”: la segunda fuente hídrica más importante del país’ YouTube video, 21.00 onwards, “Fiscalía General de la Nación – Colombia” (April 10 2019) https://www.youtube.com/watch?time_continue=1315&v=K4LBxrpwpmo.

Martínez Neira indicates that the loss of yellow colour – therefore sediment density – in the water means that there is “no hay alimentos para la vida” [no longer the food for life] in this part of the Cauca. In this case the very aesthetic register of the subaqueous space is mobilised by the Attorney General to reveal the submerged politics of hydropower and its environmental violence. The dam is here identified as the filter between life and death for both human and multi-species life and thus the organising element of a multi-species necro-hydrological order operating within the valley.⁴⁶¹

The submerged recording is reminiscent of a scene in Caycedo’s film *Yuma Land of friends* where she submerges her camera into the turbid waters of the Magdalena river. Gómez-Barris equates Caycedo’s appreciation of the visual and sonic spaces within the river to the production of an ‘anti-dam counter-logics’ and ‘submerged perspective.’⁴⁶²

⁴⁶¹ Elsewhere, Melanie Jackson and Esther Leslie have equated the turbidity of milk in relation to the dairy industry as a “filter” ‘through which to explore more broadly how relations between human and non-human entities, gender, representation, law, technology, and abstraction are set in motion.’ Here the dam acts as a filter for turbidity likewise revealing such politics of abstraction. Melanie Jackson and Esther Leslie, ‘Unreliable Matriarchs’ in Mathilde Cohen and Yoriko Otomo (eds.), *Making Milk: The Past, Present and Future of Our Primary Food* (London: Bloomsbury Academic, 2017), p.63.

⁴⁶² Gómez-Barris points out that this approach does not succumb to the trope commonly mobilised in relation to hydropower of the *silencing* of rivers (most notably the title of Patrick McCully’s seminal work) but is acutely aware of the complex sonic environment and ‘muddiness’ of the extractive zone Gómez-Barris, (2017) p.92.



Figure 26 Still from Carolina Caycedo, *Yuma, or The Land of Friends*, (minute mark: 2.14) (2014).

During an interview I conducted with Caycedo, in 2019, I asked her about this method and raised my own thinking about the socio-material thickness of the space within rivers. She stated that this was a speculative moment in her attempt to “enfold[...] different perspectives over the territory.” She wanted to go beyond the satellite image to incorporate the perspective of the fisherpeople (such as Zoila who has a major role in the film) and to incorporate the non-human entities of the river. Following her instincts to submerge the camera Caycedo told me that she was considering:

how would a stone that's been carried through the riverbed, back and forth, [that's] been there for a thousand years [...] be a witness to the daily lives of those currents and those people that fish in there. And I was also attempting to bring the view down from that power view, that tries to represent everything as so clear through their planimetries, to something that is maybe ungraspable for the human. Or not so easy to access unless you have certain powers. You can be in the thick space but unless you have certain powers to understand that thick space it will always be a muddied space.

Shifting from the scale of satellite imagery to imagining the perspective of fish, and the transportation of stones, Caycedo asks how the changes that occur in rivers across a vastly expanded temporal scale can be made sensible? A question I ask in more detail in part III, where I consider rivers as mediators of trace, and a form of sedimentary witness.

Returning to the MRVA mission and its mapping of the river's dark history through walks and interviews this method has been mobilized elsewhere in Colombia, such as by the activist group ASOQUIMBO (La Asociación de Afectados por el Proyecto Hidroeléctrico El Quimbo) in its challenge to the El Quimbo dam on the Magdalena river. In her analysis of Caycedo's film, Gómez-Barris suggests that such collective walks show how rivers can be enlivened by human

interaction that is non-extractive, or sustainably extractive, whereby rivers possess their own memory:

as a witness to a dialectic between life and death of damming, as weighing in on the contradictions between converting value and devaluing, and as a source of flow that energizes its own erasure. Seeing, watching, knowing the histories of riverbank communities and being enlivened by their presence is a submerged perspective that one might imagine could emanate from the river.⁴⁶³

Indeed, this is evident in both Caycedo's words above as well as in the film where the river and indigenous communities have lived 'for generations [...] intermixed with the flow of the Magdalena River.'⁴⁶⁴ In the film the river is described as "enabl[ing] social relations [...] a] golden thread, a sacred place where the ancestors and spirits dwell."⁴⁶⁵ This is what Gómez-Barris means when she identifies the 'anti-dam counterlogics' present within Caycedo's film. This counterlogics gives voice and agency back to the river and its embanked communities, where the development project of infrastructure has caused the 'separation from the agency and life forms of the natural world.'⁴⁶⁶ This counterlogics offers the possibilities for a counter-hydrological knowledge of resistance, such knowledges have of course always existed and continue to exist in opposition to hydropower.

⁴⁶³ Gómez-Barris, (2017) p.95.

⁴⁶⁴ *Ibid*, p.93.

⁴⁶⁵ Caycedo, (2014) (minute mark: 7.20).

⁴⁶⁶ Gómez-Barris (2017) p.92.



Figure 27 Caycedo, *Yuma, or The Land of Friends*, (2014).

Here, the river is to be referred to in its multiplicity of vital bodily and material interactions, and between all these actors: animals, fish, people, plants, sediments and waters. It is these multiple actors, which are at threat from hydropower. In Caycedo's work, however, the polyphonous voices of the river attempt to disarticulate the scientific and capital logics manifest in the very physical embankments of earth that compose the dam itself. The work forms an aesthetics, contrary to the gigantic and sublime terror of the dam,⁴⁶⁷ encompassing the relational scales of the ecosystem down to the microbial. These polyphonic voices form their own relational hydrocommons,⁴⁶⁸ or, following Povinelli, *embankment* of resistance against the very physical embankment of the dam.⁴⁶⁹ The surprising visual, but also conceptual resonance, with the Attorney General's stumbling upon a relational politics of stream health reflects the surprising social confluences of concern for the fate of river ecosystems. By this I

⁴⁶⁷ David E. Nye, *American Technological Sublime* (Cambridge MA: MIT Press, 1994) p.140.; Symbolising dominance over nature, the Hydropower sublime is associated with vast technological projects fitting the developmental imaginary of the Modernist project of the American West, or of postcolonial Independence movements. Nixon calls the dam's dominance over nature – the clash within rhetoric between a transcendent engineering and a transcendent nature – the 'counter-sublime.' Nixon, (2009) p. 68.

⁴⁶⁸ Astrida Neimanis conceives of a hydrocommons as continually emerging condition that encompasses a more-than-human scope in its challenge to dominant anthropocentric embodiments. In the case of Hidroitungo these anthropocentric interventions are disembodied through the figure of the dam itself and in the fluvial conditions it contorts. Neimanis, *Bodies of Water* (2017) p.2, p.41.

⁴⁶⁹ See Elizabeth Povinelli's podcast interview in the e-flux podcast. E-flux, Interview with Elizabeth A. Povinelli on the *Four Axioms of Critical Theory* e-flux podcast (23/01/2018) Available at: https://soundcloud.com/e_flux/elizabeth-a-povinelli-on-the. (accessed January 2018).

mean the multiple bodies and groups including stakeholders, activists, civil society, and even governmental bodies engaging in the ongoing condition of Hidroituango.

The very clarity of the water in the above video implies the waning health of the river. Perhaps more than this, it stands for the abstraction of water in the extractive process whereby material contents and histories have been removed and the river is reduced to a timeless and placeless substance. However, the assault on life in the realm of the dam is not as binary as this. The partner image of the turbid waters, claimed to be full of fertile nutrients, is, however, balanced by the accumulation of biomatter caught by the dam walls itself. Through this accumulation the water above the dam itself becomes deadly. Accumulation of sediments at this scale comes with its own perils, contributing to eutrophication — when water bodies become over-enriched with biomatter. This, in a paradoxical way, is itself a threat to river life. River nutrient levels wavering between excess and scarcity have equally catastrophic effects for the ecosystem. It is thus possible that water becomes too thick with contents and nutrients. Too thick with the food for life.

Gómez-Barris opens her book with the images made by the painter May Stevens as offering an insight into mud and thick waters as an ‘origin stuff,’ a foundational perspectival stance that counter acts the extractive gaze and its assumption of ‘simplicity where complexity actually dwells.’⁴⁷⁰ Taking the distinctly submerged perspectives mediated by the subaqueous cameras of the artist Caycedo and the scientists commissioned by the Attorney General, it may not be as simple as to see density of these visual mediations as representing complexity where the extractive gaze sees simplicity. More than this, the differential of the density of turbidity and nutrients, translated through pixels, is a sensor for the possibilities for life either side of the dam both physically and temporally. By this I mean that in Caycedo’s image the thickness of sediment, food, and nutrients is a temporal record of before a dam. In the images presented by the Attorney General we see before and after the dam, this time spatially differentiated. These multivalent positions produce greater nuance into how the submerged image, or submerged perspective in a very literal sense, can be mobilised to see the variations of mud or gold sediment in river water as a sensor of the necro-hydrology of mega-dams and the forms of governance they produce at multi-species scales. Consequently, it is not just simplicity

⁴⁷⁰ Gómez-Barris, (2017) p.xvi.

positioned against complexity but a complex array of simplicities and complexities at play in the exploitative and violent production of extractive waters.⁴⁷¹

Conclusion

‘River, fire, and mud are reminding us of their presence.’

Michel Serres⁴⁷²



Figure 28 Early botanical drawing of Eichhornia Crassipes or water hyacinth.⁴⁷³

⁴⁷¹ As specific types of river water are produced by borders, so dams produce very particular types of water contingent upon the geographies and politics within which they are set.

⁴⁷² Serres, (1995) p.2.

⁴⁷³ Karl Friedrich Philipp von Martius, *Nova genera et species plantarum : quas in itinere per Brasiliam MDCCCXVII-MDCCCXX jussu et auspiciis Maximiliani Josephi I., Bavariae regis augustissimi instituto* (Munich: Impensis Auctoris, 1824-1829), figure 4. Available at: <https://www.biodiversitylibrary.org/page/742027#page/5/mode/1up> (accessed July 2019).

In the case of Hidroituango water hyacinths (*Eichhornia crassipes*) are a living necro-hydrologic sensor; testament that life persists in the wake of environmental degradation where the previous forms and modes of life have been submerged or erased. They figure in journalist Fred Pearce's critique of the concept of nativeness in conservation practices in his book *The New Wild: Why Invasive Species will be Nature's Salvation*. He describes it as a green xenophobia reproducing imagined pristine environments.⁴⁷⁴ He does so to redresses the treatment of invasive species as somehow inherently dangerous. While voracious in its growth, Pearce suggests that in the right conditions, hyacinths could be used in productive ways such as to absorb heavy metals building up in water bodies, as fodder for livestock, or in the production of biofuel.⁴⁷⁵

The eutrophic conditions produced in the reservoir, as at Sabanalarga, are the direct result of the dam and have led to rapid growth of Water Hyacinths across the reservoir surface (figure 2 & see Appendix III). The report made by the Attorney General's office cites a growth of 8.5km² in only 2 months.⁴⁷⁶ Hyacinths often thrive in the conditions produced in hydroelectric reservoirs where *too much* 'food for life' collects.⁴⁷⁷ The plants form vast mats impeding navigation, preventing sunlight from penetrating into the water, and contributing to the further deoxygenation of the reservoir and subsequent loss of biodiversity.⁴⁷⁸ The hyacinths themselves, however, are not the cause of such issues, rather they are a symptom of ecological imbalance. In turn, they become a contributing symptom of the catastrophic ecological degradation resulting from the dam – a symptom of the necro-hydrological conditions of the Cauca valley. Pearce lists examples of the best methods for tackling the hyacinth including to

⁴⁷⁴ Fred Pearce, *The New Wild: Why Invasive Species will be Nature's Salvation* (London: Icon Books, 2015) p.1-3.

⁴⁷⁵ *Ibid*, p.50

⁴⁷⁶ EPM have also threatened to spray the flowers with pesticides, bringing yet a further environmental concern. FGN, “‘¡Viva el Cauca!’: la segunda fuente hídrica más importante del país” (April 10 2019) available at: <https://www.fiscalia.gov.co/colombia/fiscal-general-de-la-nacion/viva-el-cauca-la-segunda-fuente-hidrica-mas-importante-del-pais/> (accessed May 2019).

⁴⁷⁷ For example, McCully identifies the Kariba Reservoir, between Zambia and Zimbabwe, saw a growth of hyacinths that spread for 'more than 1,000 square kilometres.' McCully, (2001) p.39.

⁴⁷⁸ John Mark Midgeley, Martin P. Hill, Martin H. Villet, 'The effect of water hyacinth, *Eichhornia crassipes* (Martius) Solms- Laubach (Pontederiaceae), on benthic biodiversity in two impoundments on the New Year's River, South Africa,' *African Journal of Aquatic Science*, 31:1, pp. 25-30.

allow the river to be flushed out by major rain fall events.⁴⁷⁹ Or as would be in the case of Hidroitungo to allow the river to flow unimpeded thus preventing the concentration of sediments and pollutants upstream. Through the process of such build-up of bio-matter the dam produces the conditions for a multi-species necro-hydrology whereby the river upstream, as well as downstream, will become incapable of supporting a diverse assemblage of aquatic life.

Consequently, the beautiful mauve flowers bear a sinister and fatal connotation. In a recent work, Taussig writes of floating flowers on a tributary of the Magdalena, where his boatman sings a different *valenatos* of ‘paramiliatries and the terror they create, chopping up bodies and heaving them into the river with its vivid flowers on which we float.’ He then asks whether each flower stands for a body in the river.⁴⁸⁰ Indeed the correlation between water hyacinths and the floating bodies of political violence sees parallels in the case of the Kagera river in Rwanda where it has been claimed that in the 1990s beneath the mats of flowers floating downstream the bodies of victims of genocide were likewise carried by the river to Lake Victoria.⁴⁸¹ At Hidroitungo the flowers garlanding the reservoir bring to the surface yet another element of the necro-hydrological complex of fluvial terror produced by the dam. Where funerary-hydrographic practices, such as Yosada and Ruiz’s *Magdalenas por el Cauca* attempt to re-surface the disappeared, here the hyacinths block access to the water beneath and further distance the possibilities for practices of funerary hydrology. In this way, the flowers come to symbolise the violence of the hydro-social regime of the Cauca, where the river has become a grave and, through unrestrained extraction, is itself dying. Flourishing on the conditions produced by the ecological assault on the river, more than their symbolic qualities, the hyacinths are symptoms of a multi-species necro-hydrology that, like the bodies within the river, are indicative of the terror historically perpetrated against communities living alongside

⁴⁷⁹ Pearce, (2015) p.49.

⁴⁸⁰ Taussig, (2018), p.20-21.

⁴⁸¹ Pearce also includes the suggestion that the hyacinths might have been nourished by the decomposing remains. Pearce, (2015) p.47. See also a report made by the BBC’s producer in Rwanda in 1994 Tom Giles. He describes looking down from a bridge over the Rusumo Falls on the Kagera river: ‘By late afternoon, they looked like water lilies cloaking the river’s surface. Only when the light reflected off the water did you catch a truer glimpse of them: bodies by the dozen, bloated and obscene, floating together downstream. Bit by bit, you built up a picture of something human in the expanse — a back, an arm, the slope of a neck. After minutes of concentration, perhaps, you could get a hint of someone’s father, someone’s brother or daughter — lost in the eddying circles that swept them on to Lake Victoria.’ ‘Media Failure over Rwanda’s Genocide,’ BBC NEWS (Last updated Wednesday April 7 2004) available at: <http://news.bbc.co.uk/1/hi/programmes/panorama/3599423.stm> [Accessed February 2020].

its banks. A terror prolonged by the hydro-social condition of violence produced by the dam. Thus, in a truly relational way, now still the river's once turbulent flows begin to take the deceitfully beautiful form of flowers but unlike the consoling flowers gifted at funerals these flowers are the sensor of a mourning process without end.

The flower growth further indicates the politics of death circulating – from abstraction to materiality – in relation to the dam.⁴⁸² The death of the river, however, is further offset by the continuing anxiety that the dam might fail and the impounded waters flood downstream. This possible failure adds a further terror for the communities living downstream in the wake of the coming deluge. Recent events such as the Brumadinho tailings dam disaster in Brazil (January 2019) foreshadow the threats posed by Hidroituango's potential failure. If state development projects are future oriented within national imaginaries⁴⁸³ then cases like Brumadinho perversely embed a proleptic catastrophe into every dam project, casting these extractive futures in an increasingly precarious light. In Hidroituango's case Germán Vargas Cuervo, geographer and remote sensing expert at the Universidad Nacional de Colombia, has outlined 10 possible threat zones posed by the failure, including a wave between 20 and 100 metres high catastrophically flooding the towns of Puerto Valdivia and El Quince, 30 and 47 km respectively downstream.⁴⁸⁴

⁴⁸² In this way the waters of the Cauca begin to reflect the materiality of the water typical of Derrida's pharmakon. Derrida, (2004), p.150.

⁴⁸³ Rob Nixon, (2009) p.62, p.72.

⁴⁸⁴ Germán Vargas Cuervo, 'Ten threat zones of the Cauca River in face of the scenario of a Hidroituango disaster,' *UN Periódico Digital* (15 June 2018), available at: <http://unperiodico.unal.edu.co/pages/detail/ten-threat-zones-of-the-cauca-river-in-face-of-the-scenario-of-a-hidroituango-disaster/> (Accessed February 2019).

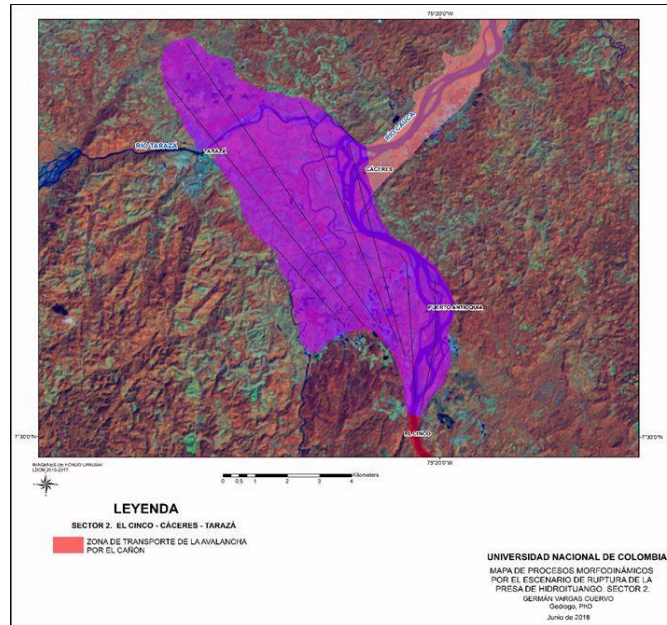


Figure 29 *Map of morphodynamic processes in sector 3. El Cinco – Cáceres.* Germán Vargas Cuervo ‘Ten threat zones of the Cauca River in face of the scenario of a Hidroituango disaster,’ *UN Periódico Digital* (15 June 2018).

Vargas Cuervo calculates that once the wave has passed the steep canyon of El Quince, it would lose some of its catastrophic energy ‘depositing the material carried and forming a 3,808-hectare fluvial-torrential fan’ (figure 29). The Cauca’s accumulating sediments would have the likely collateral effect of temporarily damming the Tarazá river. Vargas Cuervo goes on to identify a number of other possible scenarios even further downstream, with the release of the 2,720,000 m³ of water transporting its impact, more than 400 km away, past the Cauca’s confluence with the Magdalena. Where I have previously considered the politics of confluence in relation to rivers these calculations of dam collapse indicate the possible politics of dispersal and burial of sediments and flows extending far downstream.

By mapping these possible scenarios Vargas Cuervo, perhaps inadvertently, points to the rupture of the obfuscating processes of ‘concrete peace.’ It is not only with the possible break, but with its very threat that the traumas, memories, bodies, NN’s, which the river contains rupture the dam. The violent return of these waters would amount to a counter-logic of what Nixon calls the dam’s ‘temporal violence’.⁴⁸⁵ If, as established earlier, the dam as hegemonic infrastructure submerges the remains of violence within the reservoir then when it breaks it

⁴⁸⁵ Rob Nixon, (2009) p. 72.

also repeats a violence returning the terror of the river's past paramilitary violence and displacement disastrously into the present through the water's own flows.

Cultural studies scholar Lisa Blackmore's recent chapter on the modernist and universalizing aesthetic of hydropower, at the Guri dam in Venezuela, alludes to transformations in environmental conditions, in this case drought, as the river's performance of its own vibrant materiality.⁴⁸⁶ The vibrancy to which Blackmore alludes is one of scarcity, confounding the reductive process of hydropower and its creation of a neat metabolic relation from rain, through transistors and turbines to sockets and domestic use.⁴⁸⁷ In the case of Hidroituango terror emanates from the river's very own disruption of metabolic cycles. This disruption, however, is not inherent to the river or, in a new materialist way, its essentialised characteristics. Instead the water cascading from the dam is the result of the failings of engineering interventions. The prospect of the dam breaking and water bursting through the embankment is produced by the murky and indeed suspect history of the dam: the insufficient scientific studies, oversights produced by the acceleration of the project and inadequate regulation.⁴⁸⁸ This is brought forcefully into the present in the dramatic video of water breaking through the unfinished dam in the spring of 2018 (resulting in bridges being destroyed, figure 18) and in the images of the flooded turbine hall where the eerie abstract space of extraction is itself submerged by the river's returning waters, like the submerged excavations of an ancient temple (figure 30).

⁴⁸⁶ Echoing Jane Bennett's *Vibrant Matter* (Durham NC: Duke University Press, 2010).

⁴⁸⁷ The drought resulted in major power outage in 2016. Lisa Blackmore, 'Colonizing Flow: The Aesthetic of Hydropower and Post-Kinetic Assemblages in the Orinoco Basin,' in Jens Andermann, Lisa Blackmore and Dayron Carrillio Morell (eds.), *Natura: Environmental Aesthetics After Landscape* (Zurich & Berlin: Diaphanes, 2018) pp.171-198, p.196.

⁴⁸⁸ This suspicion is evidenced by the case brought against EPM and the State of Antioquia government. FGN, 'Hidroituango: el pecado original,' (February 27 2019) available at: <https://www.fiscalia.gov.co/colombia/fiscal-general-de-la-nacion/hidroituango-el-pecado-original/> (Accessed March 2019).



Figure 30 The moment the floodwaters entered the turbine hall, and the flooded aftermath on the 10th of May 2018 El Tiempo, ‘Foto revela el estado actual de la casa de máquinas de Hidroituango’ El Tiempo, February 10 2019, available at: <https://www.eltiempo.com/colombia/medellin/foto-del-estado-actual-de-casa-de-maquinas-de-hidroituango-324514> (accessed March 2019).

Returning to the Michel Serres quotation with which I opened this part, if it is no longer possible to distinguish the battles between human forces and the violence enacted against the river,⁴⁸⁹ then the potential full failure of Hidroituango, with its own flooded reservoir, is not one of water vs. dam, or water vs. community but water reminding the ‘ascendant forces’ of neoliberal extractivism, and post-conflict hydrological sovereignty, of water’s own power.⁴⁹⁰ This counter manifestation of fluvial terror is, consequently, itself enveloped within hydropower’s abuse of the river.

The Hidroituango mega-dam places into urgent juxtaposition water as resource against the physical remains and living memories of decades of violence against rural communities. The dam, as obfuscating technology, transforms the territory and thus abstracts the traces of violence into vast new lagoons, displacing villagers, and with them memories, all in the name of progress, profit, and extraction. The dam’s break in the river flow is itself, echoing Taussig, the ‘absolute denial’ of any counter claims to the territory. Further submergence, as result of the dam’s raising of river levels, inflicts what Puerto Berrío’s fire captain Carlos Vega, in *Requiem NN*, might call *a third death*. Perhaps conversely the multiple controversies around

⁴⁸⁹ Serres (1995) p.2.

⁴⁹⁰ Ironically, this is the very power intended to be converted into energy. ‘ascendant forces’ is a paraphrasing of Michael Taussig quoted earlier in this part. Taussig, ‘Excelente Zona Social,’ 2012, p.513.

the dam also make this violence even more present by bringing to further public discourse the continuing ecological and social conflict in Colombia and more broadly in the Americas. With this, the dam produces its own funerary hydrology, not just a spatial memorial practice related to the disappeared but as a subsiding tombstone to the death of the river itself.

Despite the attempt to control memory through the dam construction, the unruly river and the cultural significance of its contents bear their own agency of resistance against the constraints of infrastructure.⁴⁹¹ Rather than being buried within the dam, through the threat of catastrophe the memories of the disappeared conversely remain more present than ever. This is due, in no small part, to the brave practices of MRVA and other river defenders gaining national and international attention. The dynamic waters of the Cauca, so abstracted by hydropower, become the lens through which terror and obfuscation are unsettled, disarticulated and remain present despite efforts to submerge them beyond memory.

⁴⁹¹ In Gómez-Barris's conclusion to *Where Memory Dwells* she describes a similar condition where the memories of past violence contained within water, the Mapocho river in Santiago, Chile, break and disrupt the infrastructure project of 'neoliberal democracy.' She concludes that 'Memories of violence, like the river in winter, indeed have the capacity to burst through the forms of their containment.' (2008) p.159.

PART III

FLUVIAL TRACE

THE WISŁA, SOŁA, PRZEMSZA RIVERS AS SOLVENT TRACE

From the moment the rains began to fall, the lands began to be worn away and carried to the sea. It is an endless, inexorable process that has never stopped – the dissolving of the rocks, the leaching out of their contained minerals, the carrying of the rock fragments and dissolved minerals to the ocean. And over the aeons of time, the sea has grown ever more bitter with the salt of the continents.

Rachel Carson⁴⁹²

Whose heart hasn't been struck by the Wisła's shores? Aren't these shores an open book of history?

Oskar Flatt⁴⁹³

Relation comprehends violence, marks its distance. It is passage, not primarily spatial, that passes itself off as passage and confronts the imaginary.

Édouard Glissant⁴⁹⁴

⁴⁹² Rachel Carson, *The Sea Around Us* (Oxford: Oxford University Press, 1952) p. 7.

⁴⁹³ Oskar Flatt, *The Banks of the Wisła* (Warsaw: Gazeta Codzienna, 1854).

⁴⁹⁴ Édouard Glissant, *Poetics of Relation*, trans. by Betsy Wing (Ann Arbor MI: University of Michigan Press, 1997) p.188.

Field Note 1:



Figure 31 A small fire on a beach of the Soła river at the rear of the Auschwitz-Birkenau Museum (Ifor Duncan).

Set back from the road, separating the river from the rear of the museum, access to the Soła is obstructed by a long green fence bearing signs for both the museum and municipal water works.⁴⁹⁵ Here, at the western edges of Oświęcim, the river is on one of its final shallow turns before it opens out into the Wisła then flows through Poland and eventually into the Baltic. Walking down onto the thin pebble beach I come across the remains of what was presumably a fisherman's fire built like scale models of ancient tombs found in archaeological museums. It is hard to tell whether the dark marks on the pebbles are scorched black by the fire or hold the residual dampness of the river. Remaining at the water's edge I contemplate the wind carrying these ashes away into the water.

⁴⁹⁵ See Appendix III for images of waterworks are rear of museum.

INTRODUCTION

Droughts In The Rivers Of Forgetting

In August 2015 drought caused the Wisła, Poland's longest river, to fall to its lowest levels since records began in 1789.⁴⁹⁶ Linking Kraków to Warsaw, eventually flowing into the Baltic at Gdańsk, the Wisła is a prominent symbol of Poland's national mythology.⁴⁹⁷ The 2015 drought heralded what climate scientists project to be continued patterns of lowering summer river levels in central and eastern Europe.⁴⁹⁸ The reduced levels contributed to an unexpected archaeology, exposing long-submerged riverbeds, revealing baroque marbles, a WWII Soviet fighter plane, and tombstones from a desecrated Jewish cemetery near Warsaw. The drought sparked my own remembrance of the river's often forgotten material significance.

Far upstream at the town of Oświęcim, close to its southern source, is a marshy mesopotamia where the Soła and Przemsza rivers meet the Wisła.⁴⁹⁹ It was here that the Auschwitz-Birkenau extermination complex was constructed.⁵⁰⁰

⁴⁹⁶ The Guardian, 'Poland drought: Jewish tombstones and fighter plane uncovered as rivers run dry' *The Guardian*, (26 August 2015) available at: <http://www.theguardian.com/world/2015/aug/26/poland-drought-jewish-tombstones-and-fighter-jets-uncovered-as-rivers-run-dry> (accessed August 2015).

⁴⁹⁷ Indeed, 2017 was the official year of the Wisła. Agnieszka Warnke provides examples of the Wisła's presence in literature and art. 'Water Under the Bridge: The River Wisła in Literature, Music & Art', such as playwright Władysław Łebński's romantic analogy of the river with Polish language: 'Hey, long live our native tongue, / Our beautiful language, / Which, just like the eternal Wisła, / Flows from Kraków.' Available at: <http://culture.pl/en/article/water-under-the-bridge-the-river-wisla-in-literature-music-art>; (accessed December 2017); for the year of the Wisła see: <http://rokwisly.pl/>; also see: Jerzy Cyberski, Marek Grześ, Małgorzata Gutry-Korycka, Elżbieta Nachlik & Zbigniew W. Kundzewicz, 'History of floods on the River Vistula', *Hydrological Sciences Journal* (2006) 51:5, p.802.

⁴⁹⁸ Urszula Somorowska, 'Changes in Drought Conditions in Poland over the Past 60 Years Evaluated by the Standardized Precipitation-Evapotranspiration Index', *Acta Geophysica*, vol. 64, no. 6, Dec. 2016, pp. 2530-2549, Somorowska concludes that over the past 60 years the severity of droughts have been increasing especially during growing months (April-September).

⁴⁹⁹ This is the point at which the volume of flow reaches a level where the 'small Wisła' becomes a navigable river. Wojciech Majewski, 'Vistula river, its characteristics and management,' *International Journal of Hydrology* (2018) 2:4, pp.493-496, p.493.

⁵⁰⁰ Gideon Greif, *We Wept Without Tears: Testimonies of the Jewish Sonderkommando from Auschwitz* (New Haven CT: Yale University Press, 2005) p.18; Ber Mark, *The Scrolls of Auschwitz*, (Tel Aviv: Am Oved Pub. House, 1985), p.1. On the possible reason for siting the extermination camps Mark speculates that the area between the two rivers had a climate and environment 'conducive to death and destruction' with the water itself unsafe to drink. Although this is a water-logged area, Mark's speculation nevertheless seems to be conditioned by the context of the extermination camp.



Figure 32 Central Intelligence Agency. Directorate of Intelligence. National Photographic Interpretation Center, *Auschwitz-Birkenau Complex - Oswiecim, Poland 26 June 1944*.⁵⁰¹

Much of the ashes from the crematoria were scattered into these rivers.⁵⁰² The scattering was done by the Sonderkommando, who were groups of predominantly Jewish men selected from transports and forced to carry out the processes of the gas chambers and crematoria. Sonderkommando testimony exists through the remarkable survival of members and in the form of diaries and texts buried in the ashes and earth of the site. Often in improvised containers some of these buried testimonies, were themselves, like messages in bottles,⁵⁰³ thrown with the

⁵⁰¹ This image has been the subject of much interest, including Harun Farocki's film *Bilder der Welt und Inschrift des Krieges [Images of the World and the Inscription of War]* (Harun Farocki Filmproduktion, 1989), and Eyal Weizman's analysis of the forensic mobilisation of the image in the Irving vs Penguin Books Ltd. trial of 2000. Eyal Weizman, *Forensic Architecture: The Threshold of Detectability* (New York: Zone Books, 2017). The annotations were added during CIA analysis in the 1970s.

⁵⁰² Greif (2005) p.18; p.95; The buried testimony of Zalman Gradowski in Ber Mark, (1985) p.204. These texts have subsequently informed, amongst other projects, László Nemes's treatment of the sonderkommando in the 2016 film *Son of Saul*.

⁵⁰³ Andrzej Zaorski, a Polish doctor who entered Auschwitz-Birkenau with the Red Cross after the liberation of the camp, discovered Sonderkommando member Chaim Herman's letter in a bottle buried amongst a pile of ashes. Zaorski imagined that the vessel and the testimony were designed as a form of "message in a bottle".⁵⁰³ He speculated that the bottle buried in the ashes might be dumped in the river and float away to be discovered and sent to the intended destination. Nicholas Chare and Dominic Williams quite rightly question Zaorski's reading. They cite Herman's intention, in the papers inserted in the bottle, to bury the letter. It is certainly compelling to imagine that the Sonderkommando may have intentionally inverted, successfully or not, the

ashes into the rivers. In return many of the texts and testimonies that survive describe the act of scattering. In the 1960s the historian Ber Mark edited much of what was discovered of the testimony into *The Scrolls of Auschwitz*, focusing on the 1944 Sonderkommando uprising. Other surviving members published individual testimony, and, in 2005, Gideon Greif published further interviews with Sonderkommando survivors as *We Wept Without Tears*.⁵⁰⁴

This third and final part of this thesis, *Fluvial Trace*, follows the processes leading up to, during, and attempts to imagine what happens after the scattering into the rivers. In the scope of my argument this part does not consider rivers as directly instrumentalised in the act of killing but rather as crucial obfuscatory, if ancillary, components of a vast technology of genocide.⁵⁰⁵ Consequently, in section III.i *Ash & Sediment*, I consider how the reduction of remains to ash, and the pulverisation of bone and scattering into the river, mimetically appropriates the sedimentary processes of the river in the obfuscation of the remains. Further to this, what possibilities might exist for making these traces present in the world beyond testimony and beyond the oblivion of material dissolution? How is it possible to stay with these hydrophilic materials beyond their dissolving into water? This is not intended to further reduce these traces but, rather, to ask whether the river can stand in for the absent body? Motivated by a refusal to let these remains disappear completely, this *retracing* takes the form of a submerged imaginary, informed by hydrology and the river's contemporary contents.⁵⁰⁶ In this way the river and its processes become the object of trace.

I consider this problem through the appropriation of this river system, its hydrologic characteristics and aggregating processes, as organising logic of the discarding of two distinct forms of violence: genocide and ongoing ecosystem degradation. The imbrication of these

obfuscation of traces and mode of repressive counter-forensics they were forced to perform, to disseminate testimony through scattering into the river. It is more likely, however, that the textual testimonies were intended to be buried. Chare and Williams, *Matters of Testimony: Interpreting the Scrolls of Auschwitz* (New York: Berghahn, 2016), p.1 and p.42.

⁵⁰⁴ Greif, (2005).

⁵⁰⁵ There is evidence of the weaponisation of the Wisła through intentional flooding during periods of conflict, '(1655–1660, 1813–1815 and 1945)'. Jerzy Cyberski et al., (2006) p.815.

⁵⁰⁶ In many ways this equates to the concept of a *Forensic Imaginary* or *Imagination* defined by Forensic Architecture as an alternative engagement with objects, artifacts and events that is not necessarily grounded upon Locard's concept of every interaction leaving a trace. Instead every interaction can be retraced. Here such *retracing* occurs within the contingencies of a submerged register. *Forensis: The Architecture of Public Truth* (Sternberg Press, 2014) p. 746.

dissolved remains with contemporary pollutants introduces an ethical challenge. What does it mean when the culturally sensitive remains of the past encounter the environmental forces in flux in the present and the future? And can the remains of the past be separated from these transformations? I pursue these research questions through a fieldwork method, as in the first part of this thesis *Fluvial Frontier*. The fieldwork in this part focuses on the use of rivers to erase trace, while the rivers themselves face the possibility of a very different type of disappearance.⁵⁰⁷ Here the disappearance of the river takes the form of drought rather than hydroelectric infrastructure, as in *Fluvial Terror*. In this part fieldwork notes and images punctuate the trajectory of the argument. This fieldwork positions the river as the central dynamic object of study, and these notes are imaginative hydrologic portals into submerged volumes and operations. Regarding intervention into the aquatic space I took one short passage of film within the river (Fig at the beginning of the final section, iii, *Heavy Rivers*) shot at the confluence of the three rivers downstream from the scattering sites. I was reluctant to record this content because I was concerned by the ethics of intervening in the submerged space itself (as discussed later, disturbing inhumed remains in soil is strictly forbidden by Jewish Halakah laws) and uncertain of how to present it. I am also anxious about what it means for me as a researcher to enter the water, even mediated through the appendage of the camera, with all the historic projection I might impart. As the section particularly relates to the contemporary heavy metals of the rivers themselves I have decided to retain just this single image as a document of the multiple material and cultural contents contained within the river's opaque flows. I have also retained the image because it speaks to the coming together of multiple contents within the thick, turbid space of the river. Directly or indirectly the field notes frame a separate entry point into, or even departure from, these culturally laden spaces. One that resists the intended erasure within these waters by foregrounding a recurring encounter between river and ash. I have adopted this contemplative method as a way of reflecting upon the temporal and material research limitations of this site and to respond to the confluent politics within the volume of the Wisła and Soła through an imaginary approach. Through this contemplation I step outside of the sanctioned spaces of memory, the museum, to investigate the environment as a

⁵⁰⁷ In Gayatri Spivak's preface to Jacques Derrida's *Of Grammatology* she identifies his conception of trace as 'the mark of the absence of a presence, an always already absent present [...]' Derrida, *Of Grammatology*, trans. and preface by Gayatri Chakravorty Spivak (Baltimore MD: Johns Hopkins University Press, 1998) p. xvii. This textual double bind of absence and presence – particularly the concept of *writing under erasure* – retains a powerful significance for the material acts of erasure and the processual remaining within the environment discussed here. I explore this further towards the end of this part where the concept of writing under erasure, both textual erasure and the erasure of the author is palpably real. Or as discussed in the previous footnote the attempt to transmit testimony through *messages in bottles* becomes a mode of writing that finds itself mediated through the process of erasure.

constantly shaping archive of the past, that positions its contents in relation to environmental portents of atrocities to come.

ECOLOGIES OF GENOCIDE

Genocide studies, emerging alongside Holocaust studies, has not been bypassed by climate change or the emergence of the environmental humanities. Historian Mark Levene has drawn a connection between the importance of both social justice and environmental stability in the production of a world free from genocide.⁵⁰⁸ Historian Timothy Snyder's *Black Earth: The Holocaust as History and Warning*⁵⁰⁹ is prominent within this context. Central to his thesis is that any history of the Holocaust must be contemporary, and along with international, colonial, chronological, political and multifocal readings, 'an instructive account of the mass murder of the Jews of Europe must be planetary, because Hitler's thought was ecological, treating Jews as a wound of nature'.⁵¹⁰ While I am not attempting such an instructive account, and my site is not necessarily of a planetary scale, this chapter reads the dense and traumatic history through present processes and is activated by a planetary and future oriented sensitivity. The subtitle of Snyder's book – 'History and Warning' – points to the necessity of such a future oriented approach.

Snyder introduces his book by quoting Hitler's ecological writings, where the future can only be known through the limits of the planet, a 'surface area of a precisely measured space'.⁵¹¹ Through Hitler's genocidal ecology Snyder positions the Holocaust as part of an ecological conflict, in which a perceived scarcity of planetary resources fed an obsession with the expanses of soil necessary for the *Lebensraum* project. Rivers figured as the imaginary frontiers of such an expansion, as Hitler stated: "Our Mississippi must be the Volga, and not the

⁵⁰⁸ Mark Levene, 'A Dissenting Voice: Part 2', *Journal of Genocide Studies* (2004) 6:3, pp.431-45.

⁵⁰⁹ Evoking Balshazar's "Mene mene tekkel" [The writing on the wall.] Amir Eshel, 'Layered Time: Ruins as Shattered Post, Ruins as Hope in Israeli and German Landscapes and Literatures' in Julia Hell and Andres Schönle (eds.) *Ruins of Modernity* (Durham NC: Duke University Press, 2010). Pp. 133-150.

⁵¹⁰ Timothy Snyder, *Black Earth: The Holocaust as History and Warning* (London: Vintage, 2015) p.xiv.

⁵¹¹ Snyder, (2015) p. 1.

Niger.”⁵¹² Within this racist claim to eastern Europe and its resources,⁵¹³ Hitler modeled the expansion east and its exploitation of Slavic and Jewish populations on westward expansion in north America and its genocide of North American Indian peoples. To achieve an agro-colonial project of this scale required the labour of an enslaved people, eventually folding their erasure into the production of *Lebensraum*.⁵¹⁴ Snyder concludes by reflecting on Hitler’s conception of the limits of land, emphasising the contemporary relevance of drought and sea-level rise. These processes contribute to a diminishing of cultivatable land, calorie production, which threaten to produce, in turn, diasporic communities and an intensification of dangerous forms of ethno-nationalism that reproduce racialised othering under the guise of ‘ecological problems’. Snyder figures this into his identification of *lebensraums* of the present.⁵¹⁵ This likewise evokes the neo-malthusian discourse water-politics has been arguing against since the 1990s which I expounded upon in the introduction. It is not just the reality of a changing climate that is played on by ecofascists and the far right and their genocidal imaginaries but the fear produced by a perceived diminishing of resources as a result of the threat of those deemed to be outsiders.

The site under consideration does not present an immediate water crisis in Poland. However, current patterns indicate threats posed by drought in the near future, resulting from increasing

⁵¹² *Ibid*, p. 20-21.

⁵¹³ This is evident in the cases of environmental despoliation brought before the United Nations War Crimes Commission. For example the commission prosecuted the nine most senior officials involved in forestry management, during the German Occupation of Poland, with environmental and resource exploitation. This particularly concerned ‘a policy of ruthless exploitation of Polish forestry’. The accused were convicted as war criminals. *History of the United Nations War Crimes Commission and the Development of the Laws of War*, ch.XV, ‘The Examination of Cases and the Listing of War Criminals’ Case no. 7150 (London, HMSO, 1948), p. 496.

⁵¹⁴ See also Debórah Dwork and Robert Jan van Pelt’s extensive discussion of the agricultural plans for resettlement of the east as the rightful claim of the ‘Teutonic order’. These plans included the draining of the waterlogged land near Auschwitz. Debórah Dwork and Robert Jan van Pelt, *Auschwitz: 1270 to the Present* (New York: W.W. Norton & Co, 1996).

⁵¹⁵ Snyder, *Black Earth*, p. xiv-xv, 20. Weizman similarly connects the outbreak of conflict in Africa from east to west along the shifting aridity ‘shoreline’ that demarcates the desert space of the *Sahel*. Weizman, *The Conflict Shoreline* (2015), p.20. Snyder’s examples include a wave of violence during the droughts of 2008, the four years of consecutive drought that led to the outbreak of civil war in Syria; and starvation in Somalia and exhaustion of arable land in Rwanda as warnings of what further climate change might bring. Snyder, p.329; The US Holocaust Memorial Museum has identified the impacts of Climate Change as a new ‘research frontier’ for genocide study, citing drought as a factor in the emergence of war in Syria. Charlotte Blatt & Simon-Skjodt, ‘Climate Change and Mass Atrocities a New Research Frontier’ *US Holocaust Memorial Museum*, (August 16 2017) available at: <https://www.ushmm.org/confront-genocide/genocide-prevention-blog/climate-change-and-mass-atrocities-a-new-research-frontier> (accessed January 2018).

summer temperatures, decreasing river flows and winter precipitation. These are made all the more problematic by the Europe-wide rise in far-right politics and attitudes towards refugees and migrants.⁵¹⁶ Parallel to this is a vehement denial of environmental change, as carbon extracting industries and unions attempt to defend the feasibility of coal mining.⁵¹⁷ In line with growing correlations between water and conflict, considering rivers as vehicles for trace in this context discloses an encounter between the portents of violence presented by threats of future drought and the troubled history of these rivers.

BETWEEN THE SOLUBLE AND THE SOLUTION

What I propose in fluvial trace is to imagine the entry into, and existence of, the ashes in the processes of water, its flows, transportation, and sedimentation. This also incorporates the scale of the fluvial and geologic conditions these processes encounter. A form of sensing such as this both retroactively accounts for what occurred to these traces after they were scattered in the river through their contact with other material elements and their existence in a future state. This is an attempt to counteract the assumed abyssal qualities of aquatic space. Here the Wisła speaks to the ways water has been used both as method for obfuscating violence but also, and quite conversely, a method of following traces through, in this case, the river's own sedimentary processes. In this way, the mimetic operation of pulverizing remains were not only resulted in the desired erasure. Unwittingly, the adoption of the river as technology enabled the possibility of reading the traces through fluvial process. The reduced yet massively distributed materiality of ash lends itself to sensing a non-absent past, or what might be a particulate or even solvent remaining. This solvent remaining, a term I will define in more detail in the coming pages, questions the distinction between the insensible and the sensible.

Sites of genocide are often approached through the lens of the particulate and ephemeral, this is in no small part necessary as a result of the efforts of the perpetrators. In photographer and theorist Allan Sekula's influential article, 'Photography and the Limits of National identity', he explores documentary photographer Susan Meiselas's photographs of graves from the Iraqi-Kurdish civil war in the early 1990s. For Sekula there is a lack of historical information offered to the photographer when confronted by a mass grave:

⁵¹⁶ Somorowska, (2016).

⁵¹⁷ As is the case with the Law and Justice party in government in Poland during the writing of this thesis.

with the sense that where bodies are buried in secret there must also be a buried archive, limited in scope but immense nonetheless, waiting for resurrection. An archive, but not an atlas: the point here is not to take the world upon one's shoulders, but to crouch down to the earth, and dig.⁵¹⁸

In response to Sekula, literary human rights scholar Thomas Keenan writes that,

To dig is to climb into the grave with the dead, to share a space with them, and to confront the fact of their death, not in order to undo what has happened (that cannot be done) but to transform their silence and disappearance into names, stories, and claims. Listening to, and allowing others to hear, "what the bones tell us" is a practice with no guarantees.⁵¹⁹

In light of this discourse where physical digging would be futile, as in a river,⁵²⁰ how can the silence of ashes and fragmented bone caught within fluvial processes for over 70 years be discerned, how can this dispersed silence be transformed? At first the river might be assumed to be an *anarchival* space. However, water is not merely a lacuna. Here instead I consider it also as an archiving structure.

From most angles, the surface of water hinders visibility into the volume of liquid, reflecting back the sky above rather than offering an insight into what is contained in the water beneath.⁵²¹ Exploring the volume within the water is necessary to sense the depth and multidimensionality of aquatic space rather than its common reduction to surface.⁵²² As structures of flow, variables influence the form of this archive, such as changes to velocity and volume at different depths.⁵²³

⁵¹⁸Allan Sekula, 'Photography and the Limits of National Identity', *Grey Room* 55, Spring 2014, pp. 28–33 [Originally published in *Culturefront* 2, no. 3 (Fall 1993): pp. 54–55, p.32

⁵¹⁹ Thomas Keenan, 'Counter-Forensics and Photography', *Grey Room* 55, Spring 2014, pp. 58–77, p.73.; As discussed later, *digging* encodes its own theological and cultural issues.

⁵²⁰ This issue is especially sensitive regarding the cultural and ethical weight of the remains of genocide. As I shall touch on later, Jewish burial law with regards exhumation is a controversial issue for archaeological and forensic disciplines. What is of particular interest to me is how this is shifted in relation to submerged remains.

⁵²¹ This equates to Didi-Huberman's 'shield image' to refer to Perseus's deflection of Medusa's gaze. Perseus wields the shield as both reflection and weapon. In the case of the river's reflection it shields the gaze from the overwhelming presence within the river's depths but is also a shield mobilised by obfuscating actors to erase trace. In this way the river's hiding of remains from sight is itself a weapon of concealment. This resonates powerfully with Didi-Huberman himself, as I shall explore later, who stopped at the incidence of the pond's surface rather than taking the imaginative leap to consider the incidents within. *Images in Spite of All: Four Photographs from Auschwitz*, trans. by Shane B. Lillis (Chicago: University of Chicago Press, 2008) p.179.

⁵²² Philip Steinberg and Kimberly Peters, 'Wet Ontologies, Fluid Spaces: Giving Depth to Volume through Oceanic Thinking', *Environment and Planning D: Society and Space* (2015) 33, pp.247-264.

⁵²³ Steinberg and Peters state that water is always experienced as both depth and surface, fixed points and shifting materiality. Such multiplicity of experience contributes to reading against the obscuring of trace in water. *Ibid*, p. 252.

Similarly as forensic anthropologist Tim Thompson and his colleagues show, and discussed in detail later, the material contents and shape of a river dictate how materials are archived in sediment. Motivated by the threats of flooding and coastal erosion, they have performed extensive laboratory experiments to measure the ways sediments abrade bone.⁵²⁴ To appreciate a river's archival capacity it is necessary to think with the processes that mark these traces over time, such as how the wet medium is both abrading and diluting.

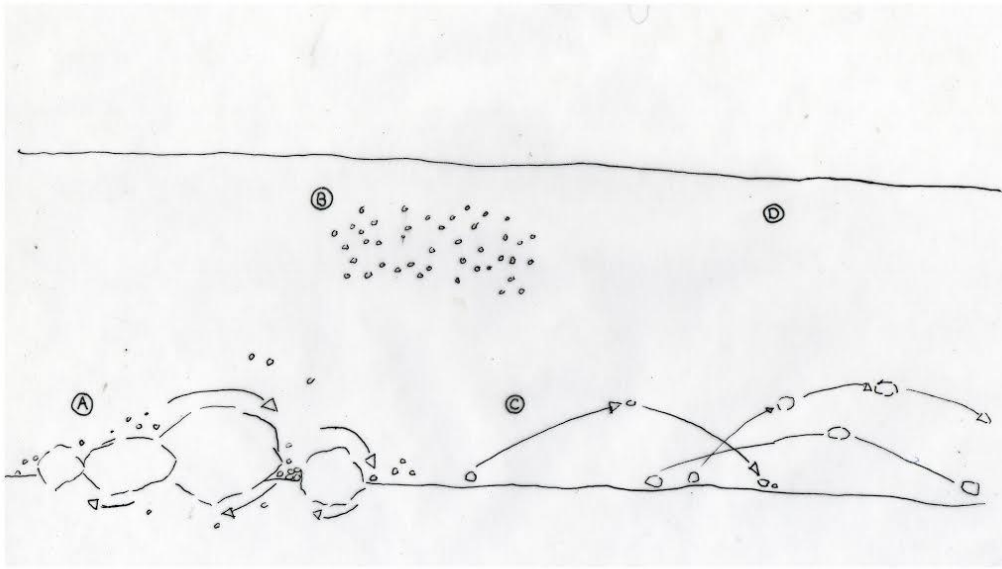


Figure 33 My diagram drawn to help me imagine the different ways rivers transport materials. A) Traction: larger stones and bolder roll along the riverbed. B) Suspension: light materials carried by the water. C) Saltation: small stones and pebbles bouncing along the riverbed. D) Solution: Minerals and particulate matter dissolved within the river stream. (Ifor Duncan)⁵²⁵

By navigating through the submersion of traces into the river's flows I propose that the turbulent, suspending, transporting, saltating, and depositing river is itself an archive of violent events, and their afterlives. As I will explore in section III.i, *Ash & Sediment*, the attempt to obfuscate through sedimentary process can be sensed otherwise through the river as itself an alternative archive of process. Thinking with the river in this way leads to the following question: can an approach informed by discourse emerging in response to a changing climate

⁵²⁴ Tim Thompson, et al., 'Experimental abrasion of water submerged bone: the influence of bombardment by different sediment classes on microabrasion rate,' *Journal of Archaeological Science* (2016) 10, pp. 15-29.

⁵²⁵ Diagram informed by Knighton, (1998) p.127; & André Robert, *River Processes: An Introduction to Fluvial Dynamics* (London: Arnold, 2003) p.73.

and the relationality of watery environments introduce a dynamic dimension to rethink the material traces of the past?

Forensic archaeologist Caroline Sturdy Colls states, in her essay ‘Learning from the Present to Understand the Past,’ that Europe’s topography has been irreparably altered by the processes of extermination. This alteration occurs through subtle ‘vegetation change’ as both a form of obfuscation (for instance the intentional planting of trees) and an indicator of ‘trace evidence’, especially in topographies which have often been overlooked as memory sites.⁵²⁶ In relation to memory rivers are often marginalised, as, for perhaps obvious reasons, Holocaust and other genocide memory practices favour land-based sites where remains are more stable and indeed must be left undisturbed.⁵²⁷ Whereas riverine memorials do not operate in the ways that land-based memorial sites, and conservation practices, do. In the dynamic space of water, trace continues to exist and encounter other objects even within the material processes designed to condemn them to oblivion.

Central to this case study is what I call solvent trace. This trace resonates with Christina Sharpe’s concept of ‘residence time’, and is explored in III.ii, *They are also in the Rivers*, through an attempt to recover the affective possibility of a chemical or microbial remaining within these rivers. This continued existence is itself an ecological impasse produced by the relation between the solvent body (here river) and the soluble material (here ashes). Within the multiple definitions of ‘soluble’ and ‘solvent’ intriguing double agential meanings and interdependencies are present. On one hand, the characteristic of being melted or dissolved (soluble) or the capacity to dissolve other substances (solvent). This relates to a transformation of states, or the production of a synthesised materiality. On the other hand, linguistically deriving from the above material transformation, is the discursive capacity to be explained or solvable (soluble), and something with the propensity to solve or explain (solvent).⁵²⁸ Between

⁵²⁶ Caroline Sturdy Colls, ‘Learning from the Present to Understand the Past: Forensic and Archaeological Approaches to Sites of the Holocaust’, *International Holocaust Remembrance Alliance. Killing Sites* (Berlin: Metropol Verlag, 2015) pp.61-2; Sturdy Colls, ‘Earth Conceal Not my Blood’: forensic and archaeological approaches to locating the remains of Holocaust victims’, in Jean-Marc Dreyfus & Élisabeth Anstett (eds), *Human Remains in Society: Curation and Exhibition in the Aftermath of Genocide and Mass-violence* (Manchester: Manchester University Press, 2016) pp. 163-196, p.183.

⁵²⁷ Of course land-based sites also change over time.

⁵²⁸ *Oxford English Dictionary*, 2nd ed. (Oxford: Oxford University Press, 1989), s.v. “Soluble” & “Solvent”.

the transformation into a separate material state and the production of clarity through a form of resolution, the traces I pursue in this part are themselves caught between dissolving into the river and the seeming impossibility of their continuing material presence being solved. What I endeavour to argue here, is a possibility of remaining within the *solvent* river (in both material and linguistic senses of the word). Thus where the river has been used to obfuscate – dissolve – as a relatively peripheral component of the Nazi genocidal project, appropriately named ‘the final solution,’ the river is also, however, the processual site of an irresolvable material solution where trace nevertheless remains.

The space of a solvent imaginary of trace is present in point D) in my diagram above (figure 33). This location of mineral solution, where the material is no longer perceptible to the eye, is itself a category for the riverine archive. Both the tangibility of bone transporting along the riverbed, and the soluble remains make the solvent river an object of study. As river processes relationally absorb the absent soluble materials within their own flows: progressing towards the sea, or flooding onto land leaving alluvial impressions, it becomes in its own way a mediator of trace. This mediation reflects a relational politics between the water, its contents, and how it picks up and leaves behind chemicals and detritus it meets along its course.

As I have shown in the introduction one of the central junctures of relational thinking is the development of a sensibility that forgoes nature / culture divisions. Redressing this division, relational thinking, in the realms of water, is often positioned in a positivist register, offering alternatives or an *otherwise*.⁵²⁹ In this thesis I have considered how a hydro-critical approach, incorporating this relational positivism, also identifies the appropriation of different waters in the production of multiple forms of violence and the re-mediations of its aftermaths.⁵³⁰ With culturally sensitive materials contained within the constantly active space of rivers ethical questions are raised regarding submerged, rather than inhumed, remains, and how these suspended traces should be treated, I explore this in section III.ii: *They are also in the rivers*.

A river draining 194.4km³ into the Baltic, the Wisła harbours and transports other eroded and dissolved contents in its nutrient cycles, pH levels, and sediments, including the transportation

⁵²⁹ Chen, Macleod & Neimanis, (2013) p.12.

⁵³⁰ Much in the way Tuana utilises it to consider the complex material, racial, and social processes at play during Hurricane Katrina. Tuana, (2008).

of waste, such as fertile alluvial silts, but also pollutants in the form of pesticides and heavy metals from industry.⁵³¹ To consider the river as an active archive requires the inclusion of these other materials of encounter. The segment of river that runs up to Oświęcim is historically, and up until the present day, the most heavily polluted watercourse in Poland. This pollution comes from mining and chemical industries in the river's upper section, upstream from Kraków.⁵³² As explored in *Heavy Rivers*, section III.iii, these rivers are themselves the accumulative product of a confluent politics where radically different forms of violence – the historically weighted yet industrially fast genocide and the slowness of pollution from centuries of industrial and chemical waste – are entangled as traces of western Modernity in changing river levels and flows.⁵³³ I have used confluent politics in this thesis, both as the material meeting of rivers and their contents but also as a term to identify the material entanglement of riverine sites across time and space one that is unlike the relative control possible in managing the earth of the museum sites of the former extermination camps themselves.⁵³⁴ The history of waste entering the river from the IG Farben Buna rubber plant, active at the same time as the processes of genocide, makes such fluvial pasts and presents difficult to disentangle.⁵³⁵ Here I consider how river processes in the present can themselves be a continuing solvent archive. Where identification may be impossible the intention of this research is to transform the silence of the river into a claim for a confluent archival structure.

III.i

ASH & SEDIMENT

⁵³¹ Zdzisław Kajak, 'The Vistula and its riparian zones', *Hydrobiologia*, (1993) 251:1-3, pp.149-157, p.149.

⁵³² T.M. Kowalkowski, et al., 'Organic and inorganic pollution of the Vistula River basin', *Journal of Environmental Science and Health Part A* (2007) 42, pp.421-426, p.424.

⁵³³ As stated in the introduction, rivers are always produced by the overlaps of heterogeneous materials. This occurs, as environmental scholar Stephanie Lavau suggests, 'in patterns of association and disassociation, presence and absence.' Lavau, (2013) p. 423.

⁵³⁴ To encompass the breadth of this task I have drawn from a number of disciplines between: the ethics of witnessing; fluvial dynamics; counter-forensics; funerary theologies; material imaginaries; and ecocriticism.

⁵³⁵ In the introduction to Esther Leslie's work on the emergence of the chemical industry at the end of the 18th century, and its role in European aesthetic developments, she draws on Thomas Pynchon's *Gravity's Rainbow* stating that IG Farben was 'a structure that favoured death.' This is further evident considering Farben's pervasive presence throughout the Nazi war machine, including within the Auschwitz-Birkenau complex. Esther Leslie, *Synthetic Worlds: Nature, Art and the Chemical Industry* (London: Reaktion Books, 2005) p.6.

The industrial scale murder perpetrated at Auschwitz-Birkenau was only possible through an assemblage of multiple operations, each developed through practice and over time. Most notably: the selection, forced labour, gas chambers and crematoria.⁵³⁶ Beyond this is the appropriation of the agency of the environment of the camps. Inspired by Sonderaktion 1005, the methods developed by Paul Blobel to eliminate the traces of the murders enacted by the *einsatzgruppen* in occupied Poland, camp commandant Rudolph Höss oversaw a further act of erasure at Auschwitz-Birkenau: the dispersal of ash into the rivers. The scattering of the ashes, including religious objects such as Torah scrolls, into the rivers was intended as the final act of mnemocide – not only the erasure of the body but along with it the objects and memories of Jewish life in Europe.

Sonderkommando survivor, Shlomo Dragon, a central witness for the Soviet Investigative Commission, emphasised the forensic effort of the SS, not content with their reduction of the human body to ash, they removed these ashes to make impossible any traces of their crimes. Describing the process, Dragon recalls:

There were still bits of bone in the ashes. We found skulls, kneecaps, and long bones there. We shovelled the ashes to the edge of the pit. Then trucks came, and ashes were loaded onto them and then thrown into the Sola River, which was nearby. We also had to take care of scattering the ashes. We did it under SS guard. The path between the road used by the trucks and the river was covered with sheets of cloth so that not even a grain of ash would fall on the ground. To keep the ashes from sinking into the ground, the SS men wanted to throw it into the river and let the current carry them away, far away. We shook the sheets of cloth over the water and swept the place thoroughly.⁵³⁷

In what appears to be an awareness of their possible sedimentation in the ground, Dragon describes the cleaning of the banks of the river to prevent them sinking into the earth. Amongst other testimony giving detail to the meticulous approach to the removal of the ashes, Dragon also describes how ashes previously buried in pits were exhumed to be scattered in the river as the Red Army approached in 1945.⁵³⁸

As Geheimnisträger [“bearers of secrets”], eyewitnesses to crime, the Sonderkommando were central tools in the SS design for erasure and synchronous negation. They were initially forced

⁵³⁶ These harrowing processes operated by the *sonderkommando* are thoroughly explained in both Mark (1985) and Grief (2005).

⁵³⁷ Grief, (2005) p.137.

⁵³⁸ *Ibid*, p.163.

to reduce the bodies of hundreds of thousands to ash in an act of repressive erasure, and then in turn, as a mode defensive forgetting, the Sonderkommando, themselves, were intended for the crematoria to ensure no one was left to remember.⁵³⁹ In the case of the crematoria and rivers this double action includes both the body of the Sonderkommando, trapped in the closed circuit of the crematoria, themselves intended to be victims of the very processes they perform, and the water of the ponds and rivers that are co-opted as tools.

The river's own transportation of objects becomes a model for the production of distance between perpetrator and crime. As Dragon stated above throwing the ashes into the river intended to 'let the current carry them away, far away.'⁵⁴⁰ This form of distancing is explicated by seminal sociologist of the human waste of modernity Zygmunt Bauman in *Modernity and the Holocaust*.⁵⁴¹ For Bauman the actors of genocide produce a 'moral' distance through a web of 'minute-acts and inconsequential perpetrators', forming an assemblage of multiple operations in the attempt to retain a physical and psychological distance and, thus, reducing the 'role of the killer to that of the 'sanitation officer'.⁵⁴² This culminated in the erasure of the Sonderkommando within the processes *they* were forced to perform, dehumanising them as tools in the acts of the gas chambers. More than this, the extermination machine co-opted the agency of the river itself to 'sanitise' the traces of the genocidal operation – *sanitas per aquam* indeed.⁵⁴³

Between the pulverisation of the bone by Sonderkommando and scattering into the river is an encounter between two materialities that are culturally and socially othered and othering. Firstly, subaqueous materialities and spaces are often culturally constructed as alien to human

⁵³⁹ See also Leslie, (2005) p.185.; For the concepts of repressive erasure and defensive forgetting see work by memory studies scholars: Aleida Assmann, 'Forms of Forgetting' (2014) available at: <http://castrumperegrini.org/forms3of3forgetting> (accessed January 2016); and Paul Connerton, 'Seven Types of Forgetting', *Memory Studies* (2008) 1:1 pp.59-71.

⁵⁴⁰ Grief, (2005) p.137.

⁵⁴¹ Zygmunt Bauman, *Modernity and the Holocaust* (Cambridge: Polity Press, 1989), p.24-26. De León refers to a similar process in the previous part, where the environment, and indeed animals, are calculated into the border regime as 'sanitis[ing] the killing ground' De León, (2015) p.82-3.

⁵⁴² Bauman, p.24-26. This is particularly relevant in the context of the close-quarters murders performed by the *Einsatzgruppen*,

⁵⁴³ As Roberto Esposito highlights in his identification of the Nazi *zoopolitics* as a dehumanization of the other in the project of extermination or – 'Soziale Desinfektion.' *Bíos. Biopolitics and Philosophy* (Minneapolis: University of Minnesota Press, 2008) p.117.

life.⁵⁴⁴ Secondly, ash, as I shall explore later in this part, is itself the product of the intended dehumanisation or abjection of the physical body, and its subjectivity.⁵⁴⁵ This distancing manipulated the nature / culture divide relying paradoxically on both the agency of *nature* (to carry the traces away) and the long epistemological denial of such agency (that the traces are lost within the ‘passive’ space of the water). The construction of a passive nature can be seen to have origins in the aesthetic construct of the notion of landscape. For Esther Leslie the conception of *natural beauty* reduced environments to de-historicised entities within a romantic register. As she writes ‘nature’ ‘without human intervention, [is] a useless thing cut off from the totality of social relations.’ In this way ‘nature’ can figure as an ‘alibi’ for the ‘ugly and supposedly unnatural social world.’⁵⁴⁶ Where Leslie points to the artifice of the distinct division between the natural and the social, Snyder, on the other hand, suggests that through such artifice Nazi ideology intended to abolish the divide between nature and culture, where nature *was* the political realm. Perhaps, however, these two approaches are aligned, meeting where the first acts as a defensive mechanism hiding responsibility and the second is used to justify genocide and ecocide on the same plane.

A fear of obfuscation through natural processes is itself evident in the testimony of Sonderkommando members. In writings, recovered from the camp, Zalman Lewenthal, who died during the 1944 uprising, emphasised his motivation to provide reliable testimony as a fear that none would survive and future generations might think that the massacre of the Jews ‘was caused by a natural disaster, as if by a sign from God the earth had opened and swallowed the Jews who had gathered there from all over the world [...]’⁵⁴⁷ Lewenthal’s desire to provide testimony is motivated against the very possibility of an, albeit highly agentive, theological *alibi-nature* – “the act of god” – used to account for catastrophe and events that transcend the limits to which existing scalar imaginaries of human causality extend. Thus, through the repetition of such tropes the victims of these extermination processes, perhaps unwittingly, are

⁵⁴⁴ This is usually in relation to maritime and oceanic space, nevertheless, riverine space is not immune from such renderings. Stefan Helmreich, *Alien Ocean: Anthropological Voyages in Microbial Seas* (Berkeley CA: University of California Press, 2009), p.17.

⁵⁴⁵ Zuzanna Dziuban, ‘Between Objectification and Subjectification: Theorising Ashes’ in Dziuban (ed.) *Mapping the ‘Forensic Turn’: Engagements in Materialities of Mass Death in Holocaust Studies and Beyond* (Vienna: New Academic Press, 2017) pp.261-290, p.269.

⁵⁴⁶ Esther Leslie, (2005) p.191.

⁵⁴⁷ Grief, (2005) p.48.

attuned to the ways nature has been produced as an essential realm within which the ideology and method of genocide is executed.

The mastery of *nature* within Nazi art took the form of the set aesthetic of blue skies and green fields. All that exceeds these parameters disappears or is the result of ‘defective eyesight’.⁵⁴⁸ Indeed, it was within the *mastered* image of nature that these crimes could be concealed. Rivers feature in this romantic composition as typically cut-off from social relations, and thus a quintessential example of the encoding of crimes within landscapes as alibis. Aesthetic responses to sites of the Holocaust are often accused of reproducing such an alibi, nevertheless, it is within the material site itself that a processual trace remains.⁵⁴⁹ The human intervention of scattering attempted to utilise this ‘alibi’, however, it unequivocally introduced the violence of the social world into the water, even in its pulverized form.

Elsewhere, in art historian Georges Didi-Huberman’s description of his visit to Auschwitz-Birkenau he meditates on the pond near crematoria IV.⁵⁵⁰ For Didi-Huberman the reflective surface of the pond, resisting the possibilities of vision beneath, conveys the impenetrability of the past. However, he states that there can never reach a point where there is no more to see, in these sites vision can never be saturated and despite doubt ‘we must know how to keep looking, how to see in spite of everything.’⁵⁵¹ Here Didi-Huberman speculates on the relational aspect of the continuing existence of the traces within the botany of the site, and in the ‘tiny pond where lie the ashes of thousands dead.’ As well as in the ground, earth and plants, for Didi-Huberman, they are also in subaquatic spaces:

A pond, still water that requires our gaze to be on alert at every instant. [...] The frogs leap up from all around when I approach the water’s edge. Below are the ashes.⁵⁵²

⁵⁴⁸ Leslie (2005), p.192 quoting Hitler at the 1937 opening of the House of German Art in Munich.

⁵⁴⁹ Such an idea might find a parallel in the context of Climate Forensics as Adrian Lahoud writes, ‘The earth’s climate loosens the bond between cause and effect; it breaks the link between attribution, responsibility, and, potentially, justice.’ ‘Floating Bodies,’ *Forensis* (2014) pp. 496-518, p.508. See also: Forensic Architecture names this ‘Field Causality’ *Forensis* (2014), p.745; It is indirectly a concept pivotal to understanding Rob Nixon’s influential rendering of *Slow Violence and The Environmentalism of the Poor* (Cambridge MA: Harvard University Press, 2011).

⁵⁵⁰ Didi-Huberman’s pond photograph is in *Bark*, trans. by Samuel E. Martin (Cambridge MA., MIT Press, 2017). [originally published in French as *Écorces* (Les Éditions de Minuit, 2011).], pp.102-3.; See also *Images in Spite of All* (2008).

⁵⁵¹ *Ibid.*

⁵⁵² Didi-Huberman, (2011) p.105-6.



Figure 34 Pond near crematoria IV (top right of image) (Ifor Duncan).

Walking to the edge of the pond he unsettles the frogs, and imagines what lies beneath, but he goes no further. He stops at the edge. He physically stops but perhaps this is also the edge of his imaginative endeavour. Even through his determination to keep looking, to employ an ‘archaeologist’s gaze,’⁵⁵³ he is arrested by the illegibility of aquatic space. Didi-Huberman lingers at this point, a point that environmental theorist Peter van Wyck identifies as ‘incidence’, the surface reflection of what is above. Often a visual boundary to the human eye.⁵⁵⁴ Although Didi-Huberman calls for a ‘gaze’ to be continually alert, he seems content with the knowledge that the archive exists below rather than imagining *how* it exists as, echoing van Wyck, the ‘incidents’ of the archive within subaqueous space. This is either because, as Leslie speculates, in this space they are ‘cut off’ from social relations, or because it is just enough to know they *are* there. To imagine *how* requires an archaeological gaze with the addition of a subaqueous filter. This is itself a ‘defective eyesight’, exactly the eyesight that

⁵⁵³ Didi-Huberman, (2011) p.54.

⁵⁵⁴ As addressed later, my thinking in this chapter is influenced by Peter van Wyck’s chorography of Montreal’s Lachine industrial canal. Where he addresses the ‘archival quality’ of the subaqueous site of the canal, as the ‘material and sedimented accumulation of “past” toxicity. Peter C. van Wyck, ‘Footbridge at Atwater: A Chorographic Inventory of Effects’, in Chen, MacLeod and Neimanis eds. *Thinking with Water* (Montreal: McGill-Queen’s University Press), pp.256-273.,p.257. Incidence and incidents are referred to on p.263.

can resist by seeing beyond the blue sky and green field of the constructed landscape aesthetic and sense the genocidal and environmental violences hidden within.

This is a necessary move beyond the limitations of the visual to the submerged perspective, or the solvent perspective that imagines the minerals and contents of the solution even in their very imperceptibility. In the imaginary pause at the edge we see the residue of the adoption of rivers within the obviatory process. A process that plays on the culturally pervasive alibi of water bodies reduced to passive elements within a colonial landscape aesthetic.⁵⁵⁵ With this logic, the incriminating products of society can be encoded into the landscape without risk of feedback. However, by reading Sonderkommando testimony of the pulverising process, alongside contemporary taphonomic study of submerged bone transportation, I develop an imaginary that intends to access these unexpected contents within the dynamic processes ordinarily occurring within rivers.⁵⁵⁶

The material practices, explored here, oscillate from the river as alibi, in the production of obviation, to archive. The pulverisation of bone by the Sonderkommando renders the objects in a similar way to sedimentary processes. Zuzanna Dziuban, whose work focuses on the political and cultural afterlives of the corporeal remains of the Holocaust, addresses pulverisation as the attempt to make the subjecthood of the remains intangible, thus greatly reducing their detectability.⁵⁵⁷ The question of subjecthood is pivotal to the study of the process of obviation. In *Mengele's Skull: The Advent of Forensic Aesthetics* Eyal Weizman and Thomas Keenan explore the unreliability of objects within the complex and much muddled relationship between evidence and testimony. They state that at least within the context of an object presented before court that the 'trace of the subject can never be fully removed' from human remains. This produces an ambiguity between object, subject, evidence and testimony.⁵⁵⁸ Outside of the court scenario might this inextricable trace subjectivity figure in

⁵⁵⁵ W.J.T Mitchell, *Landscape and Power* (Chicago IL: University of Chicago Press, 1994).

⁵⁵⁶ Taphonomy has shown that articulated skeletons are likely to be transported further in a river than disarticulated bones.; Coard, R., Dennell, R.W., 'Taphonomy of some articulated skeletal remains: Transport potential in an artificial environment', *Journal of Archaeological Science* (1995) 22, pp. 441–448.; see also, Thompson et al., (2016).

⁵⁵⁷ Dziuban, (2017) p.269.

⁵⁵⁸ Thomas Keenan & Eyal Weizman, *Mengele's Skull: The Advent of Forensic Aesthetics* (Berlin: Sternberg Press, 2012) p.13. The book's point of departure has its own coincidentally subaqueous resonance, specifically

the radical dispersal of such traces at a particulate scale across an entire ecosystem? Can the signal of a continuing presence still be imagined? In the case of remains carried by the river, thinking of course in the context of waterborne trace discussed elsewhere in this thesis, the distinction between object and subject becomes almost irretrievable unless the unpredictability of the river returns the remains to the surface. The combination of pulverisation and the river's dissolving, and sorting of its solid contents, disperses them into a far greater fluvial and alluvial spectrum of trace. Through a relational approach to the watery environment, signaled above, perhaps these massively dispersed traces and subjectivities can be sensed across scalar disparities of space and time.

Contemporary use of relationality in feminist posthumanism calls for an ethical awareness of human and non-human interactions, which are necessary in the context of changing planetary degradation and the reciprocities of material and meaning emerging in parallel with the Anthropocene thesis.⁵⁵⁹ However, it is important within the stakes of these remains to be careful when considering a posthumanist that aims to unravel human exceptionalism.⁵⁶⁰ It is important not to discard the challenge to human exceptionalism out of hand but to consider it, as most proponents of it do, exactly in the context of continuing violence against dehumanised communities that occur in tandem with violence against ecosystems with whom such communities are in relation. From this stance, to critique human exceptionalism produces the potential for clearer perception of the myriad scales through which violence is perpetrated against humans and non-humans. The cases in this thesis are informed by such a line of questioning, explored in part I, through its critique of naturalising tropes directed against specific groups, such as 'flows' and 'floods' of migrants that contribute to racial othering and the production of distance between policy makers and the deaths of thousands dehumanised through naturalised border regimes. This equates, in no small part, to the dehumanising thanatopolitics of the holocaust. As philosopher of the ethics of biopolitics Roberto Esposito identifies as a Nazi 'zoopolitics' conceiving of the Jewish people as *becoming* bacteria rather than resembling bacteria.⁵⁶¹ Perhaps there is continuity present here in the reduction to ash, and

the exhumation and identification of the body of infamous doctor at Auschwitz Josef Mengele who had himself drowned.

⁵⁵⁹ Rosi Braidotti, A Theoretical Framework for the Critical Posthumanities, *Theory, Culture, Society* (2018) (Special Issue: Transversal Posthumanities), pp.1-31.

⁵⁶⁰ Alaimo, (2011) p.283.

⁵⁶¹ Roberto Esposito, (2008) p.117.

pulverisation as a mimetic appropriation of sedimentary processes – the reduction of the Jewish people to a particulate scale. This is a thanatopolitics that plays on the geologic and hydrologic, within the realms of necro-hydrology. While the relational register is central to my thesis – and I return to directly relational readings of trace within water – it is essential, in this context, to stay with the body as human, even at its most minute register, so as not to repeat the potential traps of dehumanisation set by the perpetrators of genocide. Therefore, these traces eroded and dispersed must maintain their human condition despite all efforts to remove it.

In such cases it is necessary to remain with the granularity of the traces themselves where the river is a human space.⁵⁶² In this way, the relational model I pursue lies closer to the sedimentary poetics of Édouard Glissant and his relational approach to the alluvial legacies of the Middle Passage within the vast subaqueous space of the Atlantic. Such poetic and materially nuanced entry points aid in rendering sensible the multiplicity of contents carried by the relational courses of rivers. To approach these through a hydro-social thinking, discussed in the introduction to this thesis, understands rivers, or other bodies of water for that matter, as spaces of dispersal that harbour the secrets of the cultural and material politics within which they are located. In this way rivers act as a scalar device, enveloping traces but also appropriated as an actant in forms of conflict operating across different temporal and spatial scales: from the acute to the slow. Consequently, rather than messages in bottles, the river itself is the dynamic envelope of these forms of violence, within which is contained a complex array of contents to be deciphered.

The ashes retain their specific significance, yet they are also no longer discrete within this major watercourse. Thus, a relational awareness enables these traces to remain in the present within the continually active processes of the Wisła. Regarding sites of the holocaust this concerns an ethics of the submergence of remains.⁵⁶³ Raising further questions that should be asked where remains are not disturbed or exhumed but have, for over half a century, been suspended within dynamic material environments, for example: How are these traces altered

⁵⁶² Astrida Neimanis's concept of the 'Bodies of Water' is essential for thinking the material politics of water across scales of affect as multi-directional relationalities between body and world. Neimanis, *Bodies of Water: Posthuman Feminist Phenomenology* (London: Bloomsbury, 2017), pp.27-31.

⁵⁶³ Adam Rosenblatt, 'International Forensic Investigations and the Human Rights of the Dead', *Human Rights Quarterly*, vol.32 (2010) pp. 921–950.

by material encounters continuing in the present? With this question in mind I focus here on the encounter between both ash and water.

Ash has long been the very end of the vibrant body. The funerary refrain: “ashes to ashes, dust to dust” is the body’s becoming particulate. In ‘Impure Matter: A Forensics of World Trade Centre Dust’, theorist of the material mediation of conflict and evidence, Susan Schuppli uses chemical studies of dust from 9/11 to locate the traces of the body within the vast clouds produced by the collapsing towers:

The body was not missing in the images of swirling dust that we witnessed repeatedly those first few days after the tragedy but was emphatically present within each specimen of dust and at 1.3 parts per 100.⁵⁶⁴

Schuppli addresses dust’s potential to register past events, through its ‘maintenance of a certain connectivity with the past’, particularly due to its ‘ontological nature.’⁵⁶⁵ Indeed, as a compound material, Schuppli writes, ‘dust is a material witness *par excellence* because it maintains these [heterogeneous] distinctions to the end allowing them to be tracked back to the particular circumstances out of which they emerged.’ She goes on to quote the French criminologist and pioneer of forensic science Edmond Locard, who considered dust, as part of his exchange principle, to be ‘the mute witnesses, sure and faithful, of all our movements and of all our encounters’.⁵⁶⁶

The SS seem to have been intently aware of the potential for ash to perform ‘mute witness’. As relayed in Dragon’s testimony of the cleaning of the riverbanks, in the eyes of the architects of these crimes *mute witnessing* relies upon the relative dryness of the ground. This is the result of the threat traditionally posed by water to the archive. Dryness in this context is associated with solidity and faithful storage of information, evident in the strict management of moisture levels in archival spaces. By contrast water is utilised as a tool of erasure and any dampness or moisture might ‘wipe’ critical information, or cause warping and disintegration.

⁵⁶⁴ Susan Schuppli, ‘Impure Matter: A Forensics of World Trade Centre Dust’, in *Savage Objects*. ed. by Godofredo Pereira (Portugal: Imprensa Nacional Casa da Moeda, 2012): pp.120-140, p.121.

⁵⁶⁵ *ibid*, p.125.

⁵⁶⁶ *ibid*, p.131.; Edmond Locard, ‘The Analysis of Dust Traces’, *American Journal of Police Science* (1930) 1:3, pp. 276-298, p.278.

The combination of pulverisation and the scattering of these ashes into water troubles Locard's exchange principle of encounter. Tim Thompson writes that 'scattering the ashes on land or in water, or the breaking of bones prior to burning will also not be detectable in the archaeological record.'⁵⁶⁷ One survivor, Eliezer Eisenschmidt articulated these acts, 'The [SS] didn't want to bury the ashes in the pits because they might be discovered one day and that might endanger them.'⁵⁶⁸ For another survivor, Ya'akov Silberberg,

The Germans then wanted to obliterate all trace of everything that had ever happened in Auschwitz, even the bones. We broke the bones and ground them up very, very fine, and the Germans scattered the ashes in the Vistula [Wisła] river so that no ashes would remain.⁵⁶⁹

Grief describes this as the attempt to further 'obfuscate all traces and evidence of the crime'. When ash enters the river's current it is assumed that it can no longer perform an evidentiary role. Perhaps, however, it can be recognised through alternative modes of perception. In Locard's definition of dust and its forensic characteristics it is 'an accumulation of debris in a state of pulverization. This debris may originate from any special body, organic or inorganic.'⁵⁷⁰ The "ash" from the crematoria was likewise not a homogenous material, and certainly bone survived the cremation process. In the 1990s Sonderkommando survivor Ya'akov Gabai spoke methodically about the cremated person producing a kilo of ash, and specifically remembers pelvic bones remaining after cremation.⁵⁷¹ I use ash, but perhaps more accurately the pluralisation "ashes" as a term to encompass a spectrum of non-uniform material remains of diverse physical size and characteristics.

Forensic archaeology, particularly the work of Thompson, has made major advances in knowledge regarding the changes that occur in bone at different temperatures.⁵⁷² While

⁵⁶⁷ Tim Thompson, *The Archaeology of Cremation: Burned Human Remains in Funerary Studies* (Oxford: Oxbow Books, 2015) p.7.

⁵⁶⁸ Grief, (2005) p.230.

⁵⁶⁹ *Ibid* p.327.

⁵⁷⁰ Locard, (1930) p.278.

⁵⁷¹ Chare & Williams, (2016), p.5; For Gabai's interview see Grief, (2005) p.197.

⁵⁷² Thompson, (2015); Thompson, 'Heat-induced dimensional changes in bone and their consequences for forensic anthropology', *Journal of Forensic Science* (2005) 50:5 pp.1008-15; and Thompson, 'Recent advances in the study of burned bone and their implications for forensic anthropology', *Forensic Science International*, (2004) 146S pp. 203-5; For temperature achieved at the crematoria of Auschwitz see John C. Zimmerman 'Body Disposal at Auschwitz: The End of Holocaust Denial' available at:

cremation reduces the quality of archaeological data Thompson suggests the context of cremation is important: ‘burned human remains do not just simply occur in a vacuum but are, rather, mostly the result of human agency.’⁵⁷³ Thus, the existence of bone itself is evidence of the complex human agency of their production. The survival of bone from the crematoria is present in Sonderkommando testimony, particularly testimony of a group called the Aschenkommando, who ground the bones found amongst the ash. In Thompson’s forensic study this bone would be described as ‘Calcined Bone’: ‘bone that has progressed through all stages of heat-induced transformation resulting in structural change, a loss of organic material and a white colouration.’⁵⁷⁴ Such bone is fragile and easy to break under pulverisation.

The ‘state of pulverization’ is attested to by survivor Shaul Chazan, who recounts the smashing of bone until ‘no larger than pieces of gravel’ and then with the use of wooden poles they pulverised it until it was dust.⁵⁷⁵ The size and scale of gravel becomes important in the measurement of transport of these fragments.⁵⁷⁶ Chazan describes the violent obviating process of pulverisation as, perhaps unintentionally, replicating and preceding the slow erosion of submerged bone transported along riverbeds. It is as though the bone needed to be reduced to the sediment grain size of the river. The grain size would be the threshold where riverine obviating becomes possible. Consequently, pulverisation as an obviating process echoes, and perhaps even mimetically reproduces, the sedimentary erosion it encounters after being scattered. Another survivor Eliezer Eisenschmidt outlines the scattering process step-by-step,

Ashes were thrown into the river in the following way: they were dumped from the truck a short distance from the water, and there was a residue that landed on the river bank. The Germans wanted to get rid of the evidence of the residue. So the prisoners were ordered to clean the riverbank of whatever remained of the

<http://www.phdn.org/archives/holocaust-history.org/auschwitz/body-disposal/> (accessed October 2017); For difficulties in telling the exact temperatures of the cremation ovens at Birkenau, see Grief, p.18.

⁵⁷³ Tim Thompson, 'Burned Human Remains', *Handbook of Forensic Anthropology and Archaeology* (ed. by) S. Blau, and D. H. Ubelaker (Left Coast Press, 2009) pp.295-303. P.296

⁵⁷⁴ Tim Thompson, (2015) p.3.

⁵⁷⁵ Grief, (2005) p.274.

⁵⁷⁶ Whilst the human body was being reduced to ash and gravel, elsewhere in the camp large numbers of forced labour was extracting gravel and sand from pits and the river to provide for the expansion plans of the site, including the IG Farben site. Dwork and Jan van Pelt, (1996), p.171, 174, 208.; See also Ambros’s testimony ‘Furthermore, we needed gravel and the gravel was available in the Sola River.’ Nuernburg Military Tribunals, (1952), p.741.

ashes.⁵⁷⁷

Echoing the use of sheets described by Dragon, the cleaning of the riverbank reflects a fear that gravel-sized bone might lodge in the local sediment and so it was essential that the ashes made it to the course of the river itself. As the ashes touched the surface of the water, however, they entered into the cycle of sedimentary transportation where the finest ash may have dissolved on contact, while the crushed bones and heavier settleable solids began to deposit in river sediment.⁵⁷⁸ Some of these remains may, over time, have been carried much further downstream, possibly as far as the coastal estuary and sea, transmitting the site and the body's trace into a wider hydrology.

This transmission is contingent on the physical proportions of the material entering the river. In stream ecology organic matter is typically divided into three categories: course particulate organic matter (CPOM > 1mm); fine particulate organic matter (0.5um < FPOM < 1mm); and dissolved organic matter (DOM < 0.5um [micrometre]). The heterogeneous ashes scattered into the river would include elements of all three categories, from the crushed and burnt bones to the finest ashes. Each of these material categories operates differently as currents change. Likewise, they travel to the sea at different speeds depending on the height of the water and the shape of its channel.⁵⁷⁹ This is the hydrological spectrum of the erosion from material to immaterial.

Responding to numerous problems presented by the subaqueous transportation of submerged remains across large distances, Thompson and his colleagues consider the archaeological need for 'accurate interpretations of remains' submersion times, transport pathways and provenances'.⁵⁸⁰ This is important for forensic taphonomy, the study of postmortem decay and decomposition of human remains. This entails 'the development of numerical models for the abrasion rates of bone, which are contingent upon different flow velocities, the dimensions of the impacting sediment and the structural properties of bone itself.'⁵⁸¹ Thompson and his

⁵⁷⁷ Greif, (2005) p.255, The words of Eliezer Eisenschmidt.

⁵⁷⁸ Gernot Bretschko & Helmut Moser, 'Transport and retention of matter in riparian ecotones', *Hydrobiologia*, (1993) 251:1-3, pp.95-101, p.99.; See also Knighton, (1998), p.96.

⁵⁷⁹ Robert, (2003) p.136.

⁵⁸⁰ Thompson et al., (2016) pp. 15-29,

⁵⁸¹ *Ibid*, p.16.

colleagues performed experiments recording the abrasive effects of different sediment classes on bone, these included: silt, sand and gravel. Using microscopic methods they observed evidence that the effect of abrasion from finer materials in saltation (the transport of particles in water flow) rounds the bone and softens its surface, while the fewer impacts made by coarser materials, such as gravel, will produce cracking.⁵⁸²

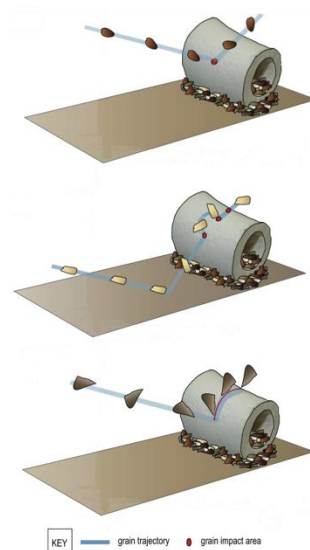


Figure 35 Reproduced from: Thompson, et al., 'Experimental abrasion of water submerged bone' *Journal of Archaeological Science* (2016) 10, p.7.: 'Variability in the way sediment impacts bone will influence its abrasive potential.'

The laboratory findings were verified against samples recovered from subaquatic contexts. Observing at microscopic level the material changes these bone samples had undergone the team were able to record the periods of immersion and forms of erosion. Their conclusions present more accurate methods for identifying 'transportation pathways' through the material makeup of specific riverbeds, and studying abrasion to calculate the length of submersion. These calculations of distance and travel are, echoing the epigraph to this section from Glissant, in their own way 'markers' of distance in the relational comprehension of violence within submerged archival process.⁵⁸³ Studying sedimentary transportation and abrasion retrieves a counter knowledge of an archival record of bone being abraded whilst scattered within the river. This informs an imaginary recovery of how the bones might exist in the present. Such an imaginary is, ironically, salvaged from the very eroding processes of pulverization and

⁵⁸² *Ibid*, see Images overleaf.

⁵⁸³ Glissant, (1997) p.188.

submergence used to obfuscate. In other words while sedimentary processes were mimetically replicated (pulverisation) and then co-opted (scattering) in the attempt to condemn these remains to oblivion, it is somewhat ironically through an understanding of the behaviour of sediments within rivers that I imagine the continuing presence of these remains.

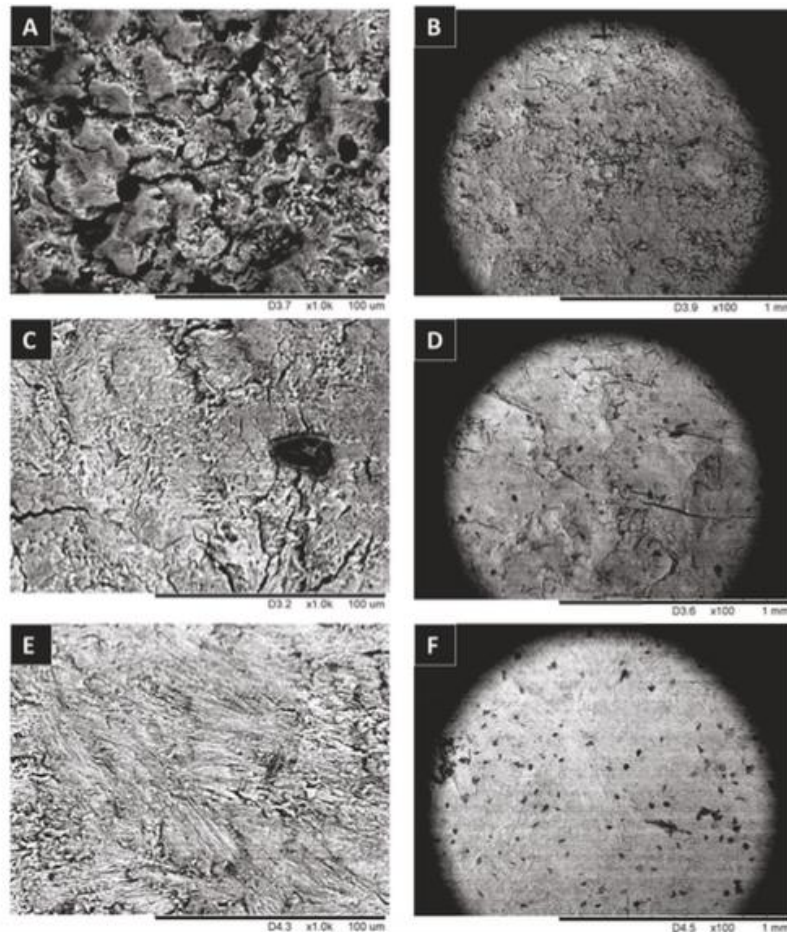


Figure 36 Reproduced from: Thompson, Tim, et al., 'Experimental abrasion of water submerged bone' *Journal of Archaeological Science* (2016) 10, p.23 'A. Cracking on proximal sheep femur imaged at x1000 magnification and B. x100 magnification. C. Cracking of sheep metatarsal imaged at x1000 magnification and D. x100 magnification. E. Bird bone surface, showing ablation in the form of smoothing at x1000 magnification. F. Minimal abrasion recorded on the surface of the bird bone at x100 magnification.'

Outside of the recovery of these remains, such a way of thinking enables the imagination of how these traces might continue to exist in fluvial processes beyond the present and in the emerging sedimentary rock of a young geology forming in the river or on its banks. In this way, the sedimentary plays with the very tense of the concept of remains, where objects at least discursively consigned to the past remain processually in the present.

Leaving the museum site and contemplating the remains beyond the contemporary moment requires a further expansion of spatio-temporal scales of perception. This mode of perception, as form of enquiry into spaces of conflict, requires a sensing that does not only look as an archaeologist but also perceives as a fluvial geomorphologist. In her own treatment of the temporality of ash Polish historian Ewa Domanska defines a new discipline emerging from archaeology, a discipline she titles archaeontology. In response to the postmodern necessity for alternative modes of history archaeontology reformulates archaeology to shift emphasis ‘from knowing to being, from epistemology to ontology.’ Domanska suggests that an archaeological perspective cannot perceive artifacts as ‘petrified products of past communities,’ instead the artifacts should be ‘perceived as agents (or ‘subjects’) having their own lives.’⁵⁸⁴ Rather than aligning my argument with Domanska’s new-materialist gesture it is important to consider, as she does, that these traces are indeed not static but in continual flux. The political rationale of the archaeontologist is to point to the consequences of contemporary actions as they unfold into the future. This prophetic methodology does not leave behind materiality, instead, it is a method that retains in its future oriented sensibility the qualities of the material itself, and the processes they might undergo.

Despite the thrust of her argument Domanska does posit a final point suggesting that human remains exist within a liminal state that protects them from the ‘all-encompassing discourses of the living’. I would dispute this by suggesting that all remains – present, absent, or absent-present – are susceptible to the material and discursive alterations of the present.⁵⁸⁵ This clarification prevents the artifact becoming de-politicised and instead acknowledges its continuing relevance, such as within the river.

⁵⁸⁴ Ewa Domanska, ‘Toward the Archaeontology of the Dead Body’, trans. by Magdalena Zapędowska, *Rethinking History*, Vol. 9 (4), 2005, pp. 389 – 413, p. 394.

⁵⁸⁵ *Ibid*, p. 407.

Field Note 2:

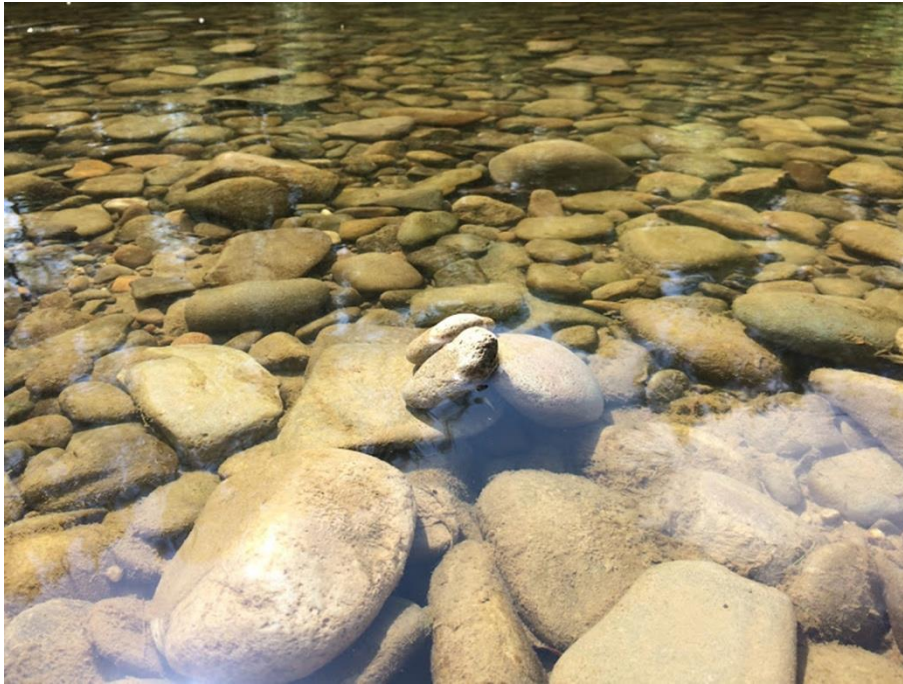


Figure 37 Pebbles placed in the Sola river at the rear of the museum (Ifor Duncan).

From its source in the foothills of the Carpathian Mountains decomposing leaves pass downstream in the Sola's nearly imperceptible June flow. I take one the stones, still covered in fine ash, forming the base of the tomb-like fire and place it into the river. I stack two smaller pebbles on top of the broader one: a funerary gesture half submerged in the shallows. The ashes lift off the flat pebble into the almost imperceptible flow of the clear water. I imagine that 70 or so years ago, out of extermination, the finest ash might have been caught in, or filtered through, the mossy web-like plants covering the pebbles and enter the mineral life of the river.

THEY ARE ALSO IN THE RIVERS

Forensic Archaeologist Caroline Sturdy Colls examines the problems that exist in locating and tracing the remains of the victims of the Holocaust, asking ‘where are the bodies?’ Two of the limitations she encounters operate from distinct socio-religious and material positions: firstly, Jewish burial laws forbid the exhumation of corpses (in Jewish law the body is required to be buried – or inhumed – in its complete state, and exhumation is strictly forbidden); secondly, the efforts, discussed above, made by the Nazi regime, in particular SS operatives, to obfuscate and erase traces of the crimes committed.⁵⁸⁶

When Sturdy Colls asks where are the bodies? She makes reference to archaeological anthropologist Richard Wright’s ‘working answer’, that they are in the ground. She states that this can be the only answer, for the different practices attempting to locate these remains, considering the social frictions and religious, ethical and material impossibilities present.⁵⁸⁷ This ‘working answer’ is supported by non-invasive archaeological research performed at sites, most notably in Sturdy Colls’s case at Treblinka. She cites other cases where changes that occur in the landscape have been deemed to be threatening to the conservation of human remains. This includes at Bełżec where bones were in danger of falling from a cliff, and at Dobrzyn Nad Wisła northwest of Warsaw where erosion revealed human remains on a riverbank.⁵⁸⁸

As explored in the previous part, it is the grounding of the dead that is, in so many cultural contexts, pivotal to the maintenance of the human dignity of the deceased. Returning to Vico’s reading of the etymological root of *humanitas* in the Latin for burial, *humando*, it is necessary to reiterate Pogue Harrison’s statement that to be ‘human means above all to bury.’⁵⁸⁹ This

⁵⁸⁶ Sturdy Colls (2016), p.169; See also Dziuban, (2017) p.271. Here Dziuban discusses how both cremation and discarding in the river were insults under ‘halakhically sanctioned mortuary ritual.’

⁵⁸⁷ Sturdy Colls, (2016) p.182. She also describes the use of magnometry for sensing the remains of cremated bodies in the ground: ‘The technique detects the evidence of burning and changes to the earth’s magnetic field.’ p.178.

⁵⁸⁸ *Ibid*, p.169. See also Michael Schudrich, ‘Jewish Law and Exhumation,’ in *Killing Sites, Research and Remembrance*, ed. International Holocaust Remembrance Alliance, (Berlin: Metropol Verlag and IHRA, 2015) pp.79-84.

⁵⁸⁹ Pogue Harrison, (2003) p. xi.

sense of *humanness* is based in land-biased epistemologies. A world formed in the constructed stability of the dry terrestrial sphere. I return to this point because it has particular relevance in relation to the conceptualisation of a necro-hydrology pursued here. Namely what is specific to fatal violence enacted in riverine conditions? Why is water weaponsied? The rehearsing of Vico's point emphasises the relation between the denial of inhumation as de-humanisation. Adam Rosenblatt, scholar of the posthumous ethics of forensic archaeology, states that it is 'nearly impossible to imagine' the dead whose ashes were scattered at Auschwitz-Birkenau or 'vaporized' at Hiroshima and Nagasaki, 'whose body is irrevocably lost,' can be attributed something like human rights.⁵⁹⁰ As Rosenblatt states the very method of extermination removed the requisite dignity of their human rights in the first place. Where the right to water, as alluded to the introduction to this thesis, 'is indispensable for leading a life in human dignity,'⁵⁹¹ water, in an albeit non-consumable form, has, by contrast, been used to deny the dignity of human rights to the dead. Perhaps this is the central point to the de-humanisation involved in necro-hydrology. To move away from a strict epistemology or hydrology based on land / water division might counteract this de-humanisation. In this way considering the bodies as still also being below attempts to point to the very possibility of a hydrologic imagination that resists such de-humanisation, and resists necro-hydrologic processes as performed by the SS.

Apart from removing incriminating remains, the denial of human rights was certainly intentional. In *Auschwitz: A Doctor's Eyewitness Account* Miklos Nyiszli, a Romanian Jewish doctor forced to work under Josef Mengele, outlines the scattering 'into the raging waters of the river'. For Nyiszli the river cannot be considered a sufficiently peaceful place for burial, 'After so much suffering and horror there was still no peace, even for the dead.'⁵⁹² If converting complete bodies into particulate matter was not enough the SS mobilised the assumption of the river's universal solvency to further dehumanise and withhold even a postmortem peace from their victims. Although Rosenblatt raises an important point regarding the intended insult to the corpse,⁵⁹³ he dismisses the possible restoration of rights to even the most ephemeral

⁵⁹⁰ Rosenblatt, (2010) p.942.

⁵⁹¹ UNESCO, 'General Comment No. 15. (2003).

⁵⁹² Miklos Nyiszli, *Auschwitz: A Doctor's Eyewitness Account* (London: Penguin Modern Classics, 2012), p.32 Privileges afforded him by this position gave him a unique perspective of the processes of the crematoria; also in Greif, (2005) p.81.

⁵⁹³ See the earlier discussion of Jason De León's concept of necroviolence. De León, (2015) p.68 - 69.

remains. Surely this is the intention of a forensic archaeologist, or even archaeontologist, whether through invasive or non-invasive methods, to not only identify but to maintain or restore what possible semblance of integrity there can be for even vaporised trace. The consideration of how these ‘irrevocably lost’ traces have entered into environmental systems, such as rivers and geology, may not restore either the body to a recognisable state or its human rights, it does allow for the consideration of these traces to still be in existence; what might be a retrieval of a processual and solvent presence from the grasps of material oblivion. This solvent presence touches on the central tension within this investigation: between a perhaps futile quantitative knowledge of how many people died and are contained in the water, or an exact measurement of the amount of bones transported by the river, and a fundamentally ontological question of the agency of water within the erasure of the traces of conflict. While I am pulled in both directions I am also content that the two are not distinct. Rather they inform one another: a scientific knowledge of water processes can be a point of departure for a somewhat paradoxical imaginary of the continuing presence within a substance intended to produce a radical absence.

Such an imaginary of trace within environmental systems is what grounds Anne Michaels’s 1997 novel *Fugitive Pieces*. The narrative concerns the rescue of a young Jewish boy, Jakob Beer, by Athos, a Greek archaeologist, paleobotanist and geologist.⁵⁹⁴ Her protagonist, Jakob, arrives at a similar questioning of the location of the dead. At the beginning of the novel he hides when his parents and sister are taken, he then escapes into the forest and buries himself in the ground:

I ran and fell, ran and fell. Then the river: so cold it felt sharp. The river was the same blackness that was inside me; only the thin membrane of my skin kept me floating. From the other bank, I watched darkness turn to purple-orange light above the town; the colour of flesh transforming to spirit. They flew up. The dead passed above me, weird haloes and arcs smothering the stars. [...] I know why we bury our dead and mark the place with stone, with the heaviest, most permanent thing we can think of: because the dead are everywhere but the ground. I stayed where I was. Clammy and cold, stuck to the ground. I begged: if I can’t rise, then let me sink, sink into the forest floor like a seal into wax.⁵⁹⁵

In this mournful scene the young boy’s experience is channeled through relationality with the material world around him – merely the ‘thin *membrane* of this skin’ keeping him alive. Here

⁵⁹⁴ Here I consider a fictional treatment of Holocaust remains as an entry point into the possible ways these traces can be imagined within ephemeral, particulate, and processual frames.

⁵⁹⁵ Anne Michaels, *Fugitive Pieces* (London: Bloomsbury, 1997) p.7.

the dead are categorically not in the ground at all, they have, in the young boy's mind, transcended the corporeal state and it is only the geologic object of the tombstone, which anchors them to the ground. Here, as in a river, the dead are similarly no longer in the ground but, unlike in the river, Michaels's dead have further exceeded the comprehensible and entered the spirit realm. For Jakob the transformation of the body into the materiality of smoke can only be explained through the religious analogies of angels – haloes and flying – and transcendental reference to the cosmos. The theological device used by Michaels to follow the body into its state of becoming 'missing' speaks to what Domanska calls the mysterious 'power of absence.'⁵⁹⁶ Nevertheless, from within this language can be retrieved the material dispersal and remaining of these traces.

With Wright's question still at the forefront of my mind, what occurs when the remains are not in, never were in, or were removed long ago from the ground?⁵⁹⁷ What if they are also in other mediums, most notably in water? The answer to the question posed here is not just 'They are in the ground' but that *they are also in the rivers*.

The submerged implications of such an assertion became a source of debate in early 2019 in the case of a search within the Danube, near Budapest, by ZAKA, a Jewish international rescue organisation, to recover the remains of as many as 80,000 people murdered along the banks. ZAKA used sonar to scan the riverbed in the attempt to return a sense of "dignity" to the dead who had been denied inhumation. The search, however, was opposed by the head Rabbi of Budapest who considered it more respectful to leave the remains where they are, especially within the context of the present political condition of Hungary.⁵⁹⁸ While it is not my aim to discuss the interpretation of Halakha laws at length the case throws up interesting questions regarding the ethical and political context of the present not just in the search for buried remains but also regarding those long submerged. Despite the theological specificity of inhumation (which calls for the immediate recovery and burial of submerged bodies) perhaps it is more respectful to leave the dead submerged but located after so many years.

Within a mobile fluvial archive of the Soła and Wisła the ashes offer another form of knowing,

⁵⁹⁶ Domanska, (2005) p.406.

⁵⁹⁸ Jeremy Sharon, 'Top Budapest Rabbi Opposes Recovery of Remains form Danube,' *The Jewish Post* (22nd of January 2019) available at: <https://www.jpost.com/Diaspora/Rabbi-of-Budapests-Great-Synagogue-opposes-recovery-of-remains-from-Danube-578286> (accessed January 2019).

another mode for questioning where the remains are. Rather than being resigned to material oblivion their trace exists in processes of deposition and sedimentation and, in this way, they encounter even in the smallest dispersed amounts the geomorphology of the rivers. Returning to *Fugitive Pieces*, Jakob's rescuer, Athos, is working at the submerged Biskupin archaeological site in Poland. Whilst in hiding the boy receives classes from his rescuer and, where all else is impossible, Jakob finds solace in geology. Michaels's character Jakob recollects,

I stared at fossil plants called crinoids that looked like the night sky etched on rock. Athos said: Sometimes I can't look you in the eye; you're like a building that's been burned out inside, with the outer walls left standing." [...] To go back a year or two was impossible, absurd. To go back millennia – ah! That was nothing.⁵⁹⁹

Looking at the abraded and cratered landscapes of bone resulting from Thompson's experiment (figure 36) present their own image of temporal and spatial persistence. Michaels's novel is an important contribution to the scales of these events. Memory scholar Robert Eaglestone describes the recurrence of geology in the novel as a distinct trope of Marianne Hirsch's concept of postmemory – regarding the inheritance of memory by second and third generations through family environment and mediation.⁶⁰⁰ Eaglestone's reference to postmemory is applied as 'a powerful and very particular form of memory precisely because its connection to its object or source is mediated not through recollection but through an imaginative investment and creation.'⁶⁰¹ Despite the denial of both objects and experience, Michaels's character meditates on the encoding of memory in air currents and river sediments and when recent memory becomes impossible recourse is made to the dual scalar extremes of the molecular, and deep temporalities.⁶⁰² This is geology as mediation as a radical form of postmemory.⁶⁰³ The imaginary I pursue here is tied to the archival possibilities of the formation of a real geology along the riverbed. It is in the imagination that such incomprehensibilities shift and fold and

⁵⁹⁹ Michaels, (1997) p.29.

⁶⁰⁰ Robert Eaglestone, *The Holocaust and the Postmodern* (Oxford: Oxford University Press), p.117.

⁶⁰¹ Marianne Hirsch, *Family, Frames: Photographs, Narrative and Postmemory* (London: Harvard University press, 1997), p.22.

⁶⁰² Michaels, (1997) p.52.

⁶⁰³ If I were to self analyse the intentions of this chapter, the centrality of the river and the geologic expression is itself a future oriented imaginative mediation of a past that I have inherited as a present-absence.

likewise through the imagination, confronted by a deep geologic future, that I, nevertheless, make recourse to ashes and to the rivers.

'EXAQUA'

The most important epistemological and ontological tools for watery archives come from study of the Middle Passage. In her article 'Blue History' Jessica Lehman, political geographer of oceanic space, presents her own tools for studying the subaqueous history of the Middle Passage where the Atlantic is the archive of a vast site of violence. For Lehman the ship-wrecks of slave ships, such as the fate of the Dutch East India Company ship *Leusden* in 1738, produce an 'oceanic method for narrating history' through:

loss, wreck, violence, and waste rather than the smooth ascendancy of imperial knowledge and power. [...] In this perhaps unlikely resonance of scientific and postcolonial thought, there emerges what I call the ocean archive: a record of life on Earth, formed and filtered through marine dynamics, and only available to us in partial and unpredictable ways.⁶⁰⁴

Even the partiality and unpredictability of these marine dynamics offer an important field of knowledge for understanding how traces of violence exist in watery environments. The unpredictable availability of Lehman's 'ocean archive' in many ways depends on its structure, with its content determined by the physical filtering of the aquatic archive.⁶⁰⁵

Poet M. NourbeSe Philip forcefully addresses the continuing presence of the dead within the salt water of the ocean. Her cycle of poems *Zong!* reverberates with the continuing trauma of the slaves thrown overboard from the slave ship *Zong* in 1781. Artist and theorist of the Black Atlantis Ayesha Hameed also addresses these lost lives as inextricably entangled with the history of maritime insurance and its role in calculations of the value of black life.⁶⁰⁶ Philip asks a potent question of subaqueous remains: "What is the word for bringing bodies back from water? From a 'liquid grave'? [...] The gravestone or tombstone marks the spot of internment,

⁶⁰⁴ Jessica Lehman, 'Blue History', *The New Inquiry* (6 February 2017) available at: <https://thenewinquiry.com/blue-history/> (accessed January 2018).

⁶⁰⁵ For the relationship between archival structure and its contents see: Jacques Derrida, *Archive Fever: A Freudian Impression*. Trans. by Eric Prenowitz (Chicago IL: University of Chicago Press, 1996), p.17.

⁶⁰⁶ See Ayesha Hameed's 'Black Atlantis: Three Songs', in *Forensis: The Architecture of Public Truth*, (Berlin: Sternberg, 2014) p.712-713.

whether of ashes or the body. What marks the spot of subaquatic death?’’⁶⁰⁷ With no word in existence to truly encompass the concept, Philip coins the term ‘*exaqua*’ – the specifically aquatic equivalent of exhumation. Despite the assumption that there could be no retrieval, Philip, nevertheless, aligns herself with the sentiments of forensic archaeologist Clea Koff, who like so many, ‘want[s] the bones’ even after so many years. For Philip the *Zong!* symbolises the hauntological operation where the ‘undead make themselves present’⁶⁰⁸ an entrance into oceanic memory, into:

salt water. Sea water. And, as the ocean appears to be the same yet is constantly in motion, affected by tidal movements, so too this memory appears stationary yet is shifting always. Repetition drives the event and the memory simultaneously, becoming a haunting, becoming spectral in its nature.⁶⁰⁹

Over time, and with decomposition, the watery archive resists the possibility of *exaqua*-tion in a physical way, and with repetition mourning persists with the hope for affective or emotional *exqua*. Into the fluvial archive I follow a similar impulse for clarity, not to exhume, or *exaqua*, *per se* but to pursue a hydrological knowledge of these remains through the perhaps irresolvable conditions of the river current. And, thus, achieve an *exaqua* of the imaginary.

Such a sense of submerged remaining benefits from black studies scholar Christina Sharpe’s careful rendering of ‘residence time’ in her book *In the Wake: on Blackness and Being*. Referring to Philip’s poem, Sharpe reaches the similar conclusion that ‘there is no retrieving bone from its watery wake. [...] There are [...] no bones to recover.’ Sharpe leads her reader through the processes of a bodies *inaquation* to calculate how long the body would take to sink, and for how long any remains might exist.⁶¹⁰ This includes, the few short days with which it takes benthic organisms to pick whale corpses clean. Finally, with the help of Anne Gradulski, a professor of Stratigraphy and Sedimentology at Tufts University’s Department of Earth and Ocean Sciences, Sharpe comes to the conclusion that it is unlikely that a body thrown from a ship would make it to the sea floor intact. In words that are similar to Richard Wright and

⁶⁰⁷ NourbeSe Philip, *Zong!* (Middletown CT: Wesleyan University Press, 2008), p.201. See also Sharpe, (2016) p.38.

⁶⁰⁸ Philip, (2008) p.202.

⁶⁰⁹ Philip, (2008) p.201.

⁶¹⁰ For further discussion of this multi-species oceanic violence see Marcus Rediker, ‘History from Below the water line: Sharks and the Atlantic Slave Trade’ *Atlantic Studies* (2008) 5:2, pp.285-297.

Caroline Sturdy Colls, Sharpe asks Gradulski, ‘What happened to the bodies?’, but here she adds the subaqueous specificity: ‘By which I mean, what happened to the components of their bodies in salt water?’ Sharpe recounts Gradulski’s answer that through the nutrient cycles of the ocean the atoms of these bodies still exist today.⁶¹¹

Sharpe explores this continuing existence through her method of *wake work* and the analysis of ‘residence time’ borrowed from fluid dynamics, recounting Anne Gradulski’s definition:

“Nobody dies of old age in the ocean.” The amount of time it takes for a substance to enter the ocean and then leave the ocean is called residence time. Human blood is salty, and sodium, Gradulski tells me, has a residence time of 260 million years. And what happens to the energy that is produced in the waters? It continues cycling like atoms in residence time. We, Black people, exist in the residence time of the wake [...].⁶¹²

For Sharpe the wake of the Middle Passage continues for black life into the present. Here the search for traces enters the ocean’s nutrient cycle through the slow breaking down into the particulate but also temporally into the present and extending into deep time. This in some way achieves a partial *exqua*-ation from oblivion through an imaginary informed by submerged process.

Perhaps Sharpe and Gradulski’s evocation of residence time can provide a cautious precedence for the pursuit of riverine traces in the distinct context of the Soła and Wisła. It must, however, not be assumed that the conditions can be directly compared, they are fundamentally different, and yet Sharpe’s work can certainly provide clues for an entry point into the riverine site. Rivers and oceans do not operate in the same ways, just as the ashes, partially broken down by the crematoria and the grinding of bones, are of course in a different material state to the throwing of entire bodies overboard. The pulverization itself would contribute to the acceleration of residence time of the calcinated bone and ashes dissolving or suspended in the current of the river and carried downstream. The different sizes of this organic matter – CPOM, FPOM, DOM⁶¹³ – are distinct as they enter the water and are processed differently. The residence time of the ocean is a vast system of currents and organisms dwarfing that of a river.

⁶¹¹ Ayesha Hameed addresses a similar possibility of a persisting presence in the decay of the living into a fossil. Ayesha Hameed, ‘Black Atlantis: Three Songs’, p.712-717.

⁶¹² Sharpe, (2016) p.41.

⁶¹³ Thompson, et al., ‘Experimental abrasion of water submerged bone’ *Journal of Archaeological Science* (2016) 10, p.7.

The residence time of a river on the other hand is the length of time a water particle, and the biogeochemical contents of rivers, take to be transported to the mouth and into a further body of water, be it lake, sea, or ocean.⁶¹⁴ The traces possibly transported to the Baltic might enter a far greater time period, while the bones enter the river's sediments. Through this transportation the solvency of trace reverberates into both the present and future. And it is, thus, into the present waters of the Wisła that I turn next.

⁶¹⁴ This is specifically in-stream residence time. Worrall, Fred, and Howden, N.J.K, and Burt, T.P., 'A method of estimating in-stream residence time of water in rivers,' *Journal of Hydrology* (2014) 512, pp. 274-284.; Elsewhere, transit time refers to the length of time water is contained within a river catchment and thus the amount of time solutes are retained within a river's biogeochemical cycle. This may well be a more relevant term in relation to contents of the rivers in question here. See Kevin McGuire & Jeffrey McDonnell, 'A Review and Evaluation of Catchment Transit Time Modelling,' *Journal of Hydrology* (2006) 330, pp.543-563.

Field Note: 3



Figure 38 An oxbow of the Wisła 2km from the rear of Birkenau. (Ifor Duncan).

Walking along a fisherman's path I first approach the Wisła. As the sun reaches the fullness of its June height the path narrows with dense grasses and nettles, from which rise a flight of almost black damselflies. Where the path ends at what I think is the river, I step into the remnants of another small fisherman's fire, this time scorched into the grass. On each occasion that I meet with the rivers I come across ashes: on scorched pebbles, and scorched earth. Are they actually fisherman's fires or strange votive offerings? I can only project onto the site the unsettling coincidence of these other ashes and the history of these waters. Removing my foot from its imprint in the fire, the placid damselflies are quickly replaced by the bites of mosquitoes emerging from what I will find is not the river itself but the still oxbow of an isolated meander formed by the Wisła's shifting course.

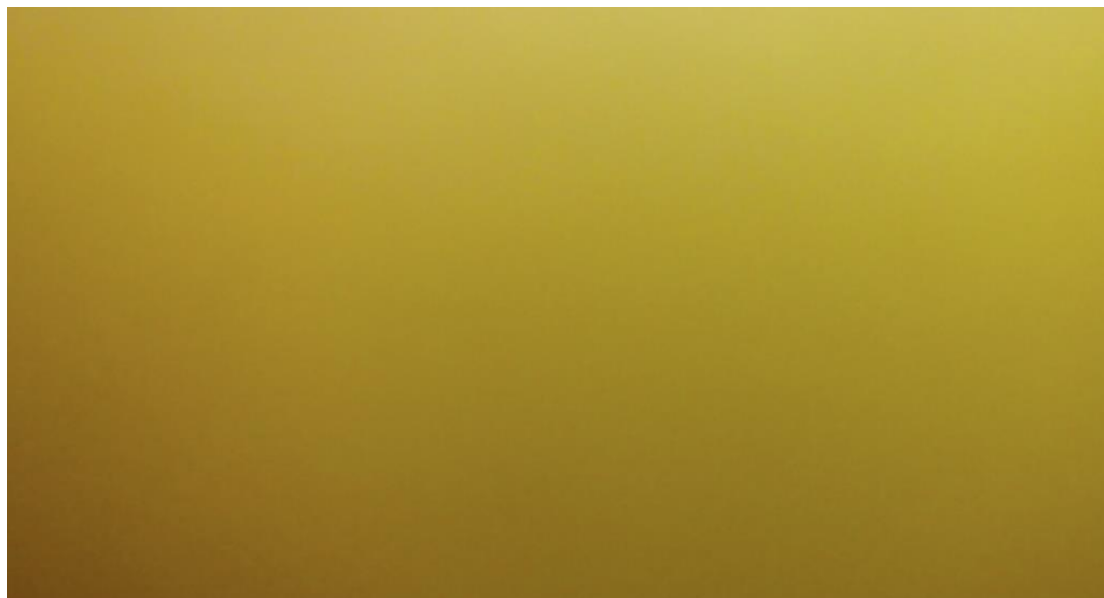
HEAVY RIVERS

Figure 39 Image taken in the Wisła below the confluence with the Soła and Przemsza rivers (Ifor Duncan).

At the fringes of the 2018 *COP24 Climate Summit* in Katowice, capital of Silesia, Poland's major coalmining region, trade union *Solidarność* (Solidarity) and US climate denial group *Heartland*, released a statement rejecting IPCC warnings of imminent climate catastrophe.⁶¹⁵ The sparsely attended event in the centre of Katowice, just an hour drive north of Oświęcim, was an unambiguous attempt to repudiate threats to the region's mining future and associated employment prospects.⁶¹⁶ In recent years, however, evidence has emerged of the local impacts of anthropogenic climate change, in particular the unprecedentedly low summer river-levels consistent with trends of drought conditions in Poland's already heavily polluted rivers.⁶¹⁷ Contrary to *Solidarność*'s statement these droughts represent the return of the impacts of changing planetary systems to the localities where carbon-emitting resources are mined. The

⁶¹⁵ Solidarity and Heartland.org, 'Joint Declaration Between Solidarity and The Heartland Institute,' available at: <https://www.heartland.org/template-assets/documents/Solidarity%20Heartland%20Communique%202018%20COP24.pdf> (Accessed December, 2018).

⁶¹⁶ Chloé Farand, 'Polish Trade Union Solidarity Rejects Climate Science Consensus,' *Climate Home News*, <http://www.climatechangenews.com/2018/12/06/polish-trade-union-solidarity-rejects-climate-science-consensus/> (Accessed December, 2018).

⁶¹⁷ Somorowska, (2016).; For pollutants see: Kowalkowski et al., (2007) p.424.

following section explores the confluence of culturally sensitive bones and ashes alongside anthropogenic pollutants, pesticides, and industrial waste. Such imbrications demonstrate how rivers have long been used to conceal a confluent politics of incriminating trace and / or polluting materials.

I adapt 'heavy rivers' from postcolonial literary scholar Elizabeth DeLoughrey's positing of the concept 'heavy waters.' She employs it as an analytical tool to explore the overlaps of the cultural and material contents of the Atlantic. These 'heavy waters' precipitate from Modernity's multiple violent practices against human bodies and towards environments.⁶¹⁸ DeLoughrey states that 'The Latin *vastus* signifies the ocean as well as waste.' It is thus a space of such unimaginable scale and solubility to safely consume near infinite radioactive materials.⁶¹⁹ Although the ocean is 'understood as external to human experience', symbolic of the nature culture divide, the relationality that all living beings share with and through water is evidenced by the increasing bodily presence of heavy metals and industrial and radioactive waste derived from the ocean.⁶²⁰

Peter van Wyck examines a similar sentiment in his chorography of the Lachine industrial canal on the St Lawrence river, Canada. Here the abundant life of the water exists alongside traces of the history of multiple industries recorded in its sediment. Van Wyck challenges his reader to:

think all of this history in the "now." The real of the sediments, of course, makes this somewhat easier to accomplish. [...] Dispersion or containment (that is, spatialization or localization) – these are modes proper to toxic materials. The passage of time here indexes only to memory and forgetting.⁶²¹

⁶¹⁸ Elizabeth DeLoughrey, 'Heavy Waters: Waste and Atlantic Modernity,' *PMLA*, (2010) 125(3), pp. 703-712; She in turn adapts the phrase from a genealogy of use from Edgar Allan Poe through to Gaston Bachelard. See Bachelard, *Water and Dreams* (1982 [1942]) pp.45-71.

⁶¹⁹ DeLoughrey, (2010), p.707; Steinberg describes the othering of the ocean as the construction of a 'vast void [...] beyond social relations.' Steinberg, (2001) p.113.

⁶²⁰ DeLoughrey calls this 'metallic modernity.' Built on the iron used both as shackles and for the weapons, tools and ships that constructed the middle passage this modernity continues in the density of metallic pollutants found in the ocean and in human bodies.; Elsewhere, anthropologist of deep sea oceanography Stefan Helmreich attempts to avoid separating the meaning and the materiality of seawater as he sees the maintenance of such a division as perpetuating the division of a 'preanalytic nature-culture'. I agree with Helmreich that similarly rivers should not be spaces in which such division is made, and instead these imbrications should be explored. Helmreich, 'Nature/Culture/Seawater', *American Anthropologist* (2011) 113:1, pp.132-144, p.135-138.

⁶²¹ Van Wyck, (2013), p.268.

Human memory of the harmful contents of the canal become subject to erosion and dilution due to the passage of time since the end of industrial practice. The lives of those who had lived alongside the canal can be read through, and as an encounter with, the sediments of contamination; or, in van Wyck's words, as 'a strange and wonderful polyphony of industry and water, and history and time, and progress and struggle and change.'⁶²² Within this polyphony, however, are dormant and potentially damaging remains – the latent threat posed by the sediments of Modernity.⁶²³ Rivers are often the conduits of sediments washed from the land into the sink of the ocean.⁶²⁴ As explored in both *Fluvial Frontier*, and *Fluvial Terror*, rivers are abused as routes for states, corporations and other bodies to deterritorialise unwanted materials such as heavy metals and pollutants, but also the traces of humanitarian violence.

Navigating the confluent histories of ecological degradation and human violence in the Wisła, Soła and Przemsza similarly reveals the heavy histories and futurities of riverine sites, including the increasing frequency and severity of droughts.⁶²⁵ Likewise navigating the changes occurring in pollution levels, particularly high throughout this period in the upper Wisła catchment, reveals Poland's own *heavy rivers*. As with many major waterways the Wisła is of commercial importance. Much of the major metal pollutants entering Poland's rivers are found in the relatively small but heavily industrialised distance between the Wisła's source and the historic city of Kraków – 60 km downstream of Oświęcim.⁶²⁶ Heavy industry, especially the coalmines of southern Poland, introduce 9,000 tons of sulphates and chlorides per day.⁶²⁷ Similarly water flowing through 60% and 80% of river segments in Poland far exceed the

⁶²² The Lachine canal itself was necessary to transform both military and commercial logistics in the early nineteenth century around the impassible St Lawrence river rapids. This streamlined trade between 'Upper and Lower Canada'. The canal subsequently became industrialised and deposited with pollutants. This space is decisively shaped by water: was transformed by the canal and consequently transformed the shape of 19th century Canada. *Ibid*, p.270.

⁶²³ Astrida Neimanis, 'Fathoming chemical weapons in the Gotland Deep,' *Cultural Geographies in Practice* (2017) 24:4, pp. 631- 638.

⁶²⁴ Pivotal stratigraphers of the Anthropocene epoch, Jan Zalasiewicz and Mark Williams identify the ocean as central to the material accumulation of geology – a non-human form of archiving. Zalasiewicz and Williams, 'The Anthropocene Ocean in Its Deep Time Context', *The World Ocean in Globalisation*, Davor Vidas and Peter Johan Schei (eds), (Leiden/Boston: Martinus Nijhoff Publishers/Brill, 2011), pp. 19–35., p.22.

⁶²⁵ Somorowska, (2016).

⁶²⁶ Kowalkowski et al., (2007) p.424.

⁶²⁷ *Ibid*. p.421.

respective standards for bacteria and chemical contamination. The occurrence of non-point pollution such as run off and the river's erosion of fields introduces artificial fertilizers, herbicides and pesticides.⁶²⁸ In response to these dangerous levels of pollution and threat to river health, groups such as Siostry Rzeki (Sisters of the River) have emerged as river defenders to raise awareness and protect the river.⁶²⁹ To achieve a critical proximity with the rivers they employ methods of submergence, swimming in the river, and protesting in the water despite its high levels of pollution.⁶³⁰

The pollution stretches back through the Communist period to before the war.⁶³¹ Opinions are split regarding the river's status. Some consider the Wisła to be a natural river, covered by the Natura 2000 European Commission agreement to protect river health and prevent hydropower interventions. Others, however, consider it to be a degraded river.⁶³² The divergence of opinion reflects the conflicts of interests that are always involved in the confluent politics of rivers. The most polluted segments of the river incorporate sections beside the Auschwitz-Birkenau complex and to the concentration of heavy industry carried by the confluence of the three rivers. The history of pollution also includes what was the major IG Farben chemical and "Buna" rubber works at sub-camp III-Monowitz.⁶³³ Now operating under the company Chemoservis-Dwory SA it remains a large-scale factory concerned with the repair and maintenance of machinery used in the chemical industry. As recently as 2005 it was the 164th largest company in Poland, and has long been a major employer in the town.⁶³⁴

⁶²⁸ *Ibid.* p.422.; Urzszula Dmitruk et al., 'Persistent Organic Poluutants (POPs) in Bottom Sediments of the Vistula River, Poland,' *Clean: Soil Air Water* (2008) 36:2, pp. 222-229.

⁶²⁹ Siostry Rzeki, available at: <https://siostryrzeki.wordpress.com/> [accessed March 2019].

⁶³⁰ Regarding my own caution in relation to submergence in the rivers that form my case studies, the practices of Siostry Rzeki do not directly address the historical contents of the river that my research does, and so I do not transpose my concerns onto their practice.

⁶³¹ Regina Taylor and Teresa Bogacka, 'Transport of pesticides to the Sea by the Vistula River', *Oceanology*, (1979) 11 pp.129-138.

⁶³² Majewski, (2018); Such differentiation reflects what Stephanie Lavau identifies as the 'ontological multiplicity' of water management. Multiple divergent approaches to the condition of any river is, for Lavau, the result of the ambiguities of such multiplicity. Lavau, (2013) p. 423.

⁶³³ It was the IG Farben subsidiary Degesch who produced the pesticide Hydrogen Cyanide, named Zyklon B, used in the gas chambers.

⁶³⁴ Alison Stenning et al., 'A Tale of Two Institutions: Shaping Oświęcim-Auschwitz,' *Geoforum* (2008) 39, pp. 401-413, p.409; Stenning and her colleagues have sociologically analysed how the town of Oświęcim has been shaped by the relationship between the museum and the factory since World War II. Their study incorporates the years of the Polish People's Republic, and up until Poland's entry into the European Union.

Returning to the *15 thousand cubic meters of water an hour* identified as necessary to remove wastewater from the Buna rubber plant, with which I introduced this case in the *Tributaries* of this thesis.⁶³⁵ Dr Otto Ambros also stated that because the site was between 14 and 23 meters above the river's level it was safe from flooding.⁶³⁶ Farben were conscious of water as a relationally multidirectional substance, necessary to remove waste but likewise aware of the threat posed by the river when it breaks its banks and encroaches on the industrial plant. Elsewhere, the SS were concerned with the extermination machine's own relational impact on groundwater. They feared that the number of bodies buried in the site might pollute the local water table and contribute to risks of disease for both the local Polish and German population. In response to these concerns the regional infrastructure was mobilised to identify where best to place a wastewater plant.⁶³⁷ This fear contributed to the decision to move from burial to SS commander Paul Blobel's model of cremation developed at Chelmno during Sonderaktion 1005. Blobel developed a process whereby the dead were also reduced to ash and scattered into the local river.⁶³⁸ Echoing the industrial instrumentalisation of the river the extermination machine adopted its own water management of genocide.

Water resources were a crucial component within almost all aspects of the Auschwitz complex. Beyond extermination the camp would become a model agricultural project for the wider eastern colonial expansion.⁶³⁹ Because the area surrounding the confluence regularly floods, and would not naturally drain easily, for agriculture to succeed the saturated earth would need to be drained. In 1941 a soil scientist was enlisted to produce a report. This suggested the need for 'major hydrological improvements of the Vistula and the Sola to prevent flooding, [...]

⁶³⁵ He also indicated that the plant needs 1 million tonnes of coal. The testimony of defendant Dr Otto Ambros. Nuernburg Military Tribunals, "The Farben Case", *Trials of War Criminals*, vol. 8 (Washington DC: Government Printing Office, 1952), p.735.

⁶³⁶ Dwork and Jan Van Pelt, (1996) p.190.

⁶³⁷ Mary Fulbrook, *Dissonant Lives: Generations and Violence Through the German Dictatorships* (Oxford: Oxford University Press, 2011), p.210.; There is a water treatment plant next to Crematoria III at Birkenau.

⁶³⁸ At Chelmno ashes were thrown into the Narew river; Didi-Huberman, (2017) p.99. This adds further weight to the opening scene of Claude Lanzmann's film *Shoah* where survivor Simon Srebnik sings aboard a boat, as he had done while he was an inmate, sailing down the Warta river near to the camp. This is one of the defining scenes of Holocaust cinema as well as of the relation between water and Holocaust memory. Claude Lanzmann & Ziva Postec, *Shoah* (Paris: Les Films Aleph, 2003).

⁶³⁹ Dwork and Jan Van Pelt, (1996) p.190.

cleaning up existing drainage channels and digging new ones, and laying a massive network of 3.6 million drainage pipes in 3,000 acres of future farmland.⁶⁴⁰



Figure 40 Inmates digging a drainage ditch, Auschwitz, 1943. Auschwitz-Birkenau State Museum, neg. 20995/346. (see also: Debórah Dwork, & Jan van Pelt, Robert, *Auschwitz* (1996) p. 193).

By early 1942 work had begun with tens of thousands of labourers, predominantly women, forced to dig the drainage ditches, or working, as survivor Hannah Kent-Sztarkman described, standing in the icy water maintaining the banks of the Wisła.⁶⁴¹ Through this forced labour maintaining the shape of the rivers – to prevent flooding – the courses themselves become embanked by a history of submerged and embodied labour. Thus, the rivers themselves are violently shaped by the presence of the camps whilst simultaneously being used to discard the remains of genocide. At the level of physical infrastructural intervention the history of Auschwitz-Birkenau is also a riverine history. Between these hydrological interventions and its mobilisation as technology of obfuscation the Wisła, even at the most trace level, is an artifact of a necro-hydrological infrastructure.

Returning to the ethical consideration I addressed in section III.ii, *They Are Also In The Rivers*, the absent presence of the solvent archive of these rivers imparts a further ethical consideration

⁶⁴⁰ *Ibid*, p.191.

⁶⁴¹ *Ibid*, p.195.

regarding the encounter between submerged legacies of forced labour, and corporeal trace, with present environmental degradation. If submerged remains are materially present, beyond a speculative imaginary, how might they be best handled? One way to attain dignity for the dead, as Rosenblatt explores, might be through conserving the river itself. As the camps are managed along strict conservation guidelines, although not in all cases, perhaps consideration might be made for the rivers themselves? Particularly in the case of rivers which are themselves undergoing processes of environmental degradation and major infrastructure.

OTHER PLACES

Elsewhere, the relational politics of these traces have raised further questions concerning the latent return of waterborne materials. In this final subsection I consider the aesthetics of the ephemeral material trace: both the clandestine images and testimonies emerging from the camps but also subsequent efforts to document airborne and solvent particles. This shift into a representational register responds to attempts made both by those caught within the events, trying to resist the reductive processes of obfuscation, and contemporary efforts to sense the environment as organic and turbulent archival order. These aesthetic interventions attempt, in their own ways, to represent the encoding of trace within the environment.⁶⁴²

To explore this latent presence of trace in the world it is important to address one of the most haunting documents produced by the Sonderkommando. In Didi-Huberman's book *Images in Spite of All*, he considers the photographs secretly taken of the processes of the crematoria by the anonymous Sonderkommando photographer whom he names 'Alex'. The photographs are perhaps the closest evidentiary document of the extermination process itself, capturing the arrival of nude figures driven towards their deaths, as well as the burning of corpses (Figure 41). In his analysis of the images Didi-Huberman states that we cannot hide behind the unimaginable, or unbelievable, but must continue looking.⁶⁴³ The images emerged from the bind Giorgio Agamben discerns as the impulse to bear witness from the very position of its impossibility. In Agamben's understanding this impulse fundamentally changes the efficacy of

⁶⁴² Leslie, (2005) p.191.

⁶⁴³ Didi-Huberman, (2008) p.19.

testimony: ‘it makes it necessary to look for its meaning in an unexpected area’.⁶⁴⁴ Agamben conceives of the unexpected area as the indiscernible non-language emerging from the lacuna.⁶⁴⁵ In the case of the recovered texts and the photographs the Sonderkommando offered their own linguistic and non-linguistic testimonies.



Figure 41 Photograph taken by an anonymous member of the Sonderkommando. Reproduced in Georges Didi-Huberman, *Images In spite of All*, 2008.

In addition to the photograph smuggled out of the camp the Sonderkommando tried to break the closed circuit they existed within by hiding evidentiary objects such as teeth, and written testimony. Zalman Gradowski, murdered in 1944 during the Sonderkommando uprising, considered it his final duty to provide testimony and, along with others, he buried writings in vessels amongst the ashes, ‘assuming that would be the safest place, where *they* could certainly dig in order to find traces of the millions who were killed.’⁶⁴⁶

⁶⁴⁴ Giorgio Agamben, *Remnants of Auschwitz: The Witness and the Archive*, trans. by Daniel Heller-Roazen (Cambridge MA: MIT press, 1999) p.34.

⁶⁴⁵ Specifically the child Hubrinek that Primo Levi accounts for in his essay ‘On Obscure Writing.’ Agamben, (1999) p.36-9.

⁶⁴⁶ Emphasis own.

Through the burial of written diaries and accounts within the ashes the Sonderkommando produced lasting textual and material evidence. Here, written within the atrocity of the camp Gradowski's reference to the 'they' who dig indicates a proleptic awareness of the necessity to leave traces and testimony for 'the days of peace in the future'. With these words Gradowski calls into existence a future archaeologist and future audience.⁶⁴⁷ Despite the absence of any hope of survival, these members of the Sonderkommando retained an optimism that the terror would come to an end, even if they would not experience it. Gradowski is not alone in this. Zalman Lewenthal, for example, who also perished in the uprising, also buried his manuscript in the camp. He expressed a similar sentiment:

But who kno[ws] if the rese[ar]chers will achieve // true research, will anyone be able --- // --- from human ashes – in other places --- // search well, you will find much.⁶⁴⁸

The damage to these buried documents, indicated by Ber Mark with the “---” symbol, is evidence, in its own right, of the conditions in which they were written and hidden. Here the written text survives the author but only in partial form. It is itself physically altered by exposure to the wetness of the ground of the camp.⁶⁴⁹ It is somehow appropriate that Lewenthal's very words speculating on the possibility of a survivor and future reader are themselves punctuated by the lacuna produced by the very watery material conditions of the camp – themselves utilised to erase all traces of his existence.

⁶⁴⁷ For equivalent testimony from Treblinka read Abraham Goldfarb's testimony: 'if one day someone looked for the traces of the Nazis' crimes, they could indeed be found', in Y. Arad, *Belzec, Sobibor and Treblinka: The Operation Reinhard Death Camps* (Bloomington and Indianapolis: Indiana UP, 1999) p.176] This is also quoted by Caroline Sturdy Colls, (2016) p.163.

⁶⁴⁸ Mark, (1985) p.23-4.

⁶⁴⁹ Chare & Williams, (2006) p.43. Chare and Williams consider the pages of the texts to contain dust, to be 'stained by the dead', and to 'bear physical trace' of the murders the texts themselves describe. This echoes Susan Schuppli's thesis of the 'event of evidence' where the medium of recording bears physical traces of the very events recorded. *Material Witness* (Cambridge MA,: MIT Press, forthcoming 2020).

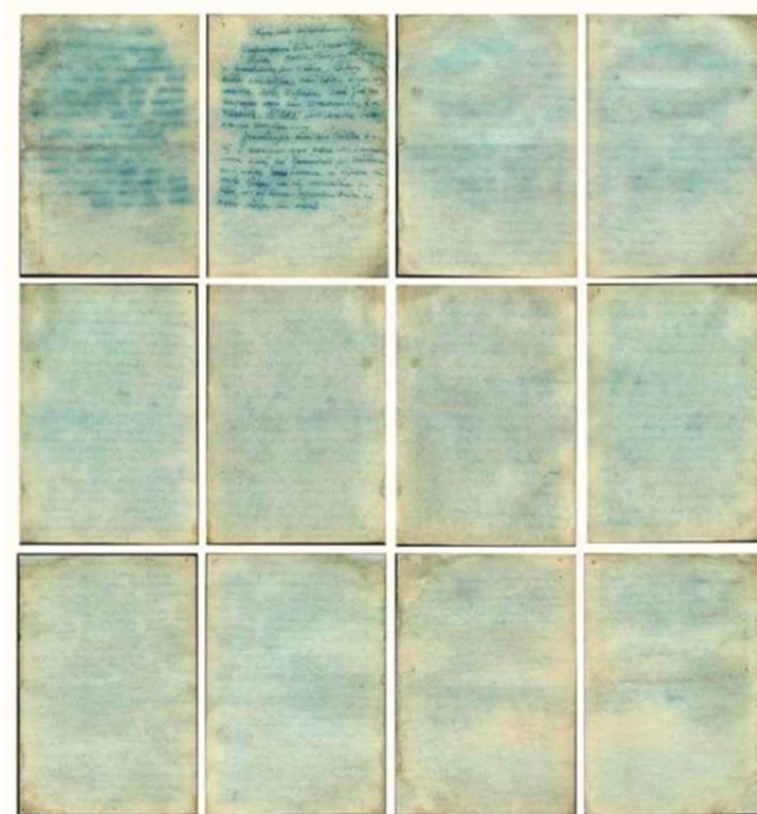


Figure 42 Pavel Polian, 'Das Ungelesene lesen: Die Aufzeichnungen von Marcel Nadjari, Mitglied des jüdischen Sonderkommandos von Auschwitz-Birkenau, und ihre Erschließung,' *Vierteljahrshefte für Zeitgeschichte*, (2014) 65:4, pp. 597–619.

The above text is the water-damaged testimony of another survivor Marcel Nadjari, a Greek-Jewish man who became a Sonderkommando in 1944. His testimony was discovered in a flask buried within the camp in 1980, ten years after his own death. The blurring of the words visualises the threat water poses to the textual archive. Using only photoshop, Pavel Polian and Aleksandr Nikitjaev have remarkably made the text decipherable. In a strange feedback loop of water's *anarchival* qualities, from the lacuna of the water-damaged sheets, a textual description of the discarding of trace into water re-emerges, as Nadjari wrote:

A person produced only about half an okka (640 grams) of ashes, bones that the Germans forced us to crush, to then press through a coarse sieve, and then a car picked it up and poured it into the Vistula River (actually the River Sola), which flows by in the area and thus they eliminate all traces. [...] ⁶⁵⁰

⁶⁵⁰ Tristan Hopper, 'How could I burn fellow believers?' Read a real-time account of the Auschwitz gas chambers, hidden for more than 70 years' National Post (19 October 2017) available at: <https://nationalpost.com/news/world/how-could-i-burn-fellow-believers-read-a-real-time-account-of-the-auschwitz-gas-chambers-hidden-for-more-than-70-years> (accessed June 2019).

The words retrieved from the blurred sheets – language retrieved from lacuna – provides an example of what Lewenthal, above, refers to as the need to search ‘human ashes – in other places.’ These words are salvaged from Lewenthal’s text as an odd variation on Derrida’s ‘writing under erasure’ whereby, in the act of writing, the author’s place their texts within the ground.⁶⁵¹ In doing so they expose the written trace to the very substance of its destruction – an act of erasure in the hope of one day someone looking in these odd places, or that they might re-emerge through the fluctuations of the terrain. This also relates to a relational form of archiving, in the anti-linguistic form of ash and its encounter with water. Undeterred by dispersal within its flows, in the very act of scattering the river becomes a forcefully present archival object. Thus it becomes one of Lewenthal’s ‘other places’ – one distinctly beyond language.

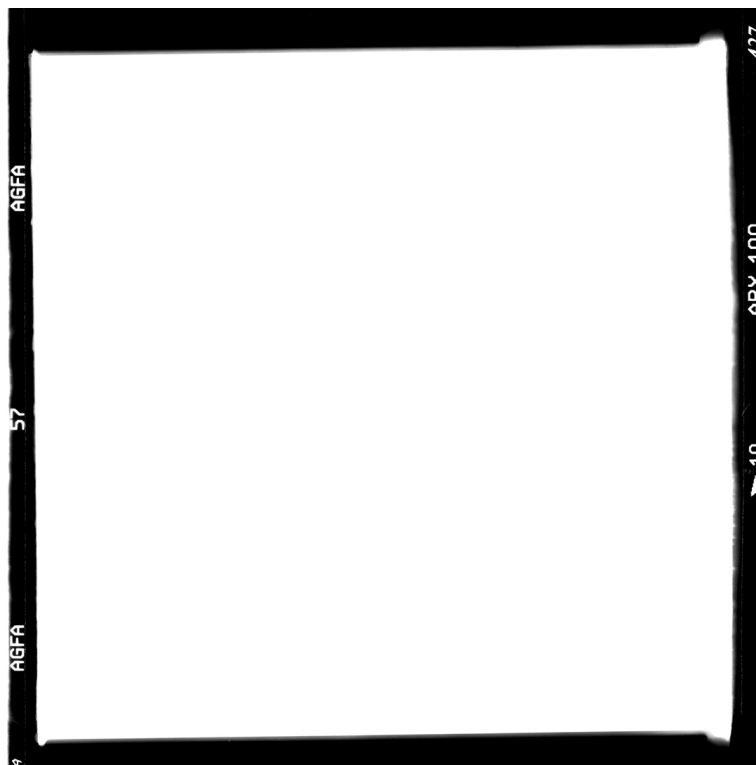


Figure 43 Elżbieta Janicka, *The Odd Place*, 2003-4.

⁶⁵¹ The sonderkommando’s writing might be the most pertinent example of writing ‘under erasure’. The author is under erasure as they produce texts with the intention of suspending them between absence and presence. Spivak in Derrida, (1998), p.xv.

The material encounters of trace and environment also figure in other forms of atmospheric feedback.⁶⁵² Polish artist and academic Elżbieta Janicka tries to capture the material remnant of ash in her 2003 photographic series *The Odd Place*.⁶⁵³

Janicka's series taken at Auschwitz-Birkenau, Majdanek, Treblinka, Sobibór, Chełmno, and Bełżec speculates on the persistent, if visually ephemeral, presence of the ashes at the sites of the extermination camps. By photographing the negative space of the atmosphere immediately above the site, Janicka also attempts to discover where the body is *not* in the ground. Through the photographic medium Janicka points to an absence: a material absence narrated by the attempt to capture ash in the frame of the image. This absence is unique to the materiality of ash: offering, from within the impossibility of presence, the faintest possibility that the most minute particulate presence is captured in the frame.

In her paper on political and social tensions between the existing Polish population and the macabre history of the extermination camp of Bełżec, Zuzanna Dziuban points to another material relation as an 'unexpected area'.⁶⁵⁴ She suggests that Janicka's images retain a 'disturbing 'corporeal[ity]'' that is not only symbolic but speaks to the continuing presence of the materiality of the ashes in 'ongoing relationships between the living and the dead', as Janicka writes:

The ashes flow in the air. We breathe this air ... The ashes are in the soil, in the rivers, on the meadows, and in the forests – subjected to constant recycling, in which we participate.⁶⁵⁵

Janicka's words echo Paul Celan's evocation of the ephemeral dispersal of trace into a grave in the clouds, one of the abiding images of his poem 'Todesfuge'.⁶⁵⁶ Dziuban weaves Janicka's

⁶⁵² As Agamben explicates, despite desubjectification preventing the possibility of the survival of the witness 'something always *remains*. *The witness is this remnant*.' The remnant is trace retrieved from oblivion - waiting to be read. Agamben, (1999) p.120-1.

⁶⁵³ She uses AGFA film. Co-founded by Paul Mendelssohn, son of Jewish composer Felix Mendelssohn, AGFA was absorbed by IG Farben in 1925 until after the war. Ernst Bäumlner: "100 Jahre Chemie", 1963, issued on the 100th anniversary of the Farbwerke Hoechst AG.

⁶⁵⁴ Some of the tensions manifest in troubling ways – some locals claiming the murdered Jews return as ghosts because they were not baptised. Dziuban, (2016) p.55.

⁶⁵⁵ Quoted in Dziuban, (2016), p.55-6. Cited as: K. Cichon and E. Janicka, 'Portrety powietrza', *Atlas Sztuki*, 21 (2006). Translation not identified – I assume it is translated by Dziuban.

⁶⁵⁶ 'Er ruft streicht dunkler die Geigen dann steigt ihr als Rauch in die Luft / dann habt ihr ein Grab in den Wolken da liegt man nicht eng [he calls out more darkly now stroke your strings then as smoke you will rise

claims of exchange between the living and the dead into the context of archaeological research conducted at Bełżec. Where buildings had been constructed during the 1960s in the vicinity of one of the mass graves, tests found that the well used by local residents contained human remains, and that ‘many families dwelling in the houses for almost four decades had been drinking water polluted by the bodily remains of the Bełżec dead.’⁶⁵⁷

Dziuban highlights Jancika’s description of the impossibility of achieving a complete burial, and how ‘the material circulation of their remains [...] designates the ‘Poles’ [...] as [at least] processual and relational bodies.’⁶⁵⁸ Dziuban goes even further suggesting that the current population act as ‘sarcophagi for the otherwise unburiable dead.’⁶⁵⁹ This is an incredibly powerful claim for such a charged materiality. The material persistence of the never inhumed dead in the site, in the river, and in the living body consumed in drinking water and breathed air troubles the ethics of the camp space, and the ethics of burial. It likewise troubles the intended erasure. The relationality between the remains of bodies and the material site poses a further question: in addition to whether the body can be located in the site, whether the site and the body can be separated at all?

Perhaps this embodied relationality can be considered from another unexpected source. In the hydrofeminist writings of Astrida Neimanis water figures as a material specifically favorable to relationality. She writes in the context of thinking issues of planetary climate change and modes of becoming aware of human relationality with the environment with and through water. Considering water as a complex archive, she writes,

Even while in constant motion, water is also a planetary archive of meaning and matter. To drink a glass of water is to ingest the ghosts of bodies that haunt that water. When “nature calls” some time later, we return to the cistern and the sea not only our antidepressants, our chemical estrogens, or our more commonplace excretions, but also the meanings that permeate those materialities: disposable culture, medicalized problem-solving, ecological disconnect. Just as the deep oceans harbor particulate records of former geological eras, water retains our more anthropomorphic secrets, even when we would rather forget.

into air / then a grave you will have in the clouds there one lies unconfined]’ Paul Celan, ‘Todesfuge [Death Fugue],’ *Selected Poems*, trans. by Michael Hamburger (London: Penguin, 1988) pp.62-65.

⁶⁵⁷ Dziuban (2016), note. 86 reads ‘Relation 65, anonymised, MMPB. [I.D. - The reference has been made anonymous].’

⁶⁵⁸ *Ibid*, p.55.

⁶⁵⁹ Dziuban, (2016) p.55-6.

Our distant and more immediate pasts are returned to us in both trickles and floods.⁶⁶⁰

The permeating awareness of relationality, to which Neimanis alludes and to which Dziuban and Janicka directly address, is both material relationality with pollutants and environmental crimes but also to genocide and humanitarian violence. In this particularly unsettling way Dziuban and Janicka redress the ecological and bodily disconnect to these legacies. An ethics of both submergence and of corporeal remains accounts for the uncontrollability or uncontainability of both the contingencies of aquatic spaces and the afterlives of remains.⁶⁶¹ This is the ethical conundrum of a continuum of body and environment in reciprocal exchange, even in the most traumatically charged conditions. These corporeal traces are brought all the more into encounter with the present conditions of the river. In doing so, the reciprocal medium of waters and what they carry point to the continuing presence of a necro-hydrosocial formation of genocide and its afterlives.⁶⁶²

Dziuban's claim of relationality finds historic parallels in testimony. Multiple Sonderkommando describe the experience of inhaling smoke from the open pits used before the development of the crematoria, and then again in the summer of 1944 when the crematoria had reached capacity during the murder of 400,000 Hungarian Jews.⁶⁶³ Another reference to this relationality exists as Didi-Huberman writes that rather than consider Auschwitz as unimaginable, that it '*is only imaginable*,' he suggests that we are 'restricted to the image' as a *lacunary necessity*.⁶⁶⁴ The images he is concerned with (figure 41) depict men amongst the billowing clouds of smoke attending to the burning of corpses, and the inhalation of smoke by the Geheimnisträger. Such inhalation or imbibing in the case of Dziuban shows that we are not

⁶⁶⁰ Neimanis, (2012) p.98.

⁶⁶¹ Stacy Alaimo calls for an ethics that acknowledges that the human and world are never wholly separate, or external to one another. The ethical questions considered here are influenced by such a call attempting to identify ways to address relationalities with the past as warning against such human / environmental violence of the future. Alaimo, *Bodily Natures: Science, Environment, and the Material Self* (Bloomington IN: Indiana University Press, 2010) p.158.

⁶⁶² This speaks back to Stefanie Kane's statement addressed in the introduction that 'as we poison water, the water poisons us.' Kane, (2012) p.2. As well as Linton and Budds claim that study of water as an 'object of social processes' understand water as shaped by and shaping 'social relations, structures and subjectivities.' Linton and Budds, (2014), p.170.

⁶⁶³ This smoke was caught in the wind and travelled to local villages, leading to talk amongst the local Polish community of the burning of corpses at the site. This was an element in the development of the custom built crematoria. Grief, (2005) p.9.

⁶⁶⁴ Didi-Huberman, (2008) p.45-47.

restricted to the image but an image as evidence of the body and environment as sites of continuing presence. Didi-Huberman continues in a lyrical passage: ‘The time of the flash, the time of the earth. Instant and sedimentation. Snatched from the present, buried for a long time: such is the rhythm of images – *anadyomene*.’⁶⁶⁵ He leaves this strange reference to the *anadyomene* that, which like Venus, rises from the sea. Echoing the photographic flash from ‘instant to sedimentation’, the Sonderkommando’s shovel of ash is scattered into the river, suspended for microseconds in the air, before entering the river processes, and persisting through the stream’s transportation and eventual sedimentation.

The artist Fernando Prats has also addressed the watery graves of Auschwitz in his 2012 film piece *We Were Dead And We Could Breathe (Paul Celan)*, which echo Janicka’s photographs.⁶⁶⁶ In it he produces his own attempt to record the persistent remains within the environment of the camp. Here, however, it is specifically the submerged spaces. Wading into the still water of one of the oxbow lakes (described in Field note 2) he floats light sensitive sheets onto the surface, before using a stick to submerge the paper into the water.⁶⁶⁷ With this method he attempts to produce an image of what I have called the solvent traces of genocide. What he records, through his speculative intervention, is the possibility that the water contains the ashes. What he does not account for is that the image mediates contemporary industrial waste, and coal sediments from mining transported downstream collecting in these seasonally flooding pools. In this way, Prats’s piece becomes an unintentional image of a solvent palimpsest of violence and degradation. Returning to my own visits to the camps I reflect that contemplating the rivers and pools of these rivers involves the possibility of the diffusion of water and sedimentary processes as fluvial trace. Meditating on the drought envisages the unpredictable return of the composite ashes *exaqua / anadyomene*.

CONCLUSION

Here these rivers have been read as archives of the ‘heavy’ entanglement of the remains of genocide within a continuity of chemical and heavy metal pollutants in river currents. The

⁶⁶⁵ Didi-Huberman, (2008) p.46.

⁶⁶⁶ Fernando Prats, *We Were Dead And We Could Breathe (Paul Celan)*, (2012) available at: <https://vimeo.com/84624060> (accessed July 2019).

⁶⁶⁷ In a slightly more troubling move he also collects the water and freezes it to place in ‘Hitler’s cabinet’, in the Zamek Castle in Poznan, Poland. This seems to fall within the ethical issues that Dziuban identifies in multiple aesthetic practices that remove traces from the sites themselves. Dziuban, (2017).

confluence of these materials emphasises that these sites and traces do not exist in a vacuum but are susceptible to the environmental threats of the present and presents yet to come. Echoing Christina Sharpe's use of 'residence time,' out of the riverine process of obfuscation perhaps even the most minute chemical traces from the crematoria continue to exist in a 'residence time' specific to this watery archive. Thus, while the fine ash might have reached the Baltic through the mouth of Wisła, near the port of Gdańsk, at the other end of the trace spectrum the crushed bones will have entered the river's sedimentary process far more quickly and locally and with greater stability, due to the traction incurred along the riverbed. Considering the full extent of these possibilities I have considered to rivers to be unique and often ephemeral liquid archives of the necro-hydrology of the genocidal apparatus.

The confluence of the Wisła, Soła, Przemsza rivers is a trace object of flow where different forms of violence are imbricated, and continue to be confluent in the sedimentary afterlives of genocide. The persistence of the sedimentary exists as the ordering or aggregation of information – human and more-than-human in form. Operating both entropically (dispersal) and negentropically (deposition) sediment narrates events and their multiple material and political implications. This might include the unsettling sedimentation in living bodies, the implications of anthropogenic patterns of drought, or continuing pollutants emitted by the factory, as the repetition of the river's transmission of multi-scalar harm. In this way the material process, appropriated as an unwitting accomplice, paradoxically exists as a dynamic remnant of the events as much as any material artifact or object. Neither entirely dissolved nor solved, the river is itself a solvent remaining.

†The entanglement of diffuse traces of genocide and anthropogenic pollutants presents a unique ethical conundrum relating to traces of the past saturated with the present. Here drought poses a threat to these water bodies, and possibly to the further erosion of the traces they contain. As planetary water ecosystems face increasing threat solvent trace becomes applicable to cases beyond these waters and is potentially operative in reading other conditions where past, present and future of conflict and violence are folded together through rivers. It is in this way that it is no longer possible to sense cultural and material legacies without accounting for contemporary conditions, as they are always imbricated within dense orderings of the planet's degrading currents. These traces then are suspended signals of necro-hydrologies of the present, and those still to come.

THESIS CONCLUSION

The Hanged Man. Fear death by water.

T.S. Eliot⁶⁶⁸

The focus of this thesis has been the contemporary and historical overlaps of river ecosystems with violence against subjugated communities. Common to each of the three cases has been the ruinous relationship between conflict and river health. These interrelations are all the more conspicuous when rivers are casualties of the political, social and material engineering of their flows. In these cases not only is life and death contingent upon control and access to water resources but that, crucially within the frame of this thesis, rivers are themselves also used to kill. What I have called the condition of necro-hydrology occurs through a treacherous politics of concealment, denial, ambiguity and threat. This occurs through both direct and oblique forms of weaponisation occurring within power's wider ordering of aquatic ecosystems. This ordering is characterised by human, animal, plant, and river death, evoking the disturbing and reciprocal prospect that with dead rivers come dead bodies.

This thesis has identified the complex assemblages that facilitate and are produced by violence enacted with and through river environments. What I want to consider further in this conclusion is how my thesis has positioned rivers as weapons, or political technologies in relation to critical environmental thinking about the prevalence of the agency of non-human actors. My contribution is to exactly double down on the decades of critique of the nature / culture binary. Rather than emphasising discord between those who see nature's mobilisation as a political tool against those who stress the autonomy of nature's agency, this thesis tries to show exactly how more-than-human agency, while often unruly, is calculated (or harnessed in more and less overt ways) into modes of domination and exclusion. In other words, as suggested in the introduction to this thesis, the weaponisation of a river occurs not only through overt physical infrastructure but through the conditioning of the agency of the river waters themselves. In other words, the very choice of a river as a border is itself a weaponization of a river.

⁶⁶⁸ T.S. Eliot, *The Wasteland* (London: Faber & Faber, 1999 [1922]) p.8.

To expand on this and address what I have learnt through writing this thesis I need to introduce new thinkers, namely ecofeminist thinkers, to shed further light on the conceptual shift from nature / culture to ‘naturalcultural’ assemblages. I argue that it remains necessary to think the ways conflict has been practiced across the blurring of nature / culture, from the granular scale of the water content of mud and mist to the extents of the flood plain and broader river basin. I do this with the intention of no longer allowing nature / culture to be an alibi for violence in fluvial environments.⁶⁶⁹ The possibility offered by identifying such environmental violences is to add greater weight to the importance of approaches to these very same rivers as sites and mediums of resistance. Approaches that proposition and enact transformative hydrosocial relations.

I have learnt in this thesis that neither the hydropolitical nor hydrosocial, discussed extensively in the introduction, have sufficiently accommodated for the nuanced ways in which water has been mobilised in forms of violence. Such mobilisations do not merely occur through conflict over resources, or as result of neo-malthusian dynamics, as preoccupies hydropolitical discourse on water and conflict, but rather through the waters produced and managed in conditions such as bordering, through extractive practices themselves, and to erase traces of genocide. Consequently, rather than being preoccupied with weighing up whether conflict is inevitable in cases where vulnerable water resources are shared between states, my project, particularly in part I, has considered how water becomes weaponised and simultaneously obfuscates this weaponisation as an alibi within already fraught conditions. As I have argued, these are examples of a hydrosocial condition that moves from the biopolitical to the *necropolitical*. This shift and weaponisation has been shrouded under water’s seemingly inherent ungraspability within received socio-cultural constructions that, in turn, feed this weaponisation. Water is understood as slippery and elusive and thus the ways it can be technologised or weaponised are just so slippery and elusive. This prevails, to varying degrees, within hydrosocial and hydropolitical thinking. Water as a material remains elusive despite the very real sense in which it is controlled and mediated into social life. States play on this by conditioning the ways water is received in overtly socio-technical ways. A river is only

⁶⁶⁹ Roxanne Lynn Doty makes this point within the context of Foucault’s biopolitics and Agamben’s bare life as a forceful claim that ‘the significance of geographic space/landscape in the process of obscuring official state responsibility for the moral consequences of the bare life that is made possible by the creation of spaces of exception’ (2011), p.600. Where I place my project within the complimentary field of Mbembe’s necropolitics, Doty’s sense of nature as moral alibi has been instructive for the way I have thought of rivers as weapons that simultaneously obfuscate the traces of such violence.

considered to be a natural force, within such a framework, when it is uncontrollable and behaves seemingly outside of the calculations and influence of its own power. I have shown, however, that in practice power hybridises, or reconstitutes, these agentic capacities. This is evident in the case of the flood zone folded into the military buffer zone of the Evros. In particular when police cannot retrieve bodies where flood waters are deemed too dangerous for the Police to access, or the way paramilitaries in Colombia attempt to simultaneously erase traces of violence while transmitting these traces downstream through the river's agency as part of a regime of fluvial terror. Thus, in both of these cases the river acts simultaneously through both overt intervention and the river's own agency as weapon and technology of alibi.

With this in mind, it is important to acknowledge Jane Bennett's re-centring of the agency of the non-human as vibrant matter against the all too frequent assumption of it as inert. Indeed, it is central to her thesis that such a conception of vitality is nothing new.⁶⁷⁰ However, I have intended to make an important shift to suggest that, without muddling the concept of causation, such agency has long been co-opted into violent narratives of natural alibi, namely the "act of nature," whereby non-human agency is factored to obfuscate human agency in violence. Here I want to stress that I have not suggested that a non-human element might act with violent intent in the cases of these rivers but rather that the human agents of conflict and exclusion have conditioned the encounter with the vitality of rivers in ways that have deadly results. Indeed, nature's agency at the river border is not, and has never been, passive but has always been calculated into the mobilisation of the river's own agency as a political tool, here as a weapon. This relates to my reference to Stefan Helmreich's definition of infranature discussed in part I. His insight enables the nuanced perspective that forms of first nature, in his case the calculations of ocean waves, are folded back into second nature – the geopolitical land grab of the building of artificial ocean islands – so that the waves as first nature hide the construction of islands. In the cases I have presented this relationship is even more nuanced as it is the river's own agency that is mobilised as a weapon, within the context of a river border, and it is this very same agency that is used as an alibi for the state's use of the river as a deadly geophysical feature.⁶⁷¹ In this way it is not enough to declare that nature has agency as a, by proxy, transformative paradigm⁶⁷² but to also understand how forms of power have outwardly denied

⁶⁷⁰ Jane Bennett, *Vibrant Matter: A political Ecology of Things* (Durham NC: Duke University Press, 2010).

⁶⁷¹ Helmreich, (2017), p.84.

⁶⁷² For example see: Val Plumwood, *Feminism and the Mastery of Nature* (London: Routledge, 1993), p.5.

non-human agency, whilst simultaneously calculating this very free-agency within its own structures of subjugation: at borders, as solvent sewers, as turbulent flow to be converted into or as a medium that carry human remains downstream to strike fear into riverside communities. Thus, as I have shown, in the cases of this thesis, no river is *a priori* natural, and it is crucial to refuse such claims of ‘naturalness’ made by forces of domination to prevent the actors of violence reproducing ‘nature’ as an alibi for the multiple violences organised around water bodies. I do so, motivated by the necessity of challenging the original acts obscured by such alibi and to reveal the underlying conditions that enable rivers to be weaponised.

In her seminal contribution to ecofeminism, *Feminism and the Mastery of Nature*, Val Plumwood argues that human / nature dualisms have been at the heart of the west’s treatment of nature and its degradation of the environment. The conception of humans being ‘outside’ nature is built upon the scientific and humanist belief in its own comprehensive knowledge and thus mastery over the natural. With this has emerged the othering and negation of those who do not fit within the binary position of the white male ‘human’. To resist this she identifies that it is essential for the ‘forest,’ which I would substitute for the river, to retain its mystery, power and wholeness to resist the powers of ‘technology and of military and economic force’.⁶⁷³ However, it is perhaps not always as simple as this. For example, the ways that the bastions of the west, and western thought, in the form of dividing border practices, have long used geophysical formations as technologies with little or no overt intervention reveals how such onto-epistemological divisions have always been arbitrary in the practices of ‘technology and of military and economic force’ – with far from arbitrary consequences.

My contribution identifies that the necessary challenge to the legacies of western humanist binaries of the nature / culture division must not detract from the long standing and various practices of power and States that have always operated with an understanding of the two as blurred – even if they outwardly and discursively reproduce this binary. The perceived division between the two has deadly consequences in the case of the multi-species river ecosystems that I have considered in this thesis. Indeed, this thesis has shown that those very co-opted unruly agencies of rivers, in the register of the watery spectrum, can also be the sites and modes of resistance to this very co-option. For example: by retaining partial and sometimes embodied

⁶⁷³ Plumwood, (1993), p.7

trace where oblivion was intended; by morphologically shifting across the demarcated lines of borders; or by threatening to break through the concrete walls that have impounded these very waters. Indeed, where my future research will lead is to the practices of river defence that have always already operated through solidarity with and within multi-species assemblages. To consider this further I will now turn to further recent ecofeminist approaches.

Following from Plumwood the work of recent hydrofeminist thinking, central to the conceptual framework of this thesis, has made great strides to further undermine nature / culture dualisms and their incumbent otherings. Namely, in Astrida Neimanis's conception of relationships between water bodies and bodies of water she asks the critical ethical question of what it means to seriously think the world in a way that humans, as porous bodies of water, are intrinsically linked with the waters they come into contact?⁶⁷⁴ This is a crucial question regarding spaces of conflict and one that refuses to reduce a river to a sewer, an extractive object, and a weaponised border. Thus, the domination of nature, intrinsic to the domination and de-humanisation of marginalised groups,⁶⁷⁵ occurs in ways that might not immediately be conceived of as "mastery" as is so commonly assumed through the imposition of rationalised engineering and vast concrete structures – but through scattering or merely through choices which abdicate care. While it might come across at first hand as reductive to think of rivers as technologies, I do not assume that a river-human relationship is inherently destructive, rather it is the intention and register of such a relationship that is – this can be understood as the evident disparity between the hydrosocial and the necro-hydrologic.

Afterall, the argument expounded here does not align with deep ecology and the inevitable degradation of the environment at the hands of "man," and incumbent knowledges and practices.⁶⁷⁶ This is, of course, to assume a certain type of universal "man". Such a view is married to the neo-malthusian argument, as I explored in my introduction, that scarce water resources will inevitably produce conflict rather than allowing the possibility for co-operation, as argued in the writings of Daanish Mustafa and Aaron Wolf, amongst others. In part III I have tried to reflect on the ways in which we can read back through polluted environments to

⁶⁷⁴ Neimanis, (2017).

⁶⁷⁵ Plumwood, (1993), p.4.

⁶⁷⁶ See Kate Soper's discussion of the conceptual distinction between nature and culture and discourses on the possibility of the existence of a pristine nature in her book *What is Nature?: Culture, Politics and the Non-Human* (Oxford: Blackwell, 1995) p.18-19.

see the genocidal crimes of those who fostered such Malthusian zero-sum calculations. In doing so, I warn against the repetitions of such violent othering emerging from cases of toxification and scarcity. I do so by attempting to reveal the traces of such prior crimes of genocidal ecological imaginaries as a continuing encounter with the river as a relational body. With this in mind to think of rivers as spectrums and as relational not only helps to uncover past violence but simultaneously offers the possibilities for living with rivers productively and sustainably. Thus, it is necessary to continue to identify the ambiguous ways that rivers are technologised by power with the purpose of countering these very forms of violence against human and more-than human hydrosocial communities. Only then can producing transformative and sustainable alternatives for living with rivers be fully possible.

To usher in such new possibilities it is necessary to approach these waters with care and to read how degradation and genocide occur in and through these different waters. In this thesis, this has required *thinking* deeply with these water bodies and not assuming their universal solvency, their unruliness as spaces of material oblivion or loss, but as spaces of memory and resistance. In *Staying with the Trouble: Making Kin in the Chthulucene*, Donna Haraway writes, following Ursula K. Le Guin's carrier bag theory of naturalcultural story telling, that to 'think-with is to stay with the naturalcultural multispecies trouble on earth,' and in doing so shift the stories of human relationships with the natural world away from those first 'words and weapons,' and thus change inter-human and multi-species narratives.⁶⁷⁷ Indeed, as Le Guin calls for the need to see science and technology not as the weapon of domination but the collection of assembled contents collected within the narrative carrier bag this is the route to changing the narrative of the rivers I have discussed here.⁶⁷⁸ Narratives that identify the violence at the relational scale in the attempt to change the story, or at least to re-centre existing but marginalised stories. Such approaches are present in Carolina Caycedo's practice and the submerged perspectives that Macarena Gómez-Barris identifies as 'submerged perspectives' which I explored in part II. Such perspectives are persistent in their critique of power despite the weight of subjugation, and they retell the stories of extraction from within the submergent condition of hydropower as complicit with histories and presents of paramilitary persecution. Influenced by these

⁶⁷⁷ Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham NC: Duke University Press, 2016) p.40.

⁶⁷⁸ Ursula K. Le Guin, *The Carrier Bag Theory of Fiction* (Ignota Books: 2019 [1986]).

submerged perspectives, my practice-led research (part I especially) has also intended to retell these stories through my hydrophone recordings and fieldnotes by reading the river as a weapon in a relational register – of flooding, fog, mist and the mud that asylum seekers are forced to traverse. This begun by telling the relational dispersal of such violences throughout weaponised river ecosystems beyond the divisions of wet and dry, human and natural as a far more complex set of relations. In doing so I have intended to further unravel those binaries that uphold the “natural” alibis of such violence.

The key term used above is ‘naturalcultural,’ or ‘natureculture,’ in the refusal of the existence of such binaries.⁶⁷⁹ Here I consider María Puig de la Bellacasa’s definition of naturalcultural thinking in her recent work on the ethics of care and the environment. Emerging from multi-disciplinary work in the social sciences, humanities and relational ontologies, she considers the naturalcultural to be ‘an ecosmology of affirmative blurred boundaries between the technological and the organic as well as the animal and the human—whether this is considered to be a historical phenomenon, an ontological shift, and/or a political intervention.’⁶⁸⁰ As Bellacasa shows, care for an interdependent earth, through the ‘affirmative’ blurring of such boundaries, is not a constraint but a necessary and ‘life-sustaining’ practice.⁶⁸¹ I introduce Bellacasa’s thinking around care through the naturalcultural into this conclusion explicitly to identify how the blurring of natureculture can help us to see how even the agency of rivers can be seen as part of its use as a political tool – its weaponisation – but in doing so show how this agency can simultaneously offer the possibility of hope to resist necro-hydrologies. She affirms that the conception of care for the environment is not a constraint but allows for the potential to think a river against its use as a weapon or a sewer for society’s ills, and crimes. What I have shown in this thesis is that blurring the nature / culture divide (to natureculture) as transformative also requires a form of blurring, or thinking through a spectrum, to inform an investigative register or practice that stays with these troubles, *a la* Haraway, and can sense how forces of violence against marginalised groups and ecosystems, knowingly or unknowingly, operate at across multiple registers.

⁶⁷⁹ See Haraway’s discussion of naturalcultural assemblages, through the writing of gender theorist Thom van Dooren. Haraway, *Staying with the Trouble*, p.38.

⁶⁸⁰ María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds* (Minneapolis MN: University of Minnesota Press, 2017) p.140.

⁶⁸¹ *Ibid*, p.160

A similar line of thought exists in the form of the collaborative curatorial project Feral Atlas and Feral Technologies, led by Anna Lowenhaupt Tsing, and including Elaine Gan, Jennifer Deger, Alder Keleman-Saxana, Feifei Zhou, Bettina Stoetzer, Soyoung Yoon, amongst others.⁶⁸² They raise similar questions to those raised in this project regarding how to engage with the often-contradictory condition that emerges within the technosphere when nature and culture can no longer be ‘studied as exclusively human, nonhuman or machine’?⁶⁸³ This is a problem I contended with when I considered that a weaponised river is a natureculture assemblage that itself cannot be encountered as exclusively human, nonhuman or machine but are weaponised across the blurred boundaries of all three. Their project tackles the imperative that the Anthropocene could not be made on its own but required the utilisation of ecologies, often with destructive consequences. They contend, however, that from such infrastructural human intervention other ecologies flourish outside of human control.

These are the feral ecologies / technologies of what they call the more-than-human Anthropocene. Such agentic ecologies emerging from human intervention alter, in turn, the ways in which human life operates. Indeed, they argue that an ‘unintended muddle of multispecies relationships [...] emerge from contaminated landscapes, postwar rubble, and garbage heaps [...]’ and that these offer new possibilities for change.⁶⁸⁴ Here I think back to the Water Hyacinths in part II, spreading voraciously across the eutrophic reservoir of the Hidroituango megadam further reducing the possibilities of other river life to exist. As I stated these are not merely symptoms of hydropower but living sensors of the necro-hydrologies that emerge out of the ecological devastation of megadams. Here human infrastructure instigates the agencies of plant life, which further foreclose the possibilities for other life. By understanding the role of non-human agency within this necro-hydrology we can see how despite scientific efforts to produce the singularity of mono-cultures (here energy extraction) multiple agencies still exist as part of, and resisting, these exploitative and exclusionary infrastructures. Such infrastructures thus occur as multi-species assemblages, sometimes ones that mutate beyond the initial form to hinder, or even threaten, the existence of the nascent

⁶⁸² Anna Lowenhaupt Tsing, Elaine Gan, et al., ‘Seminar: Feral Technologies: Making and Unmaking Multispecies Dumps,’ *HKW Anthropocene Curriculum* (2016), available at: <https://www.anthropocene-curriculum.org/project/campus-2016/feral-technologies> (accessed March 2020).

⁶⁸³ *Ibid.*

⁶⁸⁴ *Ibid.*

infrastructure and its maintenance of the ruin ecologies of borders, energy production, or the technologies of genocide.

Another example of complex adaptation in technologised yet feral ecologies, is artist-theorist Elaine Gan's wall installation project *Rice Child (Stirrings)*⁶⁸⁵ and accompanying text 'Mapping Rice / Mapping Time.'⁶⁸⁶ The project addresses the complex temporalities and agents imbricated in rice cultivation on the Mekong delta, and elsewhere, through an entangled timeline. Gan identifies the reciprocity of the history of these multiple agents including, firstly how rice yields and prices dictate economies and, in reverse, how economic changes – such as the 2008 financial crisis – increasingly have impacts on the viability of rice cultivation. Elsewhere, she tackles the politics of the genetic modification of rice crops as part of monocultural farming methods. In this case fertilizer saturation impacts on ecological interdependency, while mutating insects and viruses assault monocrop yields, in turn. She describes this as the continuing 'race between modern science and multispecies ecology'.⁶⁸⁷ In the case of the Hidroitunago Megadam the water hyacinth thrives in the eutrophic conditions resulting from the dam's excess accumulation of sediments. These, in turn, accelerate the further accumulation of biomass within the reservoir that risks clogging the dam's filters, and further hindering the process of accessing the filters to clear them. Thus, the dam's feral ecology, a truly naturalcultural entanglement, threatens the very structure that instigated the initial growth of the hyacinths. The dam is not the only feral ecology within my project. Indeed, the border produces its own multiplicity of complex agencies where the shifting river is both a hinderance to the border and facilitates the ambiguous frontier that contributes to the possible impunity of border violence. Elsewhere, the heavy waters that violent actors use to attempt to hide their genocidal crimes, whilst simultaneously polluting them with industrial chemicals, produce culturally complex and environmentally degraded multi-species ecologies. Through these examples parallels emerge between the feral ecologies / technologies project, as well as Gan's own work, and how I have attempted to tackle the complexity of these necro-hydrologies. In the light of such complexity value judgements become all the more puzzling as

⁶⁸⁵ Elaine Gan, *RICE CHILD (STIRRINGS)*, Digital Arts Research Center, University Of California, Santa Cruz (2011 / 2014), available at: <http://elainegan.com/riceDarc.html> (accessed March 2020).

⁶⁸⁶ Elaine Gan, 'Mapping Rice / Mapping Time,' *World of Matter*, ed. By Inke Arns (Berlin: Sternberg Press, 2015), pp. 152-161.

⁶⁸⁷ *Ibid*, p.159.

often the very environments that are conditioned by death are also the spaces where life is able to foster either as feral or through marginalised practices of care and resistance.

Each river I have explored, however, has been managed or been encountered, feral or not, in adversarial ways that are far from care. Indeed, the rivers of this thesis have been encountered during periods of time when death has been the primary result of environmental governance. Perhaps by focusing on such cases I have re-centred the human. If I do so it is in paying the necessary attention to naturalcultural ways of practicing that already exist in non-care giving but exploitative and deadly modes. These present a willful abdication of care as an affective force, whereby practices that blur nature / culture, such as the river border, are intentionally exclusionary and deadly. In urgent cases such as the border and the megadam the focus of inquiry must perhaps paradoxically stay with the violent human-centred conditioning of more than human agencies so as to continue to propose new and transformative possibilities of multi-species care. Indeed, the forms of care present at these rivers are greatly imbalanced, where the dominant form of care present at the border is humanitarian, which is itself problematic. With the Cauca, however, groups like MRVA, other grass roots river defenders, and the practices that I call funerary hydrologies do retain the possibility of knowing these waters through memory of the lost as a mode of care within the aquatic shadows of death. These fall within what Gómez-Barris calls ‘submerged perspectives.’ Such perspectives resist the ‘extractive view,’⁶⁸⁸ which sees the world and its multi-species communities as extractable resources that, in turn, produce what I have called necro-hydrologic conditions. Despite everything, they do so in the attempt to perceive situated ‘terrains as sources of knowledge, vitality, and livability.’⁶⁸⁹ A submerged perspective is thus one of care. Such a practice of care, following Bellacasa, necessarily challenges the necro-hydrologic socio-material formation of a river as a result of dangerous imbalances in the ‘naturalcultural relational webs of life and death’.⁶⁹⁰

The rebalance the ‘relational webs of life and death’ away from the hands of violent human forces may require what Bellacasa calls naturalcultural thinking to firstly perceive, as I have shown in this thesis, the extent and pervasion of such necro-hydrologies through the entire watery spectrum. This should not be seen as an assault on naturalcultural formations that

⁶⁸⁸ Gómez-Barris, (2017) p.5.

⁶⁸⁹ *Ibid*, p.1.

⁶⁹⁰ Bellacasa, p.160.

thinkers such as Haraway and Bellacasa promote. Instead, my intention has been to further understand how, what Bellacasa calls, ‘complex articulations of agency’ (after actor-network theory), are contradictorily harnessed within violent and degrading environmental practices of power. Such as in the river weapon assemblage that I outlined in the introduction. Whereby, as Deleuze and Guattari suggest, a river moves of its own accord but is weaponised by the specific conditions of conflict into which it has been enfolded, or within which it moves. To think in such a way prompts a crucial set of ethical considerations, that Bellacasa herself raises:

How do we actively engage with the lived experiences of forms of nonhuman bios whose existences are today increasingly incorporated in the cultural world of human techne? How do we acknowledge “their” agency, and our involvement with it, without denying the asymmetrical power historically developed by human agencies in bios?⁶⁹¹

Or as I would ask, how do we engage with the role of nonhuman bios and agency already incorporated within the reciprocal forms of necro-hydrology that kill the multi-species communities that live and depend relationally with those rivers? Such a question echoes the tidal double action of Derrida’s pharmakon, identified in the introduction, where not only does water impart life but also mediates pollutants. Or not only is water pivotal to resistance but it is also the medium of the weapon. I have considered these ethical questions through the investigative mode of thinking *with* water in the identification of such necro-hydrologic practices of *bordering*, *terror*, and *trace* as a natureculture spectrum. Indeed, as I pointed to in the introduction, following Mathur and Da Cunha, to think the world as a watery spectrum is an ethical injunction that not only challenges land biased conceptions of the world but in doing so challenges land/water and nature/culture binaries to see the world as natureculture or *waterland*. In this thesis river waters do not only stand between but, perhaps more importantly, blur the binarisms of nature / culture, connection / division, and life / death.

This means that to think natureculturally, as I have done in the preceding pages of this thesis, produces an investigative lens to see how violence is enacted through environments in ways that blur the nature / culture divide. This is a necessary step before, alongside, and through the construction of resistance. In other words, such a naturecultural lens is able to identify how the necro-hydrologies of the rivers, such as those I have studied, operate across the blurred boundaries of nature and culture and thus make it evident that in practice modes of power,

⁶⁹¹ Bellacasa, p.144.

extraction and violence operate with impunity across the divisions of land / water / air. Thus, violence occurs in riverine environments not just the reinforcement of division but at points where nature and culture are most blurred. And it is necessary to consider the violence perpetrated within and through these blurred boundaries to identify where care is abdicated. I stress here that such an identification is a crucial step towards providing the care that Bellacasa calls for. Only then is it possible to reimagine these necro-hydrologies in ways that rebalance these environments in favour of the living.

In the introduction I announced that I use ‘hydrology’ as a catch-all term to include the multiple ways of knowing rivers and waters, from the earth sciences to lay knowledges. Such an assertion may have its own issues as it reduces all the ways of knowing water otherwise to the disciplinary scientific knowledge. This has not been my intention but rather I have used it as a way of alluding to knowledges of rivers in the shorthand. However, what I have learnt is that while certain the disciplinary scientific knowledge enables the contradictory processes of changing a river’s course and at the same time maintaining the impression of the water within it as a “natural” entity. And thus contributing to the production of the geophysical border zones, where Mbembe states the ‘lives of the undesirable are shattered.’⁶⁹² Is it then the case that all hydrology is a necro-hydrology? No, despite a certain complicity with the capture and privatisation of water and inequalities of access across the world it is made clear by examples such as natural scientists at the Evros being restricted from studying the river and at the ichthyologists at the Cauca producing evidence of the dam’s impact on riverine life that water sciences are excluded from the processes of necro-hydrology. However, following Bellacasa, another hydrology is necessary one that would no longer maintain the guise of the natural, and most importantly always exist in the multiple – *hydrologies* – as always specific to situated water systems and communities. Of course, such knowledges already exist but these are, in the violent cases of Hidroitungo in particular, assaulted by the megalomaniac water science of the megadam.

A persistent necro-hydrologic question regarding the case of the Evros/Meric is: can the river exist outside of the border condition? My answer would be yes, as a river is not inherently adversarial. However, this can only occur if the river is no longer a border. Perhaps only then

⁶⁹² Mbembe, (2019), p.99.

would it be possible to live truly natureculturally with this river, and by this I mean the onto-epistemologies of exclusion that reproduce the river border against those de-humanised for being non-European.⁶⁹³ To make such a leap requires a shift away from perceiving rivers as boundaries and to do the two-fold work of uncovering the violence that operates within the alibi of a blurred nature / culture and in doing so produce a possible space of care. This is of course aspirational and should always be balanced with the immediate necessities required by these cases to reveal the extent of such necro-hydrologic influence and stand in solidarity with those who encounter these weaponised environments as they are dispersed within the entire watery environment. This must be a step on the way to producing hydrologies that no longer serve the distinction of the powerful against the powerless or marginalised. One that would itself no longer be compatible with exclusionary politics. This is a hopeful but necessary train of thought that, nevertheless, feels a long way off.

Notes on Methodology

To begin to work towards such complex aims I have found it necessary to develop an imaginary — or a fluvial imaginary — that accounts for the ambiguities of riverine environments. This has been realised in the form of field recordings and sketches, and informed by critical reading of activist reports, human rights literature, forensic taphonomy and aesthetic interventions. These methods combine both proximity and distance, which require further unpacking. Both have been conditioned by a sense of caution regarding access to sites such as the ability to conduct field work, temporal dislocation, language limitations, or, when field work is possible, the denial of access to the rivers themselves. While such concerns may be ever present when approaching conditions of conflict they pose methodological questions for the practice-based researcher. What I have learnt over the course of conducting this research is that while physical or indeed sonic immersion provides a productive proximity to a case it also raises its own ethical questions. These are questions of care for those who have perished within these waters, and whose physical traces remain in the often heavily polluted rivers. Where my impulse remains that such proximity is necessary to perceive the complexity of the conditions and processes that occur through violent acts relating to rivers, critical reflection is always necessary to conduct research through low intervention methods. Consequently, where I am able to geographically access the site of research care is perhaps all the more necessary when

⁶⁹³ Bellacasa, p.141.

in proximity. Haraway's conception of situated and partial knowledge has been an important methodological touch stone here. Haraway forwards embodied knowledges as essential modes of producing partial knowledges that shun totalising claims. However, she also strikes a cautionary note against a researcher's romanticising attempts to adopt perspectives from below.⁶⁹⁴ Indeed, Haraway's position alights on common critiques of the risks of both immersive and distanced practices. Distance, as Haraway suggests leads to often generalising conclusions. While immersion offers the embedded and long-term insight that cannot be afforded in any other way, it can run the risk of being practiced in ways that have culturally extractive consequences, and thus a combination might be preferable.⁶⁹⁵ This equates to a mode of critical caution, by this I mean that one should be cautious when pursuing immersive research methods; whether through actual immersion in water or in reference to the level of embeddedness within the communities and conditions of each case. This was a concern when asking what it means to study submerged remains of the Holocaust in part III, particularly with regards the strict Jewish Halakah laws which forbid disturbing inhumed remains. Further questions arise when studying such remains within the dynamic spaces of river systems. I succumbed only once to submerging a camera within these waters. This act, nevertheless, requires introspection as to what I, as a researcher, might achieve by this submergence other than the blurred muddiness of the river and its multifarious contents carried downstream. This image does not amount to much more than a fragment or partial image of this complex subaqueous space. I have left it in, nevertheless, as a reminder that as a researcher there is always a desire to know more, but that sometimes this is an impulse that needs to be restrained.

I have learnt from the field that, following Haraway, partial knowledge is not a weakness and is preferable to claims of complete knowledge. Sometimes despite the desire to retrieve the bones, ashes, and names, the partial is all that is all that is possible, especially considering the fragmentation of the posthumous subject of necro-hydrologic conditions. In such cases a critical distance is required to reflect and engage as a practitioner in allyship with the living and the dead. As I reflected in the introduction, the care with which the critical swim was produced allowed me to reflect on the care with which I need to approach river bodies,

⁶⁹⁴ Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,' *Feminist Studies*, (1988) 14:3, pp.575-599, p.583-4.

⁶⁹⁵ Such questions are central in the social sciences and particularly in the disciplines of Anthropology and ethnography. I have these through Haraway conception of situatedness but they are also key debates within decolonising literature in Anthropology especially the seminal work of Linda Tuhiwai Smith in *Decolonizing methodologies: Research and indigenous people* (London: Zed Books, 1999).

especially with regards embodied approaches. Thus, immersion with care is appropriate in many conditions especially in the attempt to gain greater proximity and embodied insight into degrading environments and planetary systems. In the cases I have explored, however, I do not feel it is appropriate to physically immerse in a very literal sense despite the presence of technological appendages. However, I have tried to conduct my research and writing, where possible, through an intimate contemplative yet proximate methodology of care for the assembled waters and their living and dead relations. And perhaps this points to the limits of embodied research in cases of explicit violence. What I take forwards is the continual need to ask questions rather than reach conclusions and in doing so to continue to be self-questioning of the methods adopted.

This cannot always account for how such research will be received by its audiences. For example, hydro-sonic recordings immerse their listener and might bring the audience closer to, or immerse them more thoroughly within, the properties of the river's weaponised assemblage. This in turn reflects assumptions I have made about the tension between the ocular and aural. I chose an aural method because of the limitations of the strict image regime of the Evros/Meriç. This, however, was also produced under the assumption that this was also a response to the ethical weight that the image carries when perhaps the sounding of the river provides an even closer sensory proximity to the waters themselves, and a more potent trigger for the audience's imagination in encountering such sites of harrowing events. Such questions of distance and immersive proximity are not exclusive to the study of aquatic conditions. Submergence, nevertheless, offers unique obstacles and possibilities for critical research. Primary amongst these are questions of approaching the very space of the rivers themselves that refuse the othering of water as unknown space. To do so can require technological mediation but, as I have found necessary, this is productively accompanied by a constant consideration of the physical materiality of such sites borne on a critical imaginary. Such a combination of material knowledge and a fluvial-imaginary allows for a perception that can be carried across the blurred boundaries of natureculture, water-land-air, and account for the movement of a body or an ash particle from one point on a river's course to another.

Bringing together of the material and the imaginary of riverine processes raises as many methodological questions as it answers especially when considering sites that I have not been able to access to conduct fieldwork. This brings me to my inability to go to Colombia due to financial and logistical limitations. In this case distance was not a matter of choice and raises

its own ethical questions regarding my subjectivity in relation to the case, as well as the absence of granular detail in my argument that is present in the other parts of the thesis where field work was possible. Producing research at a distance does offer the possibility to bring into conversation disparate cases where the conditions of necro-hydrology are present, while retaining their specificities. The overriding feeling is that this is a powerful limitation, which prevents the possibility of encounter with stake holders and those who live through these violences, as well as the specificities of the sites themselves. This leaves the potential for further research to add a necessary level of situated detail to the argument of part II.

Another methodological question of distance and proximity relates to the question of time and the dislocation of more than 70 years encountered while studying the Wisła. The key question being: How is it possible to conduct research in a situated fashion with rivers across expanses of time? While it can be a misconception that rivers are entirely linear in progression, nevertheless, it is to some extent true regarding the dispersal of material carried downstream within a river. This is a material challenge but one that opens the possibility for a fluvial and taphonomic imaginary to conceive of how these materials still exist within the river itself, and relationally within the multi-species communities who encounter these waters. What such an imaginary has taught me is that questions are always necessary when speaking of absent bodies in often unknowable spaces. These questions asked of the river are necessary to refuse oblivion and to contribute to challenging cases where alibi-environments and necro-hydrologic conditions continue to be encountered. Such an imaginary has helped me to navigate what I see as the ethical question: how can I hold on to the memory of these traces? It was after all the meteorological and hydrologic condition of drought that brought me to this site in the first place, and the hydrologic behaviour of rivers that has enabled me to study the relational yet absent archives of rivers. Consequently, the previous question takes on a further weight when I ask how can I hold on to the memory of these traces and help these rivers live? It is the combination of these ethical considerations that is exactly how the two can be balanced: to remember the trans-corporeal relationality of these rivers with their heavy pasts so as to emphasise the necessity of conserving their ecosystem health so that they can be part of living hydrosocial assemblages in the future.

On the subject of language, as a monolingual researcher it is necessary to make a note about working in languages in which I have no proficiency. Beyond being restricted to literature written in English, or already circulated in translation, I have used auto-translating software at

points to start translating primary texts predominantly in Greek, Turkish, Spanish, and Polish. However, this is not sufficient so I have also been reliant on the consultation of collaborators, friends and colleagues in helping me ensure that the translations I am working with are both accurate and true to the intention of the original author or speaker. Such a research practice is not ideal, however, when working across such disparate cases, each exhibiting a different and crucial element to the argument developed here, it is almost impossible to have sufficient language skills for each case. Nevertheless, in this regard I am indebted in particular to Stefanos for his ongoing collaboration and help interpreting while conducting field work and with case specific language, and to Hannah Meszaros Martin for her generous consultation regarding part II. It is in such collaboration that I find the richest work is produced, and if something can be salvaged from my limitations it is that it forces me into collaboration with people working closely to the conditions I am focusing on. To conclude this section, rivers are methodologically challenging objects of study both in terms of their own dynamic characteristics but also, specific to this thesis, their potentially obfuscating and deadly capacities emphasised by the agents of violence in each case. Nevertheless, these very challenges provide opportunities to collaborate and produce innovative approaches to what are sometimes intentionally assumed to be epistemologically or physically restricted spaces. It is sharing this work that has been most methodologically productive for me in conducting and writing this thesis.

Reflections

In Part I, I initially asked the pivotal question, what is the role of water in the politics of death at the border? In my collaboration with Stefanos Levidis we considered how a complex collection of shifting riverbanks, flooding, and ongoing hydro-diplomatic impasses have been mobilised to make the river a strategic obstacle not only for invading forces but also for asylum seekers. Playing on the ‘naturalness’ of the river the border regime folds together environmental and military technologies to de-humanise those neglected by individual nation states with the support of the EU. By investigating the design of the fluvial frontier this part identified the direct and sometimes indirect engineering of the river ecosystem, under the alibi of ‘nature,’ to incorporate elements such as flow, mud, fog, and seasonal flooding in the production of a weaponised river.

In part II, I took this reading of violence produced by human environmental weaponisation at a relational scale to consider the Hidroituango megadam's transformation of the Cauca into a completely new extractive object, one that contributes to a condition of fluvial terror. The undercurrents of this transformation, as I have shown, bring the struggle for justice and associated memory practices into direct contact with violent ecological impacts. The dam's physical hydro-forming of the landscape, in the service of the metabolic processes of energy extraction, not only amounts to a current threat but attempts to wash away, or even embed deep in the sediments at the foot of the dam, the remains and memories of those who have been disappeared during long decades of conflict. This disappearance occurs across interrelated and biodiverse multi-species communities of memory: river, human, animal, and plant. It is perhaps fitting that the possibility of new life emerging under the shadows of the dam – in the form of water hyacinths – are themselves flourishing on eutrophic conditions, where decomposing biomass caught in static water bodies, such as hydroelectric reservoirs, extract oxygen from within the water and preclude other forms of life. The beautiful flowers of eichornia crassipes are sensors of the hydro-social structure of Hidroituango as an embankment of terror that metabolises energy from its reservoir of affect. Here both rivers and populations become interrelated casualties of an extractive necro-hydrology. What I have learnt, however, is that memory practices exist with the river to resist the oblivion of riverine disappearance.

Such practices include the funerary hydrologies that approach these water bodies as sites of memory and refuse to forget those lost to decades of counter-insurgent violence. Such practices, including Gabriel Posada and Yorlady Ruiz's *Magdalenas por el Cauca* and Juan Manuel Echavarría's film *Requiem NN* reveal how communities retain these rivers at the heart of their community practices and refuse the violence that has produced them as spaces of terror and loss. In doing so funerary hydrologies retain rivers as vital spaces for both everyday life and the riverine cosmologies central to Carolina Caycedo's practice. Thus, a funerary hydrology is a community practice that is not stuck in the terror of the past or atrophied by the present but by dealing with pain and loss attempts to keep the river as the cultural centre of oppressed and terrorised communities.

The final part of this thesis explored how an infrastructure of genocide employed an entire ecosystem as a spatio-temporal technology of dehumanisation. In the Wisła's waters, weighted with pain, loss, and erasure I have attempted to engender a submerged imaginary through the hydrologic processes of traction, saltation, dispersal and solution. At the encounter of absence

and presence, possibility and impossibility, I negotiate the meeting between the solvent and soluble to conceive of rivers themselves as dynamic artifacts of memory. Where ‘residence time’⁶⁹⁶ has come before, here the solvent might itself provide an unexpected route to recalling these long dissolved remains and refusing the river as site of oblivion. This thesis joins others in calling for further attunement to scales beyond the perceptible, as it is also here that atrocities take place and where planetary extinctions proliferate.⁶⁹⁷ This final part has attempted to redress the difficulties presented for establishing accountability in the face of vastly expanded scales of causality, in particular, the disconnected associations between acts mediated through, most notably, environmental or other dispersed processes and their repercussions in time and space. Such causal distancing includes violence against human populations, cases of environmental deterioration, or more frequently a combination of the above. In this way these materials of the past *remain* present in the fluctuating archive of the river. These solvent archives of multiple contents become ever more relevant as synthetic fertilisers overload, and nutrients suffocate river systems. Furthermore, what I have shown is that the sensitive traces of past violence are not immune to change within these water systems as they encounter the troubling prospect of the disappearance of the rivers themselves through conditions such as drought. In this way these unsettled solvent traces are signaled into future environmental conditions where their difficult contents come ever more forcefully to the surface.

Necro-hydrology is not unique to the cases of this thesis. The deaths occurring at the Evros/Meriç/Maritsa and on the Cauca speak to the prevalence of necro-hydrology elsewhere. For example, on the 5th of June 2019 the central Committee for Sudanese Doctors reported the recovery of 40 bodies from the Nile, believed to be victims of paramilitary violence during recent protests against the Transitional Military Council in Khartoum.⁶⁹⁸ In July 2014 Islamic State released footage of a massacre of 1,700 Shia army cadets on the banks of, and into, the Tigris river at Speicher (near Tikrit).⁶⁹⁹ These examples corroborate the notion of a ‘fluvial

⁶⁹⁶ Sharpe, (2016).

⁶⁹⁷ Yussof, (2013).

⁶⁹⁸ BBC, ‘Sudan Crisis: 40 bodies pulled from Nile, opposition says’ *BBC* (5 June 2019) available at: https://www.bbc.com/news/world-africa-48512413?fbclid=IwAR0b4RgyyoHTS2cXDjOWgBEBW3jDAjorFu_DfaWtw71csmKAll4UD7r4ExA (accessed July 2019).

⁶⁹⁹ Taif Alkhudary, ‘Five Years in, Still no justice for Iraq’s Camp Speicher Victims’ *Aljazeera*, (12 June 2019) available at: <https://www.aljazeera.com/indepth/opinion/years-justice-iraq-camp-speicher-victims-190612085910106.html> (accessed July 2019).

terror' disseminated through the river's transportation pathways, as addressed in part II. Deaths at river borders are also of concern, particularly in the alarming case of 23-month-old Valeria Martínez Ramírez clinging to her father Óscar Alberto Martínez Ramírez in the shallows of the Rio Grande river.⁷⁰⁰ The Rio Grande forms a large part of the border between Mexico and the United States and is, in its own way a 'fluvial frontier.' The above cases reflect ongoing patterns of fatality that occur when bounded or state controlled territorial practices are challenged, such as in the distinct ways of guerilla and border crossers. In these cases paramilitaries, non-state actors, or border regimes, exploit elemental spaces or ecosystems marginalised by terrestrially biased ways of constructing the world. As this thesis has shown, riparian spaces become extrajudicial arenas within which mass death takes place and where incriminating remains are disposed.

Staying with these marginalised spaces, I return to the central questions proposed in the introduction: what are the conditions that make the weaponisation of rivers possible? And what does the existence of dead bodies in rivers reflect about the specific hydro-social formation of each context? Despite the profound specificities of each case what remains consistent is the existence of multiple interrelated casualties produced by existing and unsustainable social, geopolitical, and territorial conditions. Indeed, the human bodies in question are not any bodies, but those seeking asylum who find their presence rejected and then strenuously denied by border regimes, or those dispossessed by violence and devastating extractive practices, and finally, ethnically persecuted groups targeted by industrial scale erasure. In these cases rivers are directly weaponised through physical infrastructure such as border fences, mega infrastructure projects, canalisation, but also obliquely as material and discursive assemblages from transboundary discord, indirect policy decisions, and the technologisation of sedimentary processes. These engineered and non-engineered manipulations are also weaponised at a discursive level by the treacherous consequences of naturalising rhetoric and reproduction as alibi-natures. What I have learnt over the course of writing this thesis is that the weaponisation of rivers occurs at multiple and mutually entangled scales so that it is often hard to discern the extent to which the waters considered are calculated into regimes of oppression. Returning to the discourse extensively considered in the introduction between Delanda and Deleuze and

⁷⁰⁰ Patrick Timmons, Martin Hodgson, and David Agren, 'Shocking photo of drowned father and daughter highlights migrants' border peril,' *The Guardian*, (26 June 2019) available at: <https://www.theguardian.com/us-news/2019/jun/25/photo-drowned-migrant-daughter-rio-grande-us-mexico-border> (accessed June 2019).

Guattari, to be able to critically identify the extent of such calculations, within the contexts of borders and cases of disappearance, itself requires blurring the distinction between the properties of the river and its capacities. It is not enough to simply say that a river flows or a river floods *a priori* in such conditions, what I have learnt is that such flows and floods always exist in relation to the capacities of properties conditioned by the hydrosocial register they flow and flood within. The capacities of a river's own properties, or agencies, within a border become weaponised as deadly rather than vital with little to no overt intervention. In this way to weaponise a river a State does not necessarily need to build conduits, pipes, and embankments to striate the smooth space of the flood plain – although of course it also does this no less than in the cases of this thesis. Instead, as I have done here by blurring the boundary between properties and capacities in such marginalised and weaponised ecosystems it is possible to trace the co-option of the agency of rivers to kill or hide the trace of death and thus refuse the use of river as “natural” alibis.

I have pursued this line of questioning through a fieldwork practice that remains with rivers even when restricted by limited access. This is either because access to the waters themselves is controlled, or, quite separately, where the haunting resonances of their flows preclude physical intervention on an ethical basis. These limitations maintain the ambiguities of human intervention and expose these rivers as sites of both epistemological and material contest. Through this contestation they themselves begin to disappear. Both the ambiguous and overt interventions, whether at the scale of the impacted mud of the berm or the vast embanked rock and earth of the megadam, are territorial methods that transform often-unruly watery space into weapons.

By thinking *with* rivers and their reciprocal flows I have been able to better identify the myriad ways violence and conflict have long operated and persisted in relational ways. These relations have in many ways been facilitated by presumptions of water as an *anarchival* substance dissolving all that it comes into contact with. This has also been particularly evident through the concepts of terror and trace, where rivers have served the purpose of dispersing the remnants of multiple politics, whether anthropogenic waste or corporeal remains. In this very process, however, rivers also archive and return the traces of their contents in unpredictable ways. As I have shown, in part II through the concept of funerary hydrography, such unpredictability is contested through the calculations of both those enacting terror *and* through the estimations of the time and location of the possible return of human remains from the river.

Through these latter calculations local practices attempt to afford the unidentified bodies of the disappeared a semblance of dignity. Contrary to memory practices developing around riverine transmissions of affect, the case of Hidroituango shows that, where burial of the disappeared has been denied, human intervention in the form of a megadam has doubled the insult upon the disappeared by further submerging and then inhuming the river and its incriminating contents. This contestation exemplifies how water is a materiality of both conflict and affect, transmitting matter and feeling in multifariously dense and dispersed ways.

Here the ambiguity of river water torques between that of exploitation, and ambiguities that pry open the possibility for resistance. Here a resistant hydrology has been most evident in Carolina Caycedo's work. She continually evokes water's agency as a challenge to reduction and containment within extractive infrastructure. Caycedo is passionate in stating that rivers do not die as a result of hydropower. Instead, they will return whether in living memory or in a distant future. With this in mind it is not necessarily the rivers themselves that die but an end to the possibilities for life engendered by the nutrients they carry. This is figured in the two examples of opaque water and clear Cauca water as indicators of the river health (figure 24 & 25). In the images of upstream and downstream water produced by the dam, clarity equates to a degraded state, while the dense and thick materiality of the Cauca's gold waters (figure 26) symbolise both river and community health.

The voracious growth of hydropower throughout Latin America⁷⁰¹ is counterbalanced by hope provided by trends of de-damming in the United States and Canada and conservation practices improving the health of these unbound riverine habitats.⁷⁰² For example, cases such as the Elwha show that rivers can rejuvenate themselves if given the chance. Thus, changing hydro-social conditions can have positive impacts on the health of rivers, with fish populations returning slowly in the aftermath of hydropower. Although this shift in the prevalence of

⁷⁰¹ As a disclaimer here, the rapid growth is interrelated with de-damming in north America. The extraction of energy from rivers in Colombia, and elsewhere, may well be an outsourcing of energy produced through hydropower production that has for as much as a century degraded the rivers of the United States and Canada. In this way the evocation of a return to an American sublime often asserted by those fighting for de-damming in the United States and Canada, translates extractive ecosystem degradation from north American rivers to those of Latin America. This only emphasises the interrelated processes of environmental struggle at local and planetary scales.

⁷⁰² Caycedo cites dam removal and the return of Salmon on the Elwha river, Washington state. *One Body of Water* (2015).

hydropower from north to south only heightens existing uneven environmental impacts, this remains a source for some optimism in a planetary scenario where rivers, increasingly distinguished by slow and rapid deterioration, can return to health when assisted by radical changes in hydro-social politics.

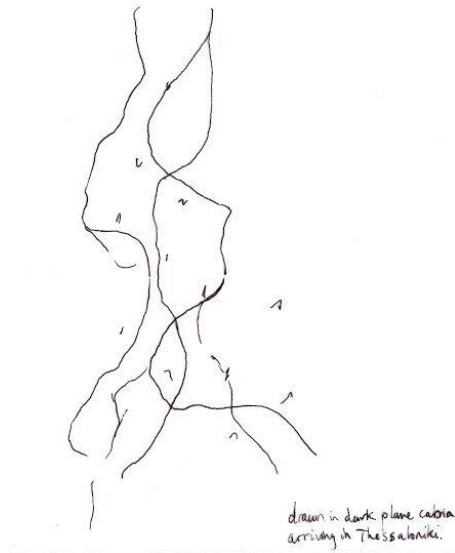
Correlations between wasted lives and wasted waters highlight the necessary reciprocities of struggles for both human and environmental justice. Exposing how conflict operates, in the relational ways I have shown here, demonstrates the inseparability of planetary rivers from human and indeed multi-species health. The above practices point to the possibility of an emergent *hydrology of the powerless* that confronts power's reductive exploitations and degradations. Instead they produce new ways of knowing water that continue to acknowledge the dense and multiple socio-cultural contents of rivers. Such practices offer the possibility of salvage from the wreck of these waters, or from shifting thalwegs, turbines and reservoirs, or even from the heavy sediments of genocide themselves. Perhaps then from within these dark currents, even solvent traces remain.

APPENDIX I

EVROS FIELD NOTES

Evros Field trip - 17/02/2019 – 22/02/2019

17/02/2019



Phones thrown into the river. We have been reading in testimony of pushbacks that when border crossers are detained by the Police at the river, or during pushbacks themselves that mobile phones are thrown into the river. What is the pathway of the mobile phones within the river? Where do they end up? Do they deposit in the sediment down stream? How does the river organise them? What is the fluvial taphonomy of the mobile phone? The river as further erasure of the digital traces of pushbacks. I think about throwing in mobile phone shaped objects (3D printed) containing transmitters, like those placed on migrating ocean mammals, into the river and tracking the river's processes as a medium.

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Landing in Thessaloniki at night the plane cork-screws over the molten light of the city, and the Thermaic gulf. The runways project out into the sea, and as the plane descends rapidly it feels like you are landing on the slick black water itself.

The taxi takes me to the city to meet Stefanos at the theatre. I wait outside on the promenade while he watches his partner Sophia in an adaptation of *Don Quixote*, this is the production's last night. A tanker in the bay drifts slowly closer. It is a sleepy Sunday evening, mild for February and placid after the storm of the previous day. I am drawn to a set of worn concrete steps leading down into the dark water of the Mediterranean. Staring at the water lapping at the steps I begin thinking of this world that my research follows, thinking of bodies of water imbued with mortal remains and a politics of death.

Applause announces the protagonist's peaceful and penitent passing. The audience emerges dressed for the theatre.

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18/02/2019 – My 30th birthday.

(Drive from Thessaloniki to Alexandroupolis to meet Professor Pavlidis, the coroner for the Evros region. Eating Bougatsa pie in the car for breakfast.)

Questions for Pavlidis

- How long does the river hold the body? What is the threshold of identification?
- Boyle's law – gasses at different stages of putrefaction...
- Decomposition process (seasonal). Sea water / river water (faster in fresh). Delta as threshold where bodies are found, but this is not a tidal delta.
- Seasonal flow rate – speed. > It is the river's flow rate that makes it the border – perhaps it is this calculation that makes it deadly.
- Turbulence – Serres – the object intervenes in / makes the abstraction of the flow-rate! Hydrophone recording is not of flow-rate but the turbulence / disorder.
- Danube / Sonar
- River as sorting machine (DeLanda)?
- River residence time.
- Animal interventions? – Birds? The Delta Nature Reserve for endangered cranes and reports of cranes feeding on bodies washed up.
- Disarticulation?
- Is it possible that bodies wash up at the Delta because the flow is decreased?

Locations and effect of river on the body?

Pavlidis's archive as an archaeology? How he thinks about his process?

- If a body is found on an island in the river which side (Greece / Turkey) does it go to?
- Have any technologies such as sonar been used?
- Cellphones? Can numbers be tracked?
- Are more bodies found during flood stage as well as lost?
- Disappearance due to increased flow and width.
- Drought? Do bodies emerge when river is at its lowest? Is drought an archaeological process?

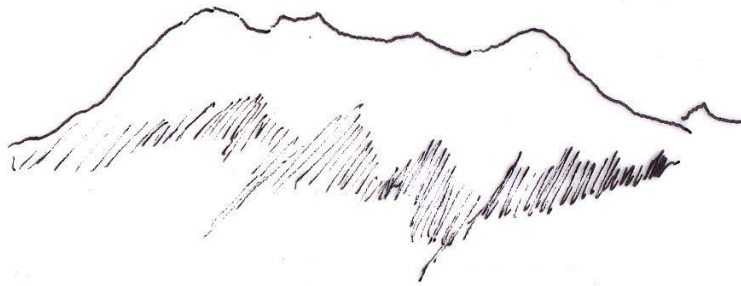
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18/02/2019

(Drive from Alexandroupolis to meet Professor Pavlidis II)

Sophia: "wow!" Starlings rise from a lake, flying over the car as a continuous cloud over the motorway. "Camera!" Sophia cries at the last moment.

Stefanos: "Fresh shit! More than the birds, I was impressed by the shadows." "You do like the index," I respond.



This mountain is called the “bald one.” The next mountain is an Ancient gold mine, the mines are still there.

Driving east towards Turkey, to Barrington Levy’s lyrics: “over the ocean and over the sea!”

The weather is very hot for February. I packed expecting snow or floods as has been the case in previous years on the Evros.

Sophia says that these are “The Halcyon days”: 5- 10 days and nights of good weather and calm seas. Reflects the period when the Halcyon bird nests. “This could be one of those days.”

“Small Gods, I don’t remember their names.”

Sophia retells the myth of the myth with eerie parallels to our research.

I looked it up later and discovered that it had even more significant. Zeus punished Alcyone who was married to the mortal King Ceyx shared such a powerful love that the God’s would look in on them and caught them telling jokes and pretending to be Zeus and Hera. Annoyed by this Zeus drowned Ceyx on a sea voyage. Halcyon found his body washed up at the coast where she threw herself into the waves. Moved by her devotion the God’s turned them both into Halcyon kingfisher birds so that they could live together. Only nesting in winter on the sea shore the Gods decided to create a short window of good weather each winter to allow the birds to nest, hence the Halcyon days.

We arrived at Alexandropoulis at the morgue to find that Professor Pavlidis was not there. Despite emails the previous week to make sure he would be there he has gone on holiday a week early and even his staff were under the impression that he would be there. This was to be our main interview.

We are despondent as we leave and drive north towards the town of Orestiada, our base for the week.

On the road north parallel to the river / border.

I write down these thoughts:

To approach the border is an affective experience - a heightened sense of tension. Like the anxiety of entering a morgue that I shouldn't be there and / or I might see something I shouldn't – the interstitial space or an interstitial zone.

This is the anxiety of someone with a “good passport.”

When the border is a river and the flood plain is its buffer zone – the border becomes a fluvial geomorphological complex of deep time - An entire ecosystem.

They are laying new roads near the border. The contrast is dramatic. “Welcome to Evros” Stefanos quips over his shoulder as we pass a tractor in the new road. The TAP (Trans Adriatic Pipeline), which meets the TANAP (Trans Anatolian Pipeline) at the Evros is the force behind these new roads).

The deep and continuing time of the river / The shallow times of the river.

Arriving in Orestiada we check into hotel BIENNH (Vienna) apparently where NGO workers stay but also where FRONTEX operatives sometimes stay. We are tired from the travel but keen to have a drink to soften the disappointment of Pavlidis's absence. We go to a bar Stefanos has been to before. I have been told that this is a conservative part of the country but this bar is the exception. We are looked at suspiciously as we enter, most people here are regulars, this is the bar frequented by the local left. There is a meeting in the back room, the books on sale are translations of Marxist theory. We order tsipouro, a clear brandy. The bar man, “M”, asks what we, two Athenians and a Brit, are doing in Evros? We tell him, and he sits and drinks with us. He is a font of local knowledge, even if some of the things he says need to be taken with a pinch of salt. He tells us that he owns a piece of land on the river and that he will take us there the next day. After the disappointment of Pavlidis, this was a good end to the day. I had come here assuming that we wouldn't get to the river at all, that the area is so heavily surveilled by the Police and the regular army bases that it would be impossible to get near to the main course of the Evros itself.

In my room, I decide to upload my photographs and delete them from my devices each night. Police traffic stops are common here and the Army are an every present. I have been told that if we are stopped they will delete the images from cameras and phones, and that we are likely to be stopped. But maybe I am paranoid and everything that “I am told” is feeding a fantasy of my own self-importance. Yet nothing we are doing is illegal and it is far from espionage. The atmosphere of the border generates an anxiety, feeds a fantasy of transgression.

From the testimony I have read Border-crossers are also told a great many things by traffickers and through word of mouth between themselves about what will happen, and what to do when they get to other side. Much of which complicates their already precarious position. The border is a space that can be characterized by ‘word of mouth advice’, a space formed by anecdotes and “what will happen ifs” these are not baseless but fed by the presence of actual violence taking place within the buffer zone, on the flood plains of the Evros, and within unmarked vans, and under the cover of night at the river banks.

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Driving on the dirt roads in the hills on the way to Sidiro - the migrant cemetery.

[Even in Rosa – the name of Stefanos and Sophia’s jet black Daihatsu Feroza jeep – with her suspension the dirt roads made writing difficult and the notes become blurred. This is common throughout as much of the writing was done on the road between locations.]

Stray puppies everywhere, alone at the roadside. We pass one dead in the road, we all fall silent.

The braided border.

Braiding is unlike the silk weaving once famous in the area and transported along the Evros.

A braid is strong pulling elements / strands together like rope, it is resilient. Are rivers resilient? They adapt to human interventions, their course change in response to upstream infrastructure, they disperse materials introduced into their flows. Is a braid a sign of ecosystem health rather than a straight river?

The village seems cut off, indeed for many years these villages had bars across the roads to prevent access, and ease of communication. Here the Greek state was producing internal borders to deny the existence of the Muslim minority. The roads are still not tarmacked. Although dirt roads are common in rural parts of Greece Stefanos and Sophia assure me that these are not normal driving conditions: “This is weird for Greece.”

13 boys piled onto 6 dirt bikes drive towards us, we are lost but they don’t stop. Later, as it gets dark, a group of teenagers sat around a fire by the roadside give us directions to Mikro Dereio where we will find the road again.

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19/02/2019 Turkey / Bulgaria / Field?

The flatness of the flood plains seem ideal for surveillance. Is this from Paul Virilio: Does he write that war is waged from high points?

Small bunkers dot the landscape, many are overgrown disused or perhaps dormant in place incase of invasion?



Eagles fly overhead.

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On route to the border crossing at Kastanies we stop at the Nero café on the Arda river, a tributary of the Evros. Here we are only 500 metres from the border and less than a kilometre from the confluence with the Evros. We stop at this small low-water car bridge, this is perhaps as close as we will get to the Evros.

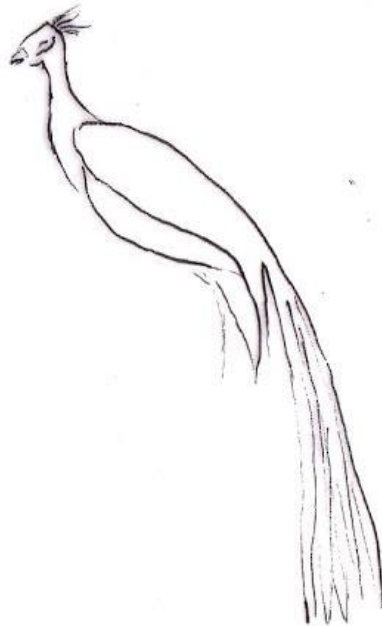
The current is strong here and the hydrophone bounces on the surface. I place it further down stream away from the rapids produced by the concrete road surface and where the surface water is less strong. The Ardas is large here before it meets the Evros. Stefanos gestures for me to take the head phones off, the underwater sounds fade away, and within the sound of the river we can hear firing in the distance from an army base. The two sounds become synthetic, and aurally symbolic of the militarisation in the region, and the militarisation of the river.

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At Kastanies border crossing. 19/02/2019

On the Greek side the border crossing is a desert, full of trash. It feels like a service station. While we wait for our passports to be checked there is a power cut and we are delayed. A month earlier a Greek and British guy researching the border were arrested in the area and during the power-cut it feels like our presence is being registered... Sofia thinks we are paranoid.

As we pass into Turkey the border is tidy. There is a garden, and there is no litter. Suddenly, we are apprehended by three peacocks. Their feathers are down and yet they are in their own way an obvious display. The strange calm of the peacocks walking across the road lead us into the garden area where the border checks take place. The whole situation had a surreal flavor.



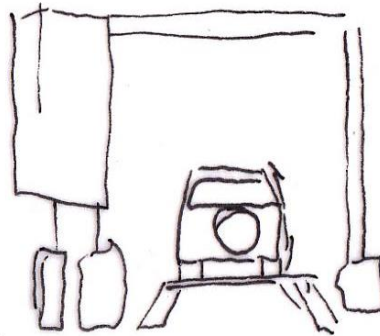
Men in plain clothes - black leather jackets and jeans - smoke at picnic tables waiting to search suspect vehicles. Rosa is a gas / petrol hybrid and they want to see the natural gas tank in the boot. Eventually they nod their heads in feint admiration for the car. They ask to see

the hydrophones. With their black rubber casing and long cables they do look suspicious. With hand gestures I explain that they are for listening under water, which is surprisingly accepted without question. I had forgotten that I need a visa to go into Turkey, a sufficient oversight as it is the European / Turkish border that we are researching. €25 is the fee for a three month stay, but we will be in Turkey for only a few hours. Driving on we think about the amounts paid by those coming in the other direction where a visa is not an option.

Then we cross the bridge into Edirne. We stay for only a few hours before driving on to the Turkish / Bulgarian border. With ease we will cross three borders before lunch.

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The Turkish / Bulgarian border



The Turkish / Bulgarian border

We pass through without any event and go through disinfection baths which spray the wheels. This is the EU's biological border, another liquid border. Then the Turkish guards call us back because they want to X-ray the car. Rosa is driven up onto a ramp where a mobile x-ray passes across her. Were we called back because we have been in Turkey for only two hours and are crossing a different border into a third country? Or with my paranoia peaking because they are suspicious of us? The border guard hands back our passports and says wryly: "Goodbye Stefanos."

The border is slow and ponderous – disconcerting and this is with our EU passports. On the Bulgarian side we are asked if we have cigarettes. Then we turn our lights on! We had been told that you get fined for not having your lights on, even in the middle of the day, and that there is a Police road block 1 km after the border specifically to fine those who are oblivious to this law. But we were prepared, or at least we thought we were. The next ingredient to the gradient of the border is that you need to buy a ticket from the service station for the road toll. When we stopped we turned off the lights but forgot to turn them back on again when we rejoined the road. Half a km later and there they are - a row of Police cars lined up waiting beyond the crest of a hill. Even if the fine was only €10, this is part of the economic gradient. The town on the Bulgarian side is punctuated with adverts for casinos and for Pole-dancing clubs to attract Greek and Turkish tourists across the border.

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[Short drive from Bulgaria / Greece border crossing to meet “M” to see the Evros near Dikaia]

Flood plain as “natural” border and lends itself to visibility. The visibility for military purposes appropriated for the border.

As we are driving alongside the river, Stefanos says: ‘the river is a ghost, you only catch glimpses of it at select locations or crossing the border’. Or for me it is only accessible through its tributaries. The tributaries of the border feed the spectre of the river. Or, the waters that will become the border. The entire watershed feeds, or becomes the border.

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Dikaia 19/02/2019

Dikaia translates as “the Just ones” or “the fair ones.”

This town of the “fair” has seen better days. The awning of the “Black and White” pub has peeled right back. Here the rendering on the walls is crumbling, in Bulgaria there was no rendering. The bookshop hasn’t opened in years, peering through the window a carousel is stacked with sun-faded postcards of small families. In need of caffeine we look for a café but only find a local shop. The kind of shop that has everything and nothing you might never need, at least not since 2008: Dusty CDs, old LPs, Nokia 3310 cases, and pornographic DVDs. And yet there are palettes of building materials stacked everywhere, these can only be left overs from before the financial crisis that has so characterized Greek politics in recent years. The sense of inertia evident in the town might also a result of the tightening of the border in recent years. And the two are not unconnected.

During the half-an-hour we spend exploring the village the border is audible in the dull pop of gunfire just at the edge of earshot. In this form the border is a light but constant presence shifting into and out of resolution.

On arrival we are told that border crossers shelter in the old railway station. The railway was built in the 1930s by a French company as infrastructure?

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“M” 19/02/2019

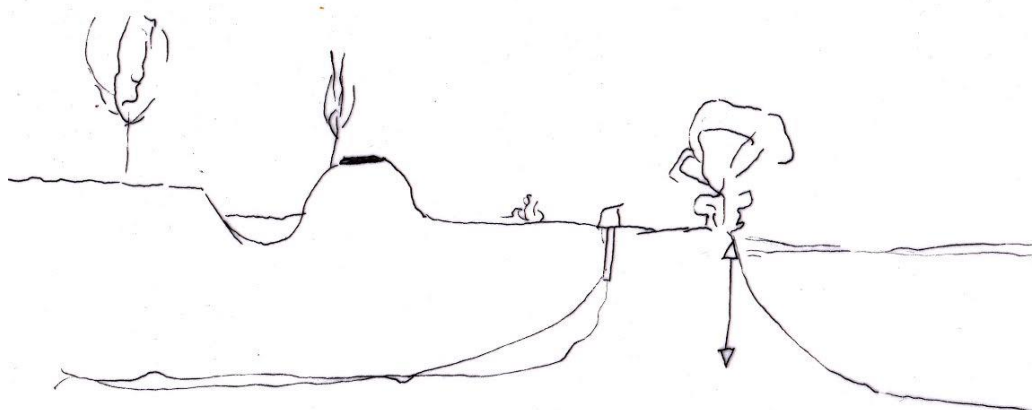
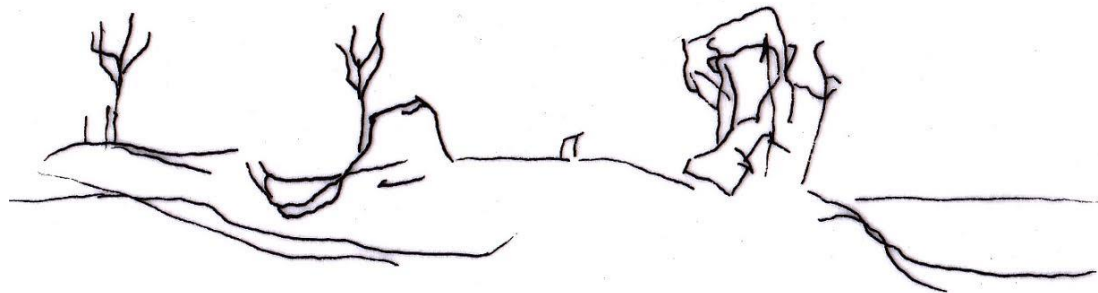
We meet M [A bar man we spoke with at a bar the night before] in the village. He is dressed in all black for the occasion: Matrix-style shades, heavy boots, a black leather bum bag.

We enter the “buffer zone” along a flood embankment (dirt road on top). This is the first segment of the river in the buffer zone. I am told that these berms – or embankments - were built during the dictatorship, the ‘Regime of the Colonels’ (1967-74).

M tells us that there are islands in the middle of the stream awarded to Greece in the Lausanne treaty on account of the traditional grazing of Buffalo on these islands. We are near to the “Gamma island”.

The dirt road is incredibly muddy built with clay dug and piled up as a flood barrier. M says that every object you see is left by border crossers, by this he means items of clothing, litter (litter carries connotations of disregard, whereas in this case the items left behind are not out of choice but necessity). The deep grooves in the clay berm, on the other hand, M says are left by Police patrols. Because there are no border cameras here this is a regular crossing point.

On the border side of the berm bull rushes grow in the fields, on the side away from the river is a trench dug next to the berm, most likely where the clay for the berm was excavated. The trench is a stagnant canal of water. It feels like a structure that follows military specifications.



Small brick wells punctuating the fields are wells used to irrigate the fields beyond the berm / embankment.

Near M's land empty plastic water bottles with Turkish branding are scattered around a tap by a collapsed building.

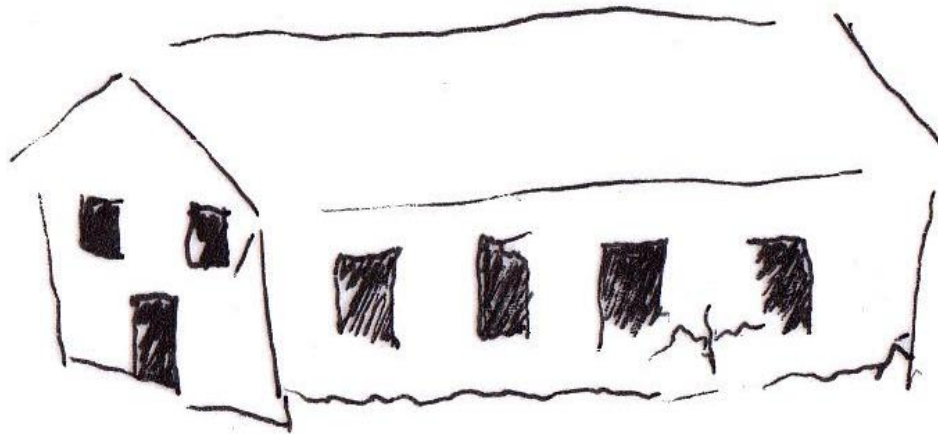
There are crocuses growing everywhere. They come out after the snowmelt and have the symbolism of resurrection, encouragement, and are harvested for Saffron.

Embankments Povinelli.

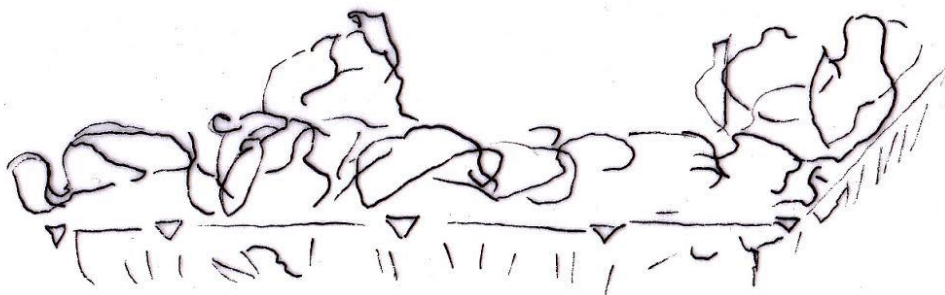
Stef to me "I can hear your gears grinding" but I can smell the brake pads and clutch from the clay road.

I feel anxious I feel we are being watched. We manage to take a picture of the river. What does it mean when one feels anxious near to water? Not because of any fear of the water itself, or previous personal trauma but because what it symbolizes for you. Because you have weighted it in your mind as dangerous.

We drive past the old railway station where "M" says that fires are lit to dry clothes.



There are overgrown thickets of brambles and stunted trees surrounded by flags indicating the presence of mines.



Henrich Böll's old phrase "a question of Botany" comes to mind.

M says: "Heavier than 40kg the mine blows, vehicles are 250."

The government claims to have removed all anti-personnel mines, these are apparently anti-tank mines left as a precaution in case of Turkish invasion. How thick will the brambles get? How long since they were laid? Böll's question related to new growth emerging from the rubble of bombing in Cologne in WWII as a measurement of time since a building or street was flattened. Conversely, this growth measures the latency that precedes an explosion. How long before the eruption of the violence stored within the ground?

The racist analogy of flooding becomes material in the flood defence / border embankment.

It has flooded once every three years of M's life, especially after major snow falls in Bulgaria.

We drive further between two villages that were communist during WWII.

At points the embankment has been mended with Gabions - rock-filled cages. There are 7 rows stacked on top of each other, each one a metre high.

We reach gamma island, here the water is three metres deep right at the bank, the surface water appears to be very slow moving. There are also water gates diverting water from the village.

See section 1 article 6 of the Lausanne treaty for border demarcation agreement. Was a "border commission" ever set up?

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20/02/2019

We drive past Fylakio detention centre very close to the Arda river. We are going to photograph it from the car as part of a photogrammetry exercise specific to Stefanos's practice. We drive slowly taking slow motion images of the centre. There is still cotton on stalks in the fields surrounding the centre. We can see through the wire fences to groups of detained people organized in a line.

We talk about our excuse if we are stopped. This is a common subject of conversation in the car. Where we are bird watchers in the delta we are agronomists in the flood plain. Indeed the village of Fylakio is subject to flooding and figures in many of the studies of flood forecasting we have been reading in the region.

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We drive to the village of the "Silkers". We pass a hotel called Pembh (to flaneur or observe). I pronounce it phonetically (and not with Greek phonetics), which receives much laughter. This reflects something of my position also. We pass a man standing behind a tree by the side of the road, it feels like he spends quite a long time standing there.

We arrive at Mikro Derrio again – the first of the “Turkish villages” and the beginning of the dirt roads. A Police truck circles the small town square around us. This is a performance of power.

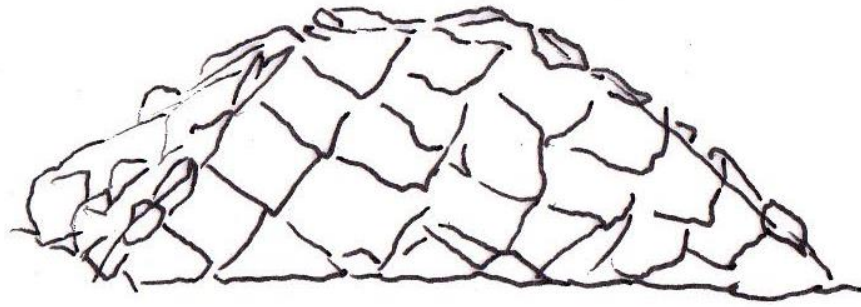
Stefanos mentions an anthropologist Alfred Gell who studied traps. He conceived that the power of the trap is that it is unintelligible to the victims.⁷⁰³ Stefanos relates this to the everyday experience of the locals [considered to be the enemies of the state] driving on the dirt roads and the Police performance of circling the square. Perhaps, however, the unintelligibility of the trap is also the river itself. The river is not intelligible as a border or a trap at first glance but is nonetheless a strategic trap or weapon in its use as a border through its flows, the muddiness of its banks, its dispersal of causality, the state of exception it produces for the performance of systematic pushbacks, or even how the trap of the protocols of Dublin II meaning often border crossers do not want to be ‘processed’ on arrival as this means that they will always be returned to Greece from other EU nations. The traps of the border.

Approaching the village of Roussa the potholes in the dirt road get very severe. In Roussa we stop at the local café / shop run by Khadija (born in 1956 as we discover). She asks if Sophia is a Greek teacher. She has a large drum stove in the middle of an earth packed floor. She gives us coffee and Flamouri tea that she grows herself. It reminds me of chamomile. Khadija tells us that daughter lives in England although she doesn’t know where. All around the café are signs for the dates when military doctors come or when teachers, sent by the state, will hold classes. As we leave we buy 4 large goose eggs and a large bag of Flamouri tea. By Sophia and Stefanos’s reaction to the eggs Geese are not common in Greece. Khadija thought I was Sophia and Stefanos’s son, which is hilarious as we are all the same age.

Driving on from Roussa we see a dam on the Erythopotamos. Perhaps it is there to regulate flow? Despite this area lacking state infrastructure except for irregular visits from the army doctor, a teacher sent from Athens, the police performances, and the lack of properly surfaced roads, nevertheless, there is a substantial water infrastructure. This small dam brings to mind Matthew Edgeworth’s thesis in his book *Archaeology of Flow* that there are almost no rivers that have not had their flows altered by even small-scale human intervention. Alterations that might well be indiscernible down stream where the Erythopotamos meets the Evros. Is this the trap again?

I do a short hydrophone recording where the road crosses the river near the hamlet Ourania, which means “heavenly” and it is in this sun. The slate tiles on the houses are roughly finished and have the appearance of fish scales. I haven’t seen roofs like this before, feels like an ancient practice.

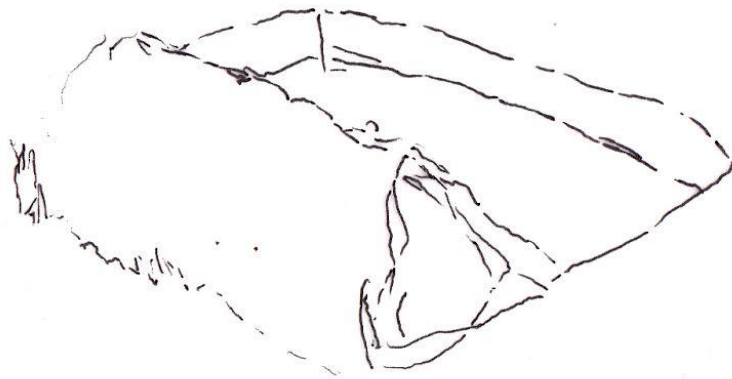
⁷⁰³ Alfred Gell, ‘Vogel’s Net: Traps as Artworks and Artworks as Traps,’ *Journal of Material Culture* 1996, 1:15, pp. 15-38, p.26. ‘Initially, a trap such as this [an “arrow trap” from West Africa sketched by Weule] communicates a deadly absence - the absence of the man who devised and set it, and the absence of the animal who will become the victim (the artist has indicated this victim in the background of the illustration). Because of these marked absences, the trap, like all traps, functions as a powerful sign. Not designed to communicate or to function as a sign (in fact, designed to be hidden and escape notice), the trap nonetheless signifies far more intensely than most signs intended as such. The static violence of the tensed bow, the congealed malevolence of the arrangement of sticks and cords, are revelatory in themselves, without recourse to conventionalization. Since this is a sign that is not, officially, a sign at all, it escapes all censorship. We read in it the mind of its author and the fate of its victim.’



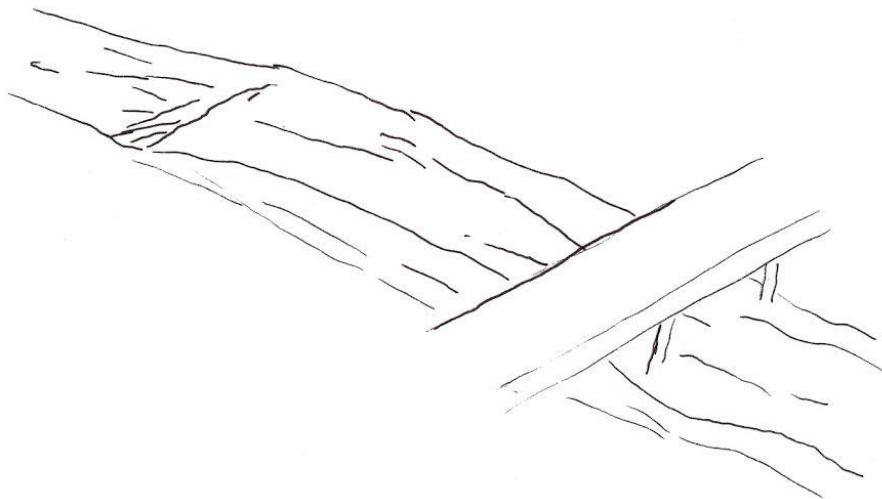
Looking for directions in Ourania we are asked: “What are you guys from Athens doing here?” It is evident that our presence, or the presence of someone from so far away, is a rare occurrence.

The drive to Sidirio to visit the graveyard and to interview the Mufti is an hour long on dirt roads. We do another hydrophone recording from behind a bushel of reeds near a small concrete bridge. This is a separate branch of the Erythropotamos.

We arrive at Sidiro graveyard at 4.59. The sun is setting rapidly and the shadows are long. There are 6 empty graves, and they are flooded.



There feels to be a distinct juxtaposition between all of the flowing water I have been recording and the stillness of the flooded graves at the cemetery. Speed and stillness / velocity and capture.



I record in the grave. This feels strange but I assure myself that there are no bodies in this grave and I am not disturbing any of them. There is almost no sound. I increase the gain on the recording beyond a level that is recommended but still I hear nothing but the static fuzz of the gain itself. Does this water signify anything or is it merely a coincidence? Nevertheless, the flooded graves capture my imagination. I immediately think of a very basic understanding of the hydrologic cycle of water cascading from the hills down to the river and to the sea, and I think of how this water pooling here is somehow a part of this cycle? I think of water captured and removed from the cycle far from any rivers, let alone the Evros itself, just as the bodies buried elsewhere in the graveyard are far from where they intended to be, far from the river and instead buried in the cemetery of a community that offered to provide a Muslim burial.

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We arrive at the Mufti's house. It is one of the first buildings you come to in the village. It is a long building shaped like a barn but painted white with a tile floor. Mehmet, the Mufti's name, also runs the local petrol station and has a polished Mercedes in his drive. It is dusk when we arrive and we fear that he will not speak with us even though we arranged to talk two nights previously. We knock but there is no response. Then we look around the back into the garden and he and his wife are tending to their beehives. He eventually comes to the front of the house: "How are you?" [some of his few English words] he greets me with that strange enthusiasm to speak to a Brit. We wait by the car while he changes, it feels like we are standing outside for ages and we start to worry that he won't come back out. Then eventually he comes out in a suit and a cardigan with the headdress of his position as a cleric, white with a silk top. He leads us into his consultation room, a small brightly lit room.



Stefanos asks why he changed, his response in this typical good humour: “You came to see Mehmet the Mufti, not Mehmet the beekeeper.” A clue to the many roles this man performs. Mehmet mentions a German / Greek woman who accused him of performing mass burials and degrading the dead.⁷⁰⁴ He claims that he did his best with little support from the government and, at times, large numbers of burials.

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21/02/2019

Driving south from Orestiada to the delta.

There are floodwaters in the meadow to the East leading down to the river. At intermittent points we can see the river from the road. This is a territory of wetness. The border is waterlogged. The tyres of all of the cars are thick with mud.

The army is everywhere today. In all the towns and on all of the main roads there feels to be an increased frequency of army vehicles compared to previous days.

South of Soufli and visible from the 53 main road there is a sand stone landscape inhabited by shepherds and quarries.

We stop at Pythio beneath a Byzantine fortress. It is positioned at a bend in the Evros with a perfect view of the flood plain. It reminds us of the passage in Virilio’s writing on the Donjon as the viewpoint and the military glacis.⁷⁰⁵ The floodplain produces a space of surveillance. The police station at Pythio is also the site of suspicious pushbacks.

⁷⁰⁴ Welcome to Europe Network, ‘Mass Graves of Refugees in Evros Uncovered’ w2eu.net (2010) Available at: <http://w2eu.net/2010/08/09/mass-grave-of-refugees-in-evros-uncovered/> (accessed May 2019).

⁷⁰⁵ Virilio, (2006), p.94.

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The Delta 21/02/2019

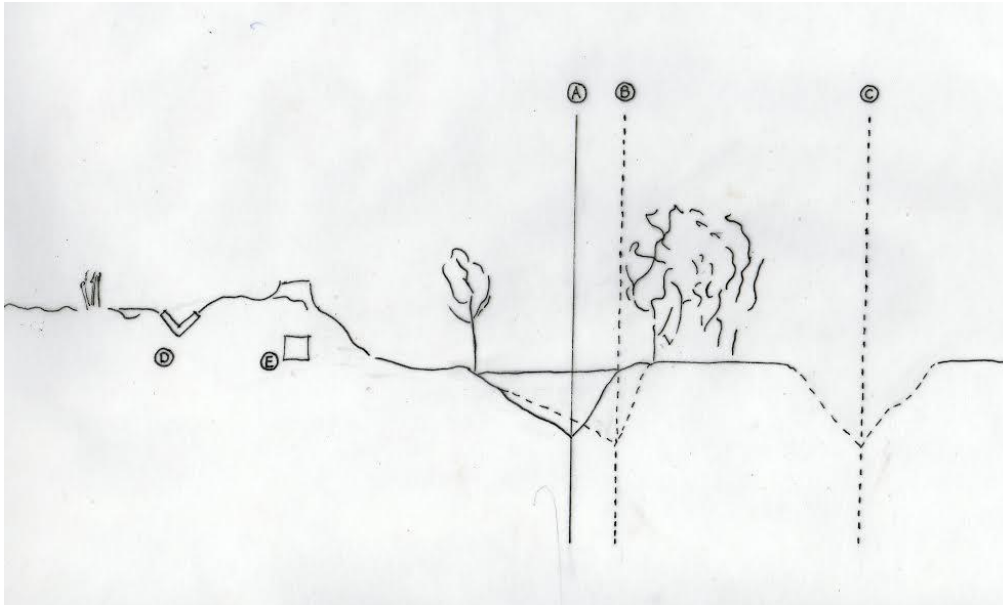
We drive to the delta amongst bull rushes. The delta is protected by the Ramsar convention on Wetlands of international importance, especially for its population of migratory cranes.

We record in a stretch of still water, the flow which is stronger upstream is massively dissipated across an entire ecosystem of the delta. Imperceptibly moving towards the Mediterranean.

A “Hup” “Hup” “Hup” sound comes regularly from beyond the trees. I assume it is the shepherd we spotted from the road calling to his sheep (here the road is also located on a berm). But instead, as Stefanos points out, it is the sound of a military training exercise going on beyond the trees on the other side of the river. Then we hear rounds fired. Is this a training field in the delta? The braided border is most evident here in the delta.



The road we are driving on is itself a military installation. With a tunnel running beneath within and a concrete tunnel running within and intermittent foxholes. The dirt road has been a research method over the previous week and here it reveals itself to be an aspect of the military infrastructure of the delta.



What I find out later that day when I consulted the geo-tagged images I took at the delta is that after all of these days of skirting around the river border the stagnant water we had been recording is the border itself. Knowing that the river has been straightened in the delta at different junctures over the previous century we had assumed this to be one of many smaller branches. This still water, however, had been the main course when the Lausanne treaty was signed in 1923. Although the simple Google satellite searches we make only show barren water logged land the training field on the other side of the water must be a Turkish position. What the map calls the Evros are merely pools of standing water, which after days driving on the fringes of the buffer zone produces an odd feeling.

APPENDIX II

EVROS FIELD RECORDINGS

See attached: USB / Soundcloud Links below:

Sounding I: *Sidiro flooded grave*



<https://soundcloud.com/ifor-duncan/sidiro-grave-hydrophone-recording/s-HcL4f>

Sounding II: *Ardas*



<https://soundcloud.com/ifor-duncan/ardas-hydrophone-recording-ii/s-GPtpD>

Sounding III: *Ardas II*

<https://soundcloud.com/ifor-duncan/ardas-kastanies-hydrophone/s-TrT48>

Sounding IV: Erythrotamos



<https://soundcloud.com/ifor-duncan/erythrotamos-hydrophone-recording/s-L6Luz>

Sounding V: Call to Prayer Edirne

<https://soundcloud.com/ifor-duncan/call-to-prayer-edirne/s-9Fe8u>



Between the water and the land: The border and the river diverge as the delimitation runs along the dry riverbed.



Poppyfield with Minefield near Dikaia (Ifor Duncan and Stefanos Levidis)



Irrigation works at the Delta near Feres.



The Mud roads of the Fluvial Frontier (Ifor Duncan and Stefanos Levidis).



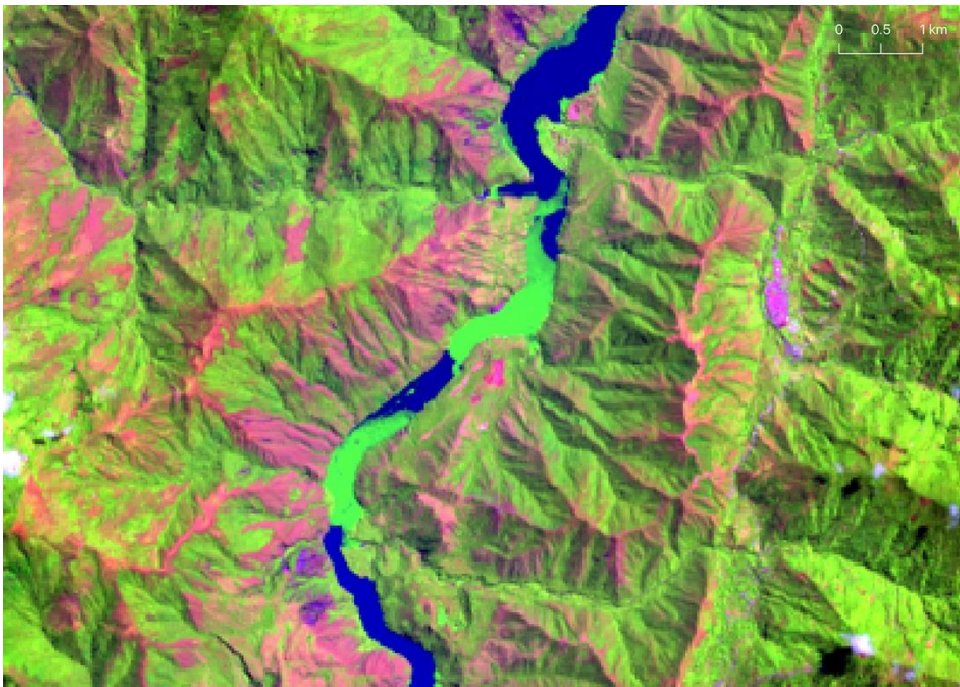
The berm / tank trap.



Inside the berm / tank trap.

APPENDIX III

Part II Waterborne Terror



Water Hyacinth growth (between February and July) on the surface of the Hidroituango reservoir near the town of Sabanalarga, Antioquia province, Colombia. Landsat 8 (band combination: 6-5-4) (17/07/2019) (Author's own).

Part III



Soła beach at the rear of Auschwitz I.



Fisherman's fire near to the Wisła.



Sign near to the Soła at the rear of Auschwitz I. The sign translates as: “Water and sewage company / I-zone for sanitary protection / Staying on the left bank of the Soła is forbidden”



Sign translates as: “direct protection area for surface water unauthorized persons are not allowed to enter”

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