

The Meteorological Occult: Submergences in the Venetian Fog

Ifor Duncan

Università Ca' Foscari Venezia, Italia

Abstract Blinking away fog as it collects between eyelashes – this article begins with a night walk in Venice and a reflection on an embodied encounter with countless suspended water particles. Here I consider fog as a political materiality in an expanded cultural and meteorological context, where, rather than simply limiting visibility, fog acts as an unexpected lens onto slow forms of pollution. In doing so, I turn to the scientific term ‘occult deposition’ – the settling of unsensed pollutants carried by fogs, mists, clouds, dew, and frosts onto surfaces, vegetation, and skin – and adapt it to develop the concept of ‘occult meteorology’. By doing so, I work towards reorienting the cultural significance of the occult. With this reorientation, instead of limiting human sensing, or harbouring unknown and threatening supernatural presences, fog is the intensity of sensing, relationally mediating through eyes, mouths and skins. Here bodies are submerged in everyday and imperceptibly polluted environments even above the surface of water, while fog disorients vast infrastructural systems, from commercial flight to petrochemical logistics. Thinking alongside Esther Leslie and Craig Martin, this article brings earth sciences into encounter with literature and cinema to attend to fog as both metaphor and materiality in the context of environmental degradation.

Keywords Weather. Embodiment. Submergence. Meteorology. Environmental media. Venice. Environmental sensing.

Summary 1 Introduction. – 2 Part I: Submergence and Reorientation. – 3 Part II: Mediation. – 4 Part III: Interruption. – 5 Conclusion.



Peer review

Submitted	2021-07-28
Submitted	2021-11-19
Published	2021-12-20

Open access

© 2021 | Creative Commons Attribution 4.0 International Public License



Citation Duncan, I. (2021). “The Meteorological Occult: Submergences in the Venetian Fog”. *Lagoonscapes. The Venice Journal of Environmental Humanities*, 1(1), 37-58.

1 Introduction

*They weren't tears that I felt between my eyelashes. My face was soaked as though I had been walking through heavy rain. Venice's famous fog, 'nebbia', or what the locals call 'caigo', was forming into droplets on the surface of my eyes. Trying to blink it away in the attempt to see I realised that what I was looking at - fog - was touching me. Walking home late on that October night, enveloped by water droplets suspended in air, fog presented itself right at the interface of the eye with the world. Through experiences such as these, fog is a crucial element for thinking and perceiving the mediation of pollutants within space and into embodiment through eyes, mouths, noses, ears, and skin?*¹

Fog is a cloud that is in contact with the ground. Formed by suspended water droplets lighter than air, it is commonly classified by its effect on visibility. Different classes of fog indicate the distance at which a human eye can see: very dense fog (less than 100 metres), dense fog (101-250 metres), medium fog (251-500 metres), light fog (501-1000 metres).² Such classifications are constructed for road and air travel as well as for military purposes, and often assume that the

I am grateful for the time, expertise and generosity offered separately by Marcello Cerasuolo and Axel Friedrich. I am also thankful to Lodovica Guarnieri for our time thinking together about the watery continuities of Venice and of course my colleagues at the Centre for the Humanities and Social Change at Ca' Foscari University of Venice: Heather Contant, Daniel Finch-Race, L. Sasha Gora, Shaul Bassi, and in particular Emiliano Guaraldo, for leading me to *Il Deserto Rosso*, and Barbara Del Mercato for her insights and generous lending of books on all things related to *nebbia*. I also acknowledge Kimberley Peters for suggesting Craig Martin's 'fog-bound' article and Wood Roberdeau, whose paper on fog I found inspiring at the *Postcards from the Anthropocene conference* in Edinburgh in July 2017. I am also very grateful to the two reviewers of this article for their interest and generous suggestions.

1 It is necessary when writing about weather to state that I continue to find theoretical inspiration in the vital literatures of critical race, eco-feminist and queer studies. For example, in her influential book *In the Wake: On Blackness and Being*, Christina Sharpe conceives of the total weather of antiblackness as the everyday racist violence that is so ubiquitous as to be like the experience of weather. This includes cases where lived weather conditions have become unevenly toxic in black majority neighbourhoods (2017, 106). My intention is not to appropriate these critical lineages but rather to acknowledge that their influence has crucially informed my thinking, even if issues of race are not immediately present in the current text. Elsewhere, however, I consider weather and race in a separate book chapter on rain and the memory of marronage in Dionne Brand's novel *At the Full and Change of the Moon* (forthcoming in Bond, L.; Radstone, S.; Rapson, J. (eds). *New Directions in Memory and Literature*. Basingstoke: Palgrave Macmillan). In the present article the eco-feminist influence becomes evident in my reading of the character of Giuliana in the film *Il Deserto Rosso*.

2 The image is taken dataset from the FROSI (Foggy Road Sign Images) database: <http://www.livic.ifsttar.fr/linstitut/cosys/laboratoires/livic-ifsttar/logiciels/bases-de-donnees/frosi/>. Also see the definition of fog in the world me-

seeing subject is standing outside rather than being immersed within the fog. Fog is considered an optical phenomenon measured by instruments such as the ‘transmissometer,’ usually found on runways, which uses modulated light (or laser beams) to measure visibility. Here, however, I consider fog not only as a hindrance but as visibility made manifest. Fog is dense with information about local atmospheric conditions and pollution; rather than limiting sight, it is the trans-corporeal made tangible in thick space.³ By inverting the assumption that fog reduces visibility, I ask how relationality with the material world can become, perhaps paradoxically, more perceptible when shrouded in fog.⁴ In addition to this, I will consider how fog in its multiple physical and cultural forms can function as a political materiality, a medium of shifting meanings and matters that make sensing otherwise unperceived environmental degradation possible.

Fog as a metaphor has long signified a sense of uncertainty and disorientation, or the obscuring of an object, memory, action or movement. In other words, it is what the theorist of political aesthetics Esther Leslie identifies as “an image of our being lost” (2021, 98). Between substance and metaphor, I propose that from the position of being lost an embodied encounter with fog can be a heuristic experience to perceive invisible yet reciprocal relations with political, cultural and environmental conditions (Jefferies 2018, 68). In the natural sciences, when fog touches and leaves a trace on a surface or on skin this phenomenon is curiously called “occult deposition” (Unsworth, Wilshaw 1989). Science classifies fog as ‘occult’ in the endeavour to identify what is present but undetected by human senses. In short, occult deposition is the settling of polluting or toxic materials on organic and inorganic surfaces left exposed to atmospheric conditions such as rain, mist or fog (Fassina, Stevan 1992). To understand the occult presences within such environments requires looking within and through fog as being in physical contact with all that it holds. This is reminiscent of Leslie’s concept of “Turbid media” from the use of the term in physics to refer to “muddy water or particularly polluted air in which the particles of poisonous dust are so dense as to be visible” (2021, 104). She goes on to ask whether thinking through fogs, froths, and foams is “a scientific or a poetic endeavour?” When I read the word ‘occult’ in scientific literature my mind immediate-

eteorological organisation’s International Cloud Atlas: <https://cloudatlas.wmo.int/en/fog-compared-with-mist.html>.

3 Stacy Alaimo conceives of the trans-corporeal as the material interchanges that take place between human and multi-species bodies and the material environment. She does so in her pioneering book *Bodily Natures* (2010). See also Gómez-Barris 2017, xvi.

4 Here I am particularly thinking of the post- or more-than-human relationalities mediated with and through waters in Astrida Neimanis’s seminal book *Bodies of Water* (2017).

ly begins to draw connections of meaning between the scientific and the poetic. Where Leslie's turbid particles identify the threshold of the ephemeral becoming perceptible, occult deposition suggests that, despite this visibility, what is mediated by fog nevertheless remains concealed, not divulged, or as early definitions of the term imply 'beyond the range of understanding'. We perceive the fog, but are we immediately aware of what it contains and leaves behind?

Starting from the context of Venice, this paper traces a material politics of fog that goes beyond the confines of the lagoon city. Adapting Serenella Iovino and Serpil Oppermann's material ecocriticism methodology that "examines matter both *in* texts and *as* a text" (Iovino, Oppermann 2014, 2; emphasis in the original), here I draw together a fog of encounters from literary and cinematic representation, through meteorological sciences to embodied reality, and from the *caigo* itself to discussions with Venice-based meteorologist Marcello Cerasuolo and the German chemist Axel Friedrich. Thus, the intention here is to bring both text and materiality into contact, not to remain with one or the other but in the thick space of fog. Such an approach is necessary to meaningfully orientate within sometimes disorienting social, material and cultural spaces. I begin by asking whether fog can offer a space of spatial *reorientation* that instigates a more nuanced perception of unperceived depositions onto surfaces and bodies. Perhaps paradoxically, I argue that this perception instils an awareness that a subject is submerged within visible and non-visible airborne waters even on the clearest day. This is followed by a reading of fog in Michelangelo Antonioni's 1964 film *Il Deserto Rosso* (Red Desert) as a complex *medium* entangled in both embodied and psychological registers. The final section shifts from fog as a medium that bears pollutants produced by unregulated petro-capital to considering how fog can become disruptive for logistical systems entangled in extraction and pollution.

*Without knowing it, that night in Venice's 'caigo' my eyes became the surface of an occult deposition.*⁵

Venice is north of the Po delta, a river famous for fog that submerges the entire river catchment from west to east across northern Italy [fig. 1]. It is an important starting point for this study because it is a truly amphibious urban environment. During Venice's *caigo*, the amphibious nature of the city becomes increasingly evident: a watery continuum that links the very bottom of the lagoon, the city's buildings (and foundations), and importantly the air above. The unique en-

⁵ In the LA photochemical smog of 1943 "eye pain, nausea and vomiting" were reported (Gupta, Elumalai 2018, 396).

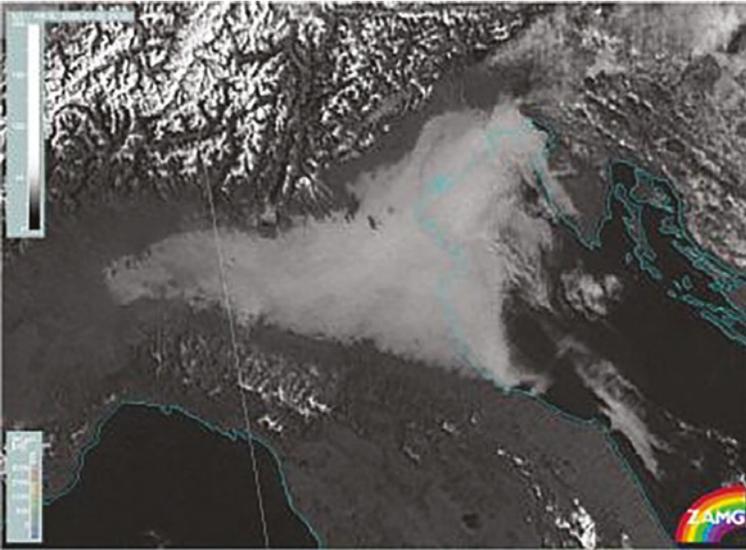


Figure 1 EUMETSAT. 2006. Meteosat 8 HRVIS image 20 January 2006/09.00 UTC. <http://www.eumetrain.org/satmanu/CMs/FgStr/navmenu.php>

vironmental challenges posed to Venice have meant that it has long been a laboratory for cultural conservation as well as techniques to withstand sea level rise. For example, the study of fog water composition has been a concern for practices that safeguard the architectural heritage of Venice, with the risk that occult deposition erodes the very stones for which Venice is famed.⁶ In one case sulphuric acid has bitten so deeply into the four bronze horses of the Basilica of San Marco that they have now been replaced with replicas (Vittori, Mestitz 1976, 70).

Air quality and meteorological conditions are inextricably related (Gupta, Elumalai 2018, 396). In the composition of fog, the size and weight of water droplets matter. Smaller in diameter and volume but with a far larger combined surface area than rain, fog is not able to dilute sulphur dioxide (the main element of acid deposition) and other pollutants to the same degree, and it is particularly reactive in ac-

⁶ For fog deteriorating Istrian marble, see Maravelaki-Kalaitzaki, Biscontin 1999. With the generous help of Marcello Cerasuolo, I was able to source and decipher research on acid fog that was in the form of an old file requiring decoding: Hahn, LaPrade, Marcotte 1990. See also designer and researcher Lodovica Guarnieri's ongoing project, *Amphibious Geologies*, which explores the Venetian lagoon as an "amphibious chemical, biological and geological ecosystem". She draws lines of connection between the degrading shells of lacustrine organisms with the impact of contaminated fogs degrading marble (Guarnieri 2020).

cumulating other dangerous airborne pollutants. For this reason, fog holds a higher concentration of contents and acid fog can be up to 20 times more acidic than acid rain.⁷ This is a question of scale: while fog as a mass of millions of water particles is itself perceptible, what it contains – its occult contents – are almost imperceptible. When fog occurs, it lingers close to water level or the ground, and to emission points, and is exposed for longer periods to pollutants that might be produced locally or travel on wind currents for long distances from power plants far afield. It is thus a unique spatio-temporal substance, whereby the enduring visible presence of water turns air into a media that holds, carries, and can multiply the effects of unseen contents.⁸

Concentrations of particulate matter increase in foggy conditions near major roads: they are gathered by the electronic charge of the suspended waters (Gupta, Elumalai 2018, 397). Despite having no roads, particulate matter is a problem for Venice. Marine fuel is used without filtration systems by the *vaporetti* (water buses), other private vehicles, and by the controversial cruise ships that dwarf the city. All lead to high levels of particulate matter in the atmosphere.⁹ Despite EU directives and claims that air pollution will be reduced through ‘voluntary agreements’ under the ‘Venice Blue Flag’ scheme, made between the Port of Venice Authority and cruise ship companies (Terranova, Citron, Parolin 2016), studies continue to find that the fuel from cruise ships, while harbouring in the city, has a sulphur content 100 times higher than that of the diesel used for trucks and 500 times the concentration of ultra-fine particles found in open sea air (Friedrich 2017). While the smog that shrouds global metropolises is a well-known environmental threat (an anthropogenic assemblage occurring when the airborne particulates and sulphur dioxide rise to dangerous levels), fog is seen as a naturally occurring phenomenon, as passive. Consequently, I stay with fog as a non-exceptional insidious state that allows for a greater awareness of the ongoing presence of harmful particulates even on clear days. My intention is not to disambiguate fog but to re-attune to it and move towards an awareness that, when in fog, a subject is part of a gathering of dense material contents and of beings inhaling and exhaling

7 From the 1970s onwards, acid rain and fog were a major environmental concern in Europe and North America; this has subsided due to successive air quality measures, however, in parts of India, China, Africa and Latin America it remains a serious environmental concern (Breault 2018).

8 Here I use ‘media’ as it is thought by authors such as John Durham Peters (2015) whereby the term not only infers orthodox forms such as photography, radio, or digital media but also considers the environment itself as a form of media.

9 In July 2021 a ruling was passed that is hoped to ban the cruise ships for good; however, such rulings have been made before, so the situation still needs to be watched closely.

together.¹⁰ I thus conceive *occult meteorology* as a lens to perceive a lived world thick with matter, and a complex spatio-temporal condition in tension with environments degraded by the everyday collateral impacts of environmental exploitation.

2 Part I: Submergence and Reorientation

In the opening passage, adapted from my journal, fog is not only a limitation to sight but the dense presence of sight itself. Like the all-encompassing digital cloud, the blurred and edgeless density of fog emphasises how subjects do not look *at* a landscape or the sky; rather their visual experience is itself a process of submergence – with sight and other modes of perception positioned within rather than without. The received understanding of being outside of the perceived world can contribute to the perpetuation of self-interest and social detachment, while a situated understanding of being within a complex environment of relations can prompt increased socio-environmental awareness. Following such a re-calibration, Leslie calls for a critical mode of understanding where everything is imbricated in a

multifaceted totality in which metaphor bleeds into and out of science, in which technology and materials emanate thought, in which thought turns material or can conjure a mood, in which language generates a fog of ambiguity, a condensation of reference. (Leslie 2021, 112)

For Leslie it is necessary to learn to “negotiate in the fog” (113). In other words, perception must become attuned to the overwhelming density of information, and the entangled fields of causality that are often too overwhelming to comprehend let alone communicate. Her ‘negotiation’ is what I call ‘reorientation’, to resist becoming overwhelmed or lost within these material and metaphorical environments but, instead, to re-position the self within this lostness and understand it as a politically ‘operative’ space of immersion (Leslie 2021, 98). Rather than a sense of disorientation, fog can *reorientate* a subject to their own relational condition immersed or submerged within their environment (even and especially above the surface of water). Such a mode of perception re-arranges the sensible world as one of relationality, where human sensory organs are connected at degrees of separation and co-constitution with the objects and spaces that are perceived. When this perceived limitation is reoriented,

¹⁰ In the next section, I will discuss the idea of gathering in more detail in dialogue with Craig Martin’s article “Fog-Bound” (2011, 63).

fog becomes instead the excess of the visible. Put another way, rather than thinking that fog reduces visibility, it is productive to think that what is seen is the fog itself – an airborne ocean of densely suspended water droplets.

This reorientation starts from the understanding that space is volumetric, and people are submerged within atmospheres saturated with varying degrees of water vapour. This reorientation questions what submergence means; for example, walking through either rain or fog is itself a type of submergence within airborne waters, or even an emergence into an awareness of existing within an ever-present watery world. British anthropologist Tim Ingold provides some clues to this state:

No more than the wind is the sky an object of perception. It is not something we look at. On our walk in the countryside we could see all manner of phenomena, thanks to their illumination by the sunlight. The sky, however, was not something we saw in the light, it was luminosity itself. Just like the feeling of the wind, the light of the sky is experienced as a commingling of the perceiver and the world without which there could be no things to see at all. As we touch in the wind, so we see in the sky. (2007, S30)

Echoing Ingold, to see in the fog, where light transmission changes, is to touch what you are seeing. To touch what is seen is to simultaneously be within it, or to see in contact with occult deposition.¹¹ In this way, and thinking back to my night walk, fog is both an object and a medium and it makes acutely clear Ingold's claim that the perceiver does not see the sky but sees in it. This sense of being physically implicated within this watery continuum gets stronger when degrees of visibility reduce: 501-1000 metres, 251-500 metres, 100-250 metres, less than 100 metres, 0. These categories do not only indicate a lateral distance but are a measurement of submergence. If we reverse this submergence, receding by each degree of visibility, fog reminds us that even when visibility is high there is a material connection between perceiver and perceived. In this way cultural geographer Craig Martin suggests that fog "entangles near and far" (Martin 2011, 462). Here submergence has both social and material significance: fog helps to imagine the world as amphibious beyond the littoral, or at the interface of water and land, involving liquids, airs, and earths. *Caigo* is thus not an absence, it is in its own way an occult presence of the lagoon as a watery material continuum.

¹¹ Proposing the theory of 'haptic visuality', feminist film theorist Laura Marks has argued that touch, as well as other senses, plays a part in vision and even offers understandings of cultural phenomena unavailable to sight alone. I would argue that such a haptic visuality is well attuned to the ways that meteorological elements are a media, as well as the ways they are mediated (Marks 2000, 22).

When water forms on skin or eyes, as with my immersion in Venice's *caigo*, Martin points towards a reciprocal relationship where the "body gathers fog, just as the fog gathers the body" (Martin 2011, 463). This is an example of reorientation within a space gathered by the body/fog encounter. This is evident in the work of poet Josef Brodsky. He visited Venice over the course of many decades, usually during winter when fog is most prevalent. In his autobiographical reflection on the city, *Watermark*, he wrote that fog:

obliterates not only reflections but everything that has a shape: buildings, people, colonnades, bridges, statues. Boat services are cancelled, airplanes neither arrive nor take off for weeks, stores are closed, and mail ceases to litter one's threshold. The effect is as though some raw hand had tuned all those enfilades inside out and wrapped the lining around the city. Left, right, up, and down swap places, and you can find your way around only if you are a native or were given a cicerone. The fog is thick, blinding, and immobile. The latter aspect, however, is of advantage to you if you go out on a short errand, say, to get a pack of cigarettes, for you can find your way back via the tunnel your body has burrowed in the fog; the tunnel is likely to stay open for half an hour. (1992, 59)

In Brodsky's description fog is violent, in the way it precludes travel and eviscerates the architecture of the city, turning it inside out like a flayed figure. Likewise, he suggests that habitual directions, such as up/down and left/right are reversed. Brodsky, however, also identifies the role of local knowledge that does not rely on sight but speculates that fog moulds to his shape as a tunnel for the return journey. How grounded this tunnel is in reality is inconsequential, what is important for my reading is the way Brodsky sees fog as an advantage when moving through space at short distances. For those, like Brodsky, who are guided or know where they are going, fog does not dis-orientate but instead allows them to recall their previous route even when their compass is inverted. Fog is thus particularly disorienting for the stranger who cannot resort to prior situated knowledge of the local environment.

The literary authors that I have considered mostly contemplate fog from the perspective of the individual subject.¹² However, rather than simply isolate, fog also gathers a community of subjects repeating similar processes of reorientation and taking care of where their body is and how they move within uncertain space - how they are required to change pace. I do not naively evoke community as a

¹² In addition to Brodsky these include Gabriele d'Annunzio's *Notturmo*; and Ippolito Nievo's *Confessioni di un Italiano* (Cesarini, Eco 2009).

flattening condition, ignoring uneven racial, social, gendered conditions. Instead, fog is productive as a gathering force not only of space, as Martin suggests, but also of subjects that reveal broader environmental conditions and cast present inequalities into embodied relief.

One canonical example of the use of fog to incorporate these inequalities can be found in Charles Dickens's use of fog as a scene-establishing device in *Bleak House*. Fog acts as a device for assembling London and the Thames estuary as a geography of socio-political implications including the economics of the river, the ships of colonial trade, and the bodies of its inhabitants:

Fog everywhere. Fog up the river, where it flows among green aits and meadows; fog down the river, where it rolls defiled among the tiers of shipping and the waterside pollutions of a great (and dirty) city. Fog on the Essex marshes, fog on the Kentish heights. Fog creeping into the cabooses of collier-brigs; fog lying out on the yards and hovering in the rigging of great ships; fog drooping on the gunwales of barges and small boats. Fog in the eyes and throats of ancient Greenwich pensioners, wheezing by the firesides of their wards; fog in the stem and bowl of the afternoon pipe of the wrathful skipper, down in his close cabin; fog cruelly pinching the toes and fingers of his shivering little 'prentice boy on deck. Chance people on the bridges peeping over the parapets into a nether sky of fog, with fog all round them, as if they were up in a balloon and hanging in the misty clouds. (1993, 3)

London's fog was a suffocating presence until new regulations were enforced after the fatal smog of 1952 that killed 4,000 people due to a combination of heavy fog and air pollution (Bell et al. 2004). A century earlier, Dickens lured his reader from the estuary into the midst of the city as the location of his narrative - from Essex and Kent into the corrupt chambers of the chancery court. With his fog refrain multiple political and social elements are gathered within the physical and metaphorical fogs of the colonial metropolis. Lingering in the rigging and with the freezing appendages of child sailors exploited by commercial and military fleets, fog draws lines of travel from the city to the empire. It is also embodied: in the eyes and entering the mouths, and, in Greenwich hospital, down the throat into the physical bodies of retired naval seamen. Dickens reorients his reader to perceive the subjects of the city, from the ship captains and judges to the downtrodden elderly and child labourers, not as dispersed and individuated figures but always in relational community. This is an eco-political and embodied state where, rather than only gathering space, fog also gathers what it contains including social formations. In doing so, fog engages a community - not just the individual as in Brodsky's tunnel - in the process of exchanging atmospheres. Thus,



Figure 2 Vaporetto at Madonna dell'Orto October 20, 2020, 09.06 am. © Author

what was made uncertain or 'obliterated' by fog is physically and socially embodied as a gathering force or mediating element of political matters across geographies and through wheezing bodies. A similar scene can be imagined drawing bodies into trans-corporeal connection in Venice. In this way Dickens mobilises fog as both a metaphorical and a very material condition of meteorological connection and social awareness. From this socio-environmental gathering-force, I turn towards what is mediated by fog, both physically and psychologically, in the cinematic treatment of toxic airs.

3 Part II: Mediation

The sound of the engine and slapping waves comes long before the boat. The 'vaporetto' assembles in physical form at the blurred boundaries of millions of suspended water droplets. Waiting for the 'vaporetto' I wonder whether there is a word to better express this emergence within fog? Rather than dissipating or concealing, does an object assemble or thicken within fog?

The reorientation to and, more importantly, within the opacity of suspended water droplets explored so far, fosters a mode of perception that makes sensible the complex and toxic processes that constitute local environments. When the *vaporetto* emerges from the fog it leaves behind polluting particles from marine fuel [fig. 2]. *Vaporetto* engines are equivalent to buses and lorries, the difference being that they have no filters. Air quality is low on a *vaporetto* ride

with its exhausts expelling 30,000 units of fine particulate matter, by contrast a major road discharges 20,000 units. Landing stations have particularly high levels because a *vaporetto* manoeuvres, reversing and accelerating to hold itself so passengers can board. In April 2016, at the Ponte degli Scalzi, which links the train station across the Grand Canal to the sestiere of Santa Croce, 62,400 units were found. Cruise ships, less frequent than *vaporetti*, also contribute vast quantities of particulate matter. For example, 133,000 units were recorded when the MSC Musica passed Zattere on April 17th, 2016.¹³ Workers on boats, as well as people living and visiting Venice, inhale these pollutants.

Such processes are occult because they operate at the scale of the particulate and, apart from the sometimes visible smoke billowing from *vaporetto* exhausts, remain undetectable to human perception. Literary scholar Jennifer Scappettone addresses this when she relays John Ruskin's dismissive, even offensive, writing on the arrival of trains and steam travel to Venice as a poisonous smoke that begins to compose the bodies of the city's inhabitants; as she reflects on his writing: "it is beginning to constitute both figure and ground" (Scappettone 2016, 79-80). Returning to that night in October, with fog in my eyes, I also thought, as Leslie does, that media is not just what is communicated, what is placed between a viewing subject and a perceived object, but it is an all-encompassing "medium of what is seen" (Leslie 2021, 104).

On another foggy night, shafts of light from street lamps were cast at 45 degree angles from the 'sotoporteghi' (tunnelled passages sometimes ending in canals). The light could be seen to dissipate into the fog after around 2 or 3 metres. It appeared to have a visible granularity, as though each illuminated water particle came in and out of focus like a thousand tiny film projection screens.¹⁴

In literature and cinema, fog usually harbours an unknown threat, it contains something that might harm you, and even kill you. In Steven King's widely adapted novella *The Mist*, fog descends on a quiet

13 These measurements were taken by the German chemist and environmentalist Axel Friedrich who has been invited on numerous occasions to Venice by activists (NoGrandiNavi and AmbienteVenezia Association). I spoke with him in July 2021. Recordings he has taken in harbours around the world, including Venice, can be found on the website of Naturschutzbund Deutschland eV (NABU): <https://www.nabu.de/umwelt-und-ressourcen/verkehr/schifffahrt/messungen/index.html>. Another measurement of a cruise ship taken 2 km away, from a rooftop at San Barnaba, recorded a level of 40,000 units.

14 The International Cloud Atlas describes fog thus: "[w]hen illuminated, individual fog droplets are frequently visible to the naked eye and are seen to be moving in a somewhat turbulent manner".

American town conjuring paranormal events and deadly creatures (King 1980). Elsewhere it is not so much an external threat that fog poses but one that has been internalised. Fog produces an existential crisis in Michelangelo Antonioni's 1964 psychological thriller *Il Deserto Rosso*. Produced at the cusp of the acid rain crisis of the 1960s and 1970s, the film is characterised by luridly yellow clouds of sulphuric pollutants in the port city of Ravenna, at the southern end of the Po delta with Venice in the north. The film delves into the impact of these pollutants on the life of its protagonist Giuliana, played by Monica Vitti. She is recovering from an accident and experiences prolonged anxiety within the context of an unfolding ecological disaster. With the entanglement of airborne pollution and psychological stress, *Il Deserto Rosso* is a film in which the occult of indiscernible material environments intervenes in the internal life of its protagonists.

In *This Contentious Storm*, feminist Environmental Humanities scholar, Jennifer Mae Hamilton proposes the concept of "meteorological reading". She does so within her study of the performance history of Shakespeare's *King Lear*, as it has changed over time in line with cultural interpretations of weather: from metonym to 'literal' meteorological conditions in response to an increase of extreme weather events (Hamilton 2017, 16). Hamilton's "meteorological reading" theorises literal interpretations of the storm in the play as historically circumscribed and always more than this: a metaphor for inner turmoil and a metonym for the broader political situation. *Il Deserto Rosso* can be read in a similar way. Indeed, the choice of Ravenna for this eco-psychological thriller must be read in the wider context of rapid industrialisation of Italy in the post-war period.¹⁵ Discussing the film, Elena Past suggests that Giuliana's terror of an impending ecological disaster is reminiscent of eco-feminist theorist Stacy Alaimo's conception of the trans-corporeal as the porosity of the human body that is not discrete from the flows of substance of a polluted world (Past 2019, 27).¹⁶ This trans-corporeality in Antonioni's film results in both bodily and mental reaction, a consciousness of environmental degradation manifesting as inner turmoil. While this is certainly evident, something occult can also be extrapolated from Giuliana's character.

While her external world of 1960s Ravenna is shrouded by toxic air and sea fog, Giuliana's mind is likewise fogged, or weathered. How-

15 Like Leslie's provocation that fog collapses the boundaries between poetry and science, *Il Deserto Rosso* encapsulates one of the central contradictions of cultural production and, more than this, society as a whole. Past identifies how the film is simultaneously critical of pollution while leaving its own polluting trace - "both industrial by-product and critical of the industrial world" - walking "the threshold at the encounter of art and industry" (Past 2019, 47).

16 For Alaimo see *Bodily Natures* (2010); and "States of Suspension: Trans-corporeality at Sea" (2012).

ever, the misogynistic dismissal of Giuliana's responses as hysteria, including by her husband who is a factory manager, suggests that, to the contrary, her mental fogging is itself an attunement to the environment within which she exists. Her altered mental state reflects her own perception of the slow and pervasive airs of the changing world and her own place within it. Indeed, she perceives these tangible yet insidious changes, also experienced by Antonioni's audience, with greater clarity than any other character in the film. Consequently, through Giuliana, Antonioni's film is an awakening to what is concealed as occult, within the degrading world of petrocapiatal. The film produces such an awakening through what Past describes as Giuliana's extension of "her subjectivity to encompass the 'things around her'" (2019, 40). Consequently, echoing Hamilton, the fog as metonym for rapid industrialisation must be read alongside its role as a metaphor for Giuliana's mental state.

In another scene, set on an oil platform in the Adriatic, she declares her illicit love to the industrialist Corrado (played by Richard Harris), her husband's boss, "now you are part of me - part of what is around me, that is". In this quotation Giuliana collapses the division between her sense of self and other, her sense of self and her surroundings. Giuliana's words - "part of what is around me" - echo Martin's fog that gathers space and what occurs through this, namely the gathering of what is contained within those water particles.¹⁷ Giuliana and Corrado are porous figures whose romance is implicated in the politics of pollution and toxicity that pervade Ravenna. Elsewhere in Italy, Serenella Iovino characterises Naples as a porous city formed at many levels, from the social to the architectural, of myriad porous bodies and matters (Iovino 2014, 101). In this context she posits that knowledge itself is a form of embodied porosity:

To say that knowledge is 'embodied' means that [...] knowledge comes from the give-and-take between bodies and the world. It materializes the porous exchange of inside and outside, the progressive becoming-together of bodies and the world, their intra-action. (103)

The toxicity Giuliana and Corrado encounter is both part of them and around them. More than this, Corrado harbours neo-colonial fantasies about expanding operations to Patagonia and thus transport-

¹⁷ The transdisciplinary *Weathering* research project engages with the embodiment of climate change where "bodies are archives in an ongoing gathering of climate-time". They do so with the intention of developing new imaginaries, linking the vast scale of planetary processes with the everyday lived experience of weather (Giggs et al. 2016). Elsewhere, Neimanis and Hamilton refer to this as the "inter-implication" of bodies, places, and weather in a world of changing climates (Neimanis, Hamilton 2018). Such inter-implications are racially and socially imbalanced.

ing these toxic airs to un-exploited parts of the world. Framed by their romance, this equates to the reproduction of what is around them as a toxic colonial expansion of the toxicities that are reciprocally colonising them. Her awareness of the boundless interrelation of the toxicity she embodies leads to the very externalisation of herself. Through her partial perception of these toxic elements, Giuliana practices an occult form of Iovino's 'embodied knowledge' of the intra-actions of body and world, one that threatens to spill out of their romantic inter-actions to the wider world.

The film is bisected by one of its most haunting scenes at the docks where a flirtatious group congregate in a shack. They play on a bed, begin to pull the shack apart, and discuss whether they had heard a scream. One of the men who is sceptical of Giuliana's claim admonishes her: "Giuliana, who could have screamed? There's only the sea!" When a boat enters the port and raises a flag, indicating an epidemic on board, they leave the shack. What follows during the dock scene are shots of the group running into and out of the fog. When Giuliana loses her bag, the camera takes her perspective. As she looks at the tableau of the gathered group (except Corrado), the fog slowly covers them all. She runs past them and into the car driving off down the jetty and, again, into the fog. They find the car perched right at the end of the jetty having stopped just in time.¹⁸ When her husband Ugo berates her, she says that: "all I wanted was to drive home. It was the fog, it confused me and I made a mistake". Here fog plays its usual disorienting role.

Giuliana's near-death experience is prefigured when, earlier in the shack, she looks out of the window at the fog and says: "What should I look at?" ("Cosa devo guardare?") - "I feel like my eyes are all wet. What do they expect me to do with my eyes? What am I supposed to look at?" Past suggests, citing Alaimo and Rachel Carson, that the wetness of human eyes and tears are evolutionary inheritances from oceanic sea creatures and that "Giuliana's observation about wet eyes underscores the formal constitution of every cinematic viewer, not just her own troubled vision" (Past 2019, 38). Past points to the form of the eye, but only gestures to the watery continuity between eye and world that fog forges. Indeed, the film that covers the cornea and the eye is composed of different liquids. More than this, however, I argue that her eye is actually made wet by the fog, as it formed that October evening between my own eyelashes. Rather than the evocation of a deep evolutionary inheritance, the trans-corporeality of fog and water suspended in the air occurs in her very encounter

18 In Venice, security vehicles have been known to drive off the edge of the wharf at the petrochemical port of Marghera, showing the dangerous role fog can play as it forms the continuity between land and water.

with fog. It is thus through a polluted atmosphere that people see and sense: content and medium, metaphor and material. Giuliana's confusion is framed by an awakening to the wetness of her eyes and the world these eyes are in contact with. In the polluted environment of 1960s Ravenna, sea fog limits their understanding and makes them question what they had heard, and when she opens her eyes the polluted fogs of the film are touching them. With the physical contact between her eyes and the world, Giuliana's question "What should I look at?" reflects her consciousness of being a part of the world that she perceives. In other words, what should she look at when all that is around her is a part of her (Past 2019, 48)?¹⁹ Here her embodied knowledge of pollution is perceived through the physiology of the eye. This leads to the discovery of a continuity between the self and the outside - a discovery that is full of meaning, which leads her to question her position in the world.

Giuliana's 'mental weather' is an awakening to the relationality of toxicity symbolised and physically mediated through a wet eye beginning to orientate to the presence of fog as a meteorological occult. The seminal land artist Robert Smithson evokes the phenomenon of wet eyes under his concept of "The Climate of Sight", in his 1968 essay "A Sedimentation of the Mind", evoking changes to sight "from wet to dry and dry to wet according to one's mental weather" (Smithson 1968, 88-91). Smithson, with the rest of the land art movement, was part of a wider cultural environmentalism occurring at roughly the same time as Antonioni's film. However, rather than Smithson's suggestion that a wet eye is enamoured by the actions of water in its changing states - "melting, dissolving, soaking [...] gaseousness, atomization or fogginess" (1968, 88) - Giuliana's wet eyes are discontented, perturbed by these foggy, soaking environments even before she is fully aware of their ramifications. Towards the end of the film she says to her son that birds have adapted their flight patterns to the sulphurous yellow clouds spilling from the city's factories. Through this observation, Giuliana identifies the multi-species disruption these polluted airs cause. However, it is not only animal routes that dense airs interrupt. When fog is thick, it can also produce an ephemeral interruption in the mobility of logistical systems that Corrado imagines transporting materials from Ravenna to Patagonia.

¹⁹ Karen Pinkus makes a similar argument with regards to Giuliana being a part of the surrounding environment (2011, 270).

4 Part III: Interruption

When I began learning to row in the local ‘voga’ style I remembered that someone had once told me that the word ‘caigo’, fog in Venetian dialect, means to tie up boats when visibility is low. In my subsequent research I found no further trace of this and dismissed it as something I had imagined or dreamt. When I asked a Venetian friend, she mobilised her local networks: the response arrived on my phone: “so, apparently: ‘caigo’ comes from ‘ca me ligo’ (here I tie up my boat)”.

This etymology is, perhaps correctly, dismissed by most academics who point to the root of *caigo* in the Latin word for mist: *caligo*. Nevertheless, the fact that some Venetians continue to say that the term comes from the disruption fog causes to boat journeys reflects fog’s historic importance in the general movement and commerce of the city. Here I am thinking of the cancelled boat services in Brodsky, or, as recounted in a meeting with meteorologist Marcello Cerasuolo, how fog interrupted the telling of time from the Patriarchal Observatory in Venice: beginning in the 1880s, a red balloon or flag would be raised to indicate midday, and to account for the frequency of foggy days they would also fire a cannon. Despite innovations such as horns and lamps, fog continues to disrupt and disorient the circulations and mobilities of resource logistics and even cruise ships. In this way, fog is a political actor, disrupting systems of power while simultaneously being adopted as a metaphor for these complex systems.²⁰ This interaction of globalised systems equates to the occult in the fog of things.

Leslie shifts between meteorological and digital fogs, stating that as “the internet of things come down to earth”, fog “that was once meteorological is now also technical” (2021, 90). For example, the *cloud* of digital and computer memory – like meteorological fog – tightly hugs ground level through the continual messaging between devices, as well as the increasing environmental impact of ‘cloud’ storage infrastructures. From within these imbricated processes, Leslie suggests that what is often so confusing about fog can become operative (98). With this in mind, fog is not only becoming operative as a mode of reorientation, but it already intervenes within logistical systems. In other words, airborne water particles themselves interrupt fogged systems to offer moments of reprieve from relentless circulations of petrochemicals and cruise ships – meteorological fog *fogging* logistical systems.

²⁰ Brani Brusadin uses the metaphor of “the fog of systems” to identify the deeply entangled world of networked physical, logistical, and digital infrastructures (2021).



Figure 3 Tweet from @abc13weather, December 19, 2017

Fog regularly halts shipping traffic. Taking the port of Houston as an example, in January 2009, February and December 2011, April 2012, February 2014, and December 2017 fog prevented ships from entering (37 vessels) or exiting (13).²¹ Echoing the shrouded port in *Il Deserto Rosso*, sometimes heavy sea fog holds part of the gulf coast in stasis for weeks on end. In this weather map from a tv broadcast in December 2017 visibility is reduced to zero [fig. 3]. Countless hours of petrochemical circulation are put on hold as ships are forced to a standstill. In maritime navigation protocol boats should not enter port if visibility is less than the length of the vessel itself. This is a navigational translation of the erroneous *ca me ligo*: when fog suspends, even if only briefly, the networks of petrochemical trade. A trade that also supplies the marine fuel of Venice. What if Venice were shrouded in fog for long enough that the cruise ships stopped or the oil tankers stood still? This, however, raises other issues regarding the employment of workers in the cruise ports and service industries. The fogs of systems teaches that things are always nuanced and interconnected, and extraction and logistics produce other dependencies that complicate resistance to them. Where local economies are reliant on processes that deplete local ecosystems, labour and environmental movements are at loggerheads. Here suspended water droplets – an ephemeral presence – if only temporarily halt the flows of capital, and thus it is not only the body that must re-orientate but even these satellite navigated vessels, with their economically val-

²¹ Reuters (2017). "Fog halts inbound Houston Ship Channel traffic: U.S. Coast Guard". December 19. <https://www.reuters.com/article/idUSKBN1ED21C>

uable and environmentally damaging contents, must slow, halt, and wait while they are gathered within an ocean in the air.

5 Conclusion

The complex physical presence of fog touches the skin, enters the mouth, forms tears between eyelids, while preventing planes from flying, or oil laden ships from leaving port. To consider fog or rain or snow and other atmospheric ephemera in such a way prevents it from being dismissed as merely a thing of curious beauty or a supernatural threat. Instead, fog can be perceived as a very tangible element with very real effects. Returning to where I began, walking in Venice's fog is itself a submergence, an entrance into the hydrological continuity that defines the city's lagoonscape from the benthic, through its surface to the atmospheric moisture forming on walls. Walking through this fog is itself a form of wading, not through the shallows or sand banks but through air itself as the lagoon above the surface; a city that is as much airborne waters as it is stone and marsh. When fog forms so densely, it can trigger a further questioning of what imperceptible contents fog in Venice might contain - an embodied reminder of atmospheric complexity.

By thinking in and through the amphibious urban space of Venice, a greater sensitivity is possible for understanding how we are submerged even when above the water's surface. With this I mean that, even when far from a body of water - a sea, a river, a lake - the atmosphere contains varying degrees of moisture, and the land itself is constituted by waters that shift and seep - all in processes of submergence that can be equally nurturing and toxic, or somewhere in between.

Thus, to sense the ephemeral through the residues of occult depositions offers a mode of thinking that troubles discreet boundaries between body and world through an occult perspective on the imperceptible processes of degrading environments.

To conceive of fog as a heuristic enables an encounter with it not as inherently disorienting, reducing visibility, or as a metaphor of becoming lost, but also one of reorientation in a world always shifting between intensities of suspended matters. An occult meteorology negotiates the porous threshold of the turbid and the ephemeral - of visibility and the limits of visibility. This can help to garner a greater awareness of the inextricable connection, and co-constitutive relationship between subject and environment - perhaps even a sense of solidarity with others who have yet more fog in their eyes, throats, and ears. The meteorological occult is a reorientation towards the meaning of what is in the fog of things, an occult awakening to the very real and embodied pollutants of environmental degradation.

In the spring of 2021 while living in Venice, and only a few months after the occult encounter between the 'caigo' and my eye, I developed an eye infection, hindering my sight for some weeks. Diagnosed as a common yet chronic condition called Blepharitis there was something, nonetheless, uncanny about thinking fog through my eye as a physical surface and then contracting an eye illness. While I do not believe the two are connected, I am nevertheless all the more conscious about the surface of my eyes and the possibility that they are always in direct contact with the occult mediation of pollutants.

Bibliography

- Alaimo, S. (2010). *Bodily Natures: Science, Environment, and the Material Self*. Indianapolis: Indiana University Press.
- Alaimo, S. (2012). "States of Suspension: Trans-Corporeality at Sea". *Interdisciplinary Studies in Literature and Environment*, 19(3), 476-93. <https://doi.org/10.1093/isle/iss068>.
- Bell, M.L.; Davis, D.L.; Fletcher, T. (2004). "A Retrospective Assessment of Mortality from the London Smog Episode of 1952: The Role of Influenza and Pollution". *Environmental Health Perspectives*, 112(1), 6-8. <http://doi.org/10.1289/ehp.6539>.
- Breault, R. (2018). "Have We Passed the Acid Test?". *The New York Times*, May 2.
- Brodsky, J. (1992). *Watermark*. New York: Farrar, Straus and Giroux.
- Brusadin, B. (2021). *The Fog of Systems: Art as Reorientation and Resistance in a Planetary-Scale System Disposed Towards Invisibility*. Ljubljana: Aksioma.
- Cesarini, R.; Eco, U. (2009). *Nebbia*. Torino: Einaudi.
- Dickens, C. [1852-53] (1993). *Bleak House*. London: Wordsworth Classics.
- Durham Peters, J. (2015). *The Marvelous Clouds: Towards a Philosophy of Elemental Media*. Chicago: The University of Chicago Press.
- Fassina, V.; Stevan, A. (1992). "Fogwater Composition in Venice in Relation to Stone Decay". *Conference Proceedings of the 7th Int. Symposium on Deterioration and Conservation of Stone*. Lisbon: Laboratório Nacional de Engenharia Civil, 365-74.
- Friedrich, A. (2017). "Heading to Venice? Don't Forget your Pollution mask". *The Guardian*, 31 July.
- FROSI (Foggy Road Sign Images) database: <http://www.livic.ifsftar.fr/linstitut/cosys/laboratoires/livic-ifsftar/logiciels/bases-de-donnees/frosi/>.
- Giggs, R.; Hamilton, J.M.; Neimanis, A.; Wright, K.; Zettl, T. (2016). *Weathering: A Collaborative Research Project*. <http://weatheringstation.net/about/>.
- Gómez-Barris, M. (2017). *The Extractive Zone: Social Ecologies and Decolonial Perspectives*. Durham (NC): Duke University Press.
- Guarnieri, L. (2020). *Amphibious Geologies*. <https://www.greenoffshores.com/Amphibious-Geologies>.
- Gupta, S.K.; Elumalai, S. (2018). "Adverse Impacts of Fog Events During Winter on Fine Particulate Matter, CO and VOCs: A Case Study of a Highway Near Dhanbad, India". *Weather*, 73(12), 396-402. <https://doi.org/10.1002/wea.3000>.

- Hahn, P.G.; LaPrade, W.R.; Marcotte, J.R.S. (1990). "Quantifying the Problem of Acid Fog and Acid Rain in Venice". <https://www.veniceprojectcenter.org/vpc/project/quantifying-the-problem-of-acid-fog-and-acid-rain-in-venice>.
- Hamilton, J.M. (2017). *This Contentious Storm: An Ecocritical and Performance History of King Lear*. London: Bloomsbury Academic.
- Ingold, T. (2007). "Earth, Sky, Wind, and Weather". *The Journal of the Royal Anthropological Institute*, 13, S19-S38. <https://www.jstor.org/stable/4623118>.
- Iovino, S., Oppermann, S. (2014). *Material Ecocriticism*. Bloomington; Indianapolis: Indiana University Press.
- Jefferies, D. (2018). "Weather: Fog Trouble". Boon, S.; Butler, L.; Jefferies, D. (eds), *Autoethnography and Feminist Theory at the Water's Edge*. London: Palgrave Macmillan, 65-8.
- King, S. (1980). *The Mist*. New York: Viking.
- Leslie, E. (2021). "Fog, Froth and Foam: Insubstantial Matters in Substantive Atmospheres". Teets, J.; Hunchuck, E.; Mendes, M. (eds), *Electric Brine*. London: Archive Books, 87-113.
- Maravelaki-Kalaitzaki, P.; Biscontin, G. (1999). "Origin, Characteristics and Morphology of Weathering Crusts on Istria Stone in Venice". *Atmospheric Environment*, 33(11), 1699-709. [https://doi.org/10.1016/s1352-2310\(98\)00263-5](https://doi.org/10.1016/s1352-2310(98)00263-5).
- Marks, L. (2000). *The Skin of the Film: Intercultural Cinema, Embodiment and the Senses*. Durham (NC); London: Duke University Press.
- Martin, C. (2011). "Fog-Bound: Aerial Space and the Elemental Entanglements of Body-With-World". *Environment and Planning D: Society and Space*, 29, 454-68. <https://doi.org/10.1068/d10609>.
- Neimanis, A. (2017). *Bodies of Water: Posthuman Feminist Phenomenology*. London: Bloomsbury.
- Neimanis, A.; Hamilton, J.M. (2018). "Open Space Weathering". *Feminist Review*, 118(1), 80-4. <https://doi.org/10.1057/s41305-018-0097-8>.
- Past, E. (2019). *Italian Ecocinema Beyond the Human*. Bloomington: Indiana University Press.
- Pinkus, K. (2011). "Antonioni's Cinematic Poetics of Climate Change". Rascaroli, L.; Rhodes, J.D. (eds), *Antonioni: Centenary Essays*. London: British Film Institute, 254-75.
- Scappettone, J. (2016). *Killing the Moonlight: Modernism in Venice*. New York: Columbia University Press.
- Sharpe, C. (2016). *In the Wake: On Blackness and Being*. Durham (NC): Duke University Press.
- Smithson, R. (1968). "A Sedimentation of the Mind". *Artforum*, 82-91.
- Terranova, G.; Citron, M.; Parolin, A. (2016). "The Port of Venice Case Study: Voluntary Agreements to Reduce Air Pollution from Cruise Ships". <https://www.port.venice.it/files/page/vbfeffectinveniceapice.pdf>.
- Unsworth, M.H.; Wilshaw, J.C. (1989). "Wet, Occult and Dry Deposition of Pollutants on Forests". *Agricultural and Forest Meteorology*, 47, 221-38. [https://doi.org/10.1016/0168-1923\(89\)90097-X](https://doi.org/10.1016/0168-1923(89)90097-X).
- Vittori, O.; Mestitz, A. (1976). *Four Golden Horses in the Sun*. Transl. by J.A. Gray. New York: International Fund for Monuments.

