Drift as a planetary phenomenon

Bronislaw Szerszynski
bron@lancaster.ac.uk

Postprint version – to appear in *Performance Research*

ABSTRACT:
In this paper I situate the Situationists' *dérive* within an analysis of drift as a planetary phenomenon. Using the concept of the 'middle voice', I suggest that drifting can lead us to a deeper understanding of the way that *all* things move, that move within the extended body of the Earth. I develop the idea of 'driftwork', in which drift is subsumed within a wider set of purposes or functions, and describe different forms of more-than-human driftwork, with different political implications. I conclude by suggesting that things adrift can help us trace the lineaments of a planetary ethic: an ethic that extends beyond the human, the animal, and the living to the whole extended body of the Earth; that allows us to recontextualize human practices of drifting within a planetary context; that is sensitive to the debt that all moving things owe to the planetary mobility commons that enables their motion; and that helps us to recognize our obligations of care towards all drifting things.

You are in a marketplace in Northern England on a midweek November afternoon. The weather is unusually clement and dry for this part of the world, and at this season. The stalls offer wares ranging from fruit and vegetables, cheese, bread and meat, through cooked food of various world cuisines, to books, phone accessories and toys. People move through the space between the stalls – workers on their lunchbreak, school pupils on their autumn break, homeless people, students and the unemployed. Bodies move around the space rather like airborne dust under a microscope, along short path-lengths with frequent changes of direction. They drift, are pulled this way and that, along gradients of exchange value, use value, style and aesthetics.

Then your eye is caught by a moving splash of colour. A child's balloon, made of latex and filled with helium, is moving around the marketplace, floating a few feet above the ground. Tied to the balloon is a piece of string; holding the string is a human being. But the person is not pulling the balloon along; he is being pulled by it, having decided to follow the balloon wherever it wants to go. The motion of the balloon seems to echo those of the people around it: it bobs up and down on its trailing string; it moves along, relative to the surface of the ground below it; it seems at times purposeful, at times passive, distracted, aimless, hesitant, uncertain, pulled this way and that by forces of attraction and repulsion.

What can this drifting spectre tell us about the planet on which it has arisen? If we can see 'a planet in a pebble' (Zalasiewicz 2010), can we see, in a balloon – and in the way that a balloon moves – a planet in all its historical complexity, a planet that Spivak insists 'is in the species of alterity, belonging to another system, … [inhabited] on loan' (Spivak 2003: 72)? I will suggest that drifting can lead us to a deeper understanding of the way that *all* things move, that move within the extended body of the Earth. I will also suggest that things adrift can help us trace the lineaments of a planetary ethic: an ethic that extends beyond the human, the animal, and the living to the whole extended body of the Earth; that allows us to recontextualize human practices of drifting within a planetary context; that is sensitive to the debt that all moving things owe to the planetary mobility commons that enables their motion; and that helps us to recognize our obligations of care towards all drifting things.

Drift and culture

Every language seems to have words for ‘walking without fixed purpose’, and for the walks that result. The author Robert Macfarlane collected such words via Twitter, resulting in a rich deposit that included the French *déambuler*, the Hindi *tehelna*, the Arabic *sarha*, and English vernacular words such as ‘potter’, ‘mosey’, ‘bimble’ and ‘daunder’. Many contributors offered variants of the English and Scots word ‘stravaig’, which, like the English ‘stray’, probably derives from *extrāvagārī*, a Medieval Latin word meaning ‘to wander out of bounds’, related to the Italian *girovagare*, ‘to wander in circles’.[1]

Sifting through MacFarlane’s word-drift, it is clear that drifting is not without its politics. Drifting can be act that comes from weakness or marginality – witness for example the ‘vagabond’, who wanders without a home, or the ‘whortling’ or ‘whorting’, of those who wander around looking for whortleberries (Holloway 1838: 189). But drifting can also sometimes be an act of power. *Mzungu*, the Bantu word for white people, literally means ‘people who wander’, referencing the apparently aimless perambulations of early explorers and missionaries, and Africans’ more recent experience of white people armed with free time, cultural capital and specific global imaginaries. Walter Benjamin’s bourgeois *flâneurs* (Benjamin 1973), strolling in the Parisian Arcades before Haussmann’s boulevards started to regulate movement in the Parisian capital in more linear fashion, also represent an example of drifting as luxury, here motivated by the sheer pleasure of being pulled this way and that, of seeing and being seen.

But in the twentieth century, the Lettrist International and later the Situationists gave us a new way of drifting – as critical practice. As part of a radical *avant garde*, the Situationists mobilized negation as a creative act, in revolt against the ‘society of the spectacle’ (Debord 1994), rebelling against bourgeois conceptions of work and art as separate from life. The Situationists reimagined everyday life, as an interface between rational production and free play, and in this a key concept was the *dérive*, or drift (Marcus 2002). Debord laid out his conception of the *dérive* in 1958 (Debord 2006). As much as such ideas were influenced by Surrealism, dada, and Marx, they also drew on the ideas of collective play of Johan Huizinga (1955; see also Andreotti 2002). For Huizinga, play is a voluntary stepping out of the demands of real life in a delimited space-time, creating an artificial perfection in which the individual is absorbed in the collective (1955: 7-13). Play, Huizinga argued, ‘lies outside the

antithesis of wisdom and folly, and equally outside those of truth and falsehood, good and evil' (6).

Debord (2006: 62) explained: '[i]n a *dérive* one or more persons during a certain period drop their relations, their work and leisure activities, and all their other usual motives for movement and action, and let themselves be drawn by the attractions of the terrain and the encounters they find there'. But the drifting of the *dérive* is not merely subject to chance, and neither is it purely a response to physical gradients and forces. Debord went on: 'from a *dérive* point of view cities have psychogeographical contours, with constant currents, fixed points and vortexes that strongly discourage entry into or exit from certain zones. But the *dérive* includes both this letting-go and its necessary contradiction: the domination of psychogeographical variations by the knowledge and calculation of their possibilities' (2006: 62).

How can we put drift in the context of the planet? It is strange that animals such as humans should drift. Locomotion – coordinated motion that enables extended, compound action sequences such foraging and hunting, homing and migrating – is one of the great achievements of the animal body. Yet the *flâneur* and the Situationist seem to mimic the motion of something adrift, subjected to environmental gradients and eddies like the balloon in our marketplace. How can we put this apparent strategic regression into the deep-time context of planetary self-organization?

Planetfall

Earth like all planets is a falling and fallen world. It circles around the sun in endless freefall. But internally too it is fallen, and it is this condition that enables it to make other things fall. Verticality – the precondition of things falling, or rising – is a local phenomenon, one which was created and enacted in the planetary collapse out of the protoplanetary disc.[2] But in planets like our own, composed of diverse heavy atoms crafted and ejected by long-exploded early suns, the falling also *differentiates* – in that it is both *differentiating* and *itself differentiated*. Just as the planet enacts the vertical in its collapsing, so too, in its very taking of form, does it create *topoi* and directions for the different elements that make up its body, which with their different phase states of solid, liquid and gas then find their place in the volume of the Earth's

body. The Earth is thus a matryoshka doll of alternating solid and fluid volumes from its core to the top of the atmosphere, and one in which the endless energy flow provided by the gift of stellar radiation over deep time keeps its fluid compartments in constant motion, brings its compartments into dynamic relation with each other, and prevents it from ever completing its endless descent to quiet equilibrium.

And within the dense, fallen, folded body of a planet, it is not possible for an entity really to fall in Galileo's sense. The heavier a body is, and the thinner the medium within which it moves, the closer the movement of that body when released approaches constant acceleration towards the centre of its planet; but, fundamentally, to one extent or another, everything moving in a planetary medium in response to environmental forces drifts. Bodies cannot move totally in step with the enveloping medium, moving exactly along a 'streamline' of the moving fluid, and at the same rate; but neither can they just fall through the medium as if it were not there. They have to explore the spectrum in between – and this is where the magic of drift occurs.

The power to drift

Let us return to our child's balloon (if we can still find it). Why does the balloon move around the market place as it does? From where does it gain the power to float above the ground? The atoms of helium that lift the balloon into the air were born as alpha particles generated from the radioactive decay of uranic minerals in the Earth's crust – of cleveite, pitchblende, carnotite and monazite – which particles then collided with the surrounding rocks and were deionized into helium atoms. Suddenly filled with gravitational potential energy, they now knew which way to move in the body of the Earth; they moved *against* the gravitational gradient, rising *up* through the porespace of the lithosphere, and pooling under the roofs of anticlines near the top of the lithosphere, where they mingled with methane and other hydrocarbons. Here they became entangled in a very different gradient, one between sources and sinks of energy in the technosphere, which led to them being extracted along with the natural gas, then distilled out by the energy industry before finally being allowed, in and through our balloon play, to find a new place in the extended body of the Earth. The balloon, filled with the helium with its gravitational potential energy,

balanced by the weight of its enclosing latex, wants to rise to a certain isopycnal surface – an altitude where the air has a particular density, so as to balance the forces of falling and rising.

And why then does it 'stravaig' so? This surface, the *topos* where the balloon finds its place, is low down within the boundary layer of the atmosphere (Kaimal and Finnigan 1994) – that region of the air whose movement is dominated by the features on the ground, where most aerial and subaerial creatures live and where the motion and the very substance of the air are a mixture of Earth and sky (Ingold 2007). And in the very lowest, surface layer, eddies swirl around the solid entities, both sessile and motile, still and moving, that pepper the urban surface layer. In this slow current at the bottom of the ocean of air, the sharp corners of the street furniture shed Kármán streets of alternating vortices, a slow thrum of infrasound Aeolian music. Then the moving shoppers carry along bound vortices behind them as they perambulate, stirring the air into new patterns. Drifting within this complex, shifting architecture, the balloon is repeatedly roused from its torpor, its indirection and obliquity, is propelled in new directions, hesitates, reorients, never resting in one course of action.

Drifting in deep time

What are the preconditions of drift, as a form of motion? Apart from the planetary condition itself, what does *drift need*, in order to happen? First, drift needs a flow, a circulation, by which an object can be surrounded without disappearing into it. Wherever something starts to circulate, then drift may well arise. This might be a flow of water or air – or a granular flow of a substance like clastic rock, rock broken up, drifting down subaerial or submarine slopes, where drift's power of sorting and sifting operates through the interactions of size, shape, surface angle and roughness. Or drift might arise in the 'paraflows' that have emerged more recently in the Earth – streams of discrete solid entities such as migrating animals and transport vehicles that circulate around the Earth, and on and in which other entities can hitch a ride. Second, drift needs a gratuity, an opening, a withdrawal. The hesitant motion of our balloon, while dominated by the movement of the air round it, is not identical to that surrounding motion. The power of winds and rivers and subterranean flows to lift and

carry particles, or chemical loads, to mix and to sort, to deliver and to deposit, and thus to turn the surface and subsurface of the Earth into the complex generative regions that they are, depends on the distinction between the carrier and the carried, the medium and the message.

And drift is *old* – a primordial power of the Earth. In the warm, young, abiotic Earth, before the 'zoic' aeons when life became dominant, matter's self-organising powers could operate without constraint; and they innovated. The innovations of drift were profound for the Earth. Each of these innovations has been rediscovered, again and again, by other non-drifting beings; but it is in drift that these innovations come together most powerfully and consequentially for our planet. *Innovation the first*: the topological folding of motion within motion, of a solid moving in a moving medium, both being moved by, and moving within, the moving – at once two movements, and one movement, a movement with an internal 'double articulation' between carrier and carried. *Innovation the second*: the being collected and picked up into drift, that physicists call 'entrainment'. *Innovation the third*: the being delivered and deposited. And *innovation the fourth*: the mysterious passage between, of being carried, and sifted,[3] and sorted.[4] Armed by these innovations, over billions of years, drift built the world that we inhabit, through the sinking and settling of chemical elements into compartments, the being-carried of the continents on the liquid mantle, the settling of sediment that became the sedimentary rocks, the pushing-together of tectonic plates and the driving up of mountains, and the concentrating of minerals into ores and deposits by subterranean hydrological flows.

Drift is still active all around us, and continues its powerful but (usually) gentle work. Yet drift did not have the last word. With the arrival of animals about half a billion years ago, a radically new form of motion appeared within the Earth – *locomotion*, motion to a predetermined point, powered by energy stored within the moving body itself. Gut-based motile heterotrophs make up a tiny proportion of the mass of the biosphere, which is dominated by plants and bacteria, but their new form of directed, powered motion, driven by and further driving their hunger, was hugely consequential for it (Butterfield 2011). Locomotion also produced a new shape of body, and a new way of being in the world. Drifting things typically do not have a front and a back – like our balloon, they have rotational symmetry. Eating, however, provides the pressure to move towards and capture prey, favouring bilaterality

(having a front and a back), and eventually cephalization – the concentration of sensory equipment towards the newly 'front' end (Szerszynski 2016).

We have seen that directed, powered 'locomotion' represents the way that only a *tiny* part of the planet moves and occupies space and does its work. Yet it tends to occupy human consciousness as the paradigm form of motion – as if we motile animals should be the measure of all things, so that anything that does not move 'under its own steam' suffers from some kind of metaphysical privation. But if any form of motion should be the unmarked category, so that all others are merely derivative, it should surely be drift. We need to value drift more, and understand it better. And as I will argue, such a transvaluation will help us better understand the nature of *all* motion.

Drift and the middle voice

How have we forgotten *so much*, since our forebears drifted? What turbulence and turbidity has clouded our vision so that we cannot even clearly conceive *what drift is*? There are clues in the very way that we talk about it. In English the word 'drift' can mean both the motion and the result of that motion – we say that the snow or leaves 'drift', but also talk about the resulting 'drift' of snow or leaves. In this, 'drift' is like the word 'cast' – which is both the throw itself and the result of the throw (the 'cast' of a fishing line, or of molten metal, or of the production of a play). This duality gives us a clue to the secret magic of drift. Recall some of the verbs I used to describe the balloon's motion in the market place, in which I switched uneasily between passive and active voice. First I said that the balloon 'is propelled in new directions' – but then that it 'hesitates', 'reorients'. Like the balloon itself, my language in that passage is pulled this way and then that. To make sense of these layers of prevarication we must think about the phenomenon of 'voice' in human language.

As human languages divided, so too did our words of motion, with lines of naming and thinking divided into different voices. Passive and active voices both divide the world clearly into agent and patient, and just differ in which they make the subject of the verb: thus we might use the active-voice formulation 'the wind drives the snow', or the passive-voice version 'the snow is driven by the wind'. In both it is clear what is driving what. But many languages also have a *middle* voice, in which

agency is not so clearly located in one entity rather than another. It is in this voice that drift can sound out most clearly.

However, in European history, as the classical languages of Greek and Latin gave way to the vernacular languages of Europe it was the active voice that was given more and more priority in how the world was talked about and thought about. The active voice is the grammatical voice that speaks as if an actor can act without being affected by the action, and can, if they wish, reverse the action. It is the voice that says that the drift is the *end product* of the driving wind, the cast the end product of the casting, the throw. This is the voice that laid the ground for the seemingly detached observer of modern science, the distanced actor of technology – and its passive twin our sense of the environment as mere resource or instrument (Romanyshyn 1989). Owen Barfield describes this as a process of 'internalization', 'the shifting of the centre of gravity of consciousness from the cosmos around him into the personal human being himself' (Barfield 1954: 166-7).

It is clear that part of our difficulty in understanding drift comes from the language we use to describe motion, and cause and effect. Yet even when we do not notice it, our language also serves us well by betraying us, by giving us tell-tale signs designed to jog us into anamnesis. Just as the sight of flowing things calls forth from our tongues words like 'ooze', 'surge', 'well', 'circulate', 'ebb', 'seep', 'eddy', so too we have seen that *drift* has its own special words – 'carry', and 'deliver' and 'sort', and sometimes 'concentrate' and 'disperse'. But drift does not just have its own *semantics*; it also has its own *grammar* and *syntax*. Speaking of drift we find ourselves drawn to use the 'middle voice' such as that used in Homeric Greek. In the middle voice the subject does not 'do' or have something 'done to' them; neither can they simply opt out from or reverse the action of which they are a part. They undergo change while engaged in interactive processes from which they cannot simply withdraw; they *are not* and *cannot* be exterior to the process (Pred and Pred 1985; see also Ingold 2015: 145-6).

Modern English lacks a proper middle voice. But although the ancient Proto-Indo-European (PIE) root '**dhreibh*' gave us the English active-voice formulation 'to drive', and the corresponding passive-voice 'to be driven', it also gave us the middle-voice 'to drift'.[5] Our balloon *itself* drifts, but is not in control of the drift. Similarly, the PIE root '**pleu*' gave us the active, intransitive verb 'to fly'[6] – but also the middle-voice 'to float'.[7] 'Derive' – from the Latin *derivare*, 'to lead or draw off (a stream of

water) from its source' – can also be active, passive and middle.[8] And if a body is really *à la dérive* – drifting, on the loose, *stravagante* – then we surely need to talk about it in the middle voice.

So suspension and drift can summon up the middle voice in us, and the middle voice can allow us to give voice to drift. Drift as a way of thinking divides and joins the world differently to locomotion, which encourages us to make a division between the active animal and its passive environment. In drift, we are not driving – and neither are we being driven. Although in drift there is a division between the air and the balloon, the carrier and the carried, the medium and the message, the resulting motion is a *single motion*, one which results from the immersion of the body in the medium, and is the conjoined achievement of all.

Driftwork

Yet the Situationist *dérive* is not purely autotelic, with no purpose outside itself. Despite the Situationist slogan 'Never work' (Marcus 2002: 6), the *dérive* can be seen as a form of 'driftwork' – of drift being put to use. As I quoted above, Debord says that in the *dérive*, people should suspend their natural attitude, 'drop their relations, their work and leisure activities' and simply let themselves be drawn this way and that. Yet in the Situationist *dérive*, drift is nevertheless put to work, in the service of the project of the psychogeographic mapping of a city, and of opening up human subjectivity to new ways of occupying urban space. Does this somehow violate the spirit of drift? I think not. To think that this is the case – that drift, the following of ambient gradients, can have no purpose outside itself – would be once again to fall into the bias against drift that is an inheritance of our animal bodies and our active-voice thinking. Let me put Situationist driftwork in the context of how other entities 'use' drift.

From the point of view of locomoting creatures like ourselves, drift is a form of motion that has two key features: (i) it only uses ambient gradients as its sources of energy, and (ii) it results in undirected motion.[9] It is of course possible for animals to drift in this full, paradigmatic sense – indeed, animals such as jellyfish with the radially symmetrical bodyplans of the Ediacaran period typically do this, as do resting motile animals in water, or 'ballooning' spiders in the air. The film *Ocean Gravity* by

the freediver Guillaume Néry and Julie Gautier captures the vertiginous experience of a relaxed human body allowing itself to drift in underwater currents.[10] But animals (including humans) can also exploit drift in a partial – one might say derivative – way, by adopting only *one* of these two characteristics. Thus animals can: (a) use *ambient* energy to produce *directed* motion (for example through sailing, rafting, gliding, soaring, skiing or sledging) or conversely (b) use *onboard* energy to produce *undirected* motion (for example in grazing and foraging).

Even non-living entities and systems can engage in driftwork, in which drift is subsumed within a wider set of purposes or functions. We have seen that from the earliest aeons of the Earth, drift has been engaged in work, building the structures of the world, and maintaining them in the far-from-equilibrium state that enables them to generate new phenomena. But at all temporal and special scales, different kinds of driftwork are at play around us. Here I will simplify a diverse range of driftwork into four broad categories: sorting, shifting, soaring and surging.

Firstly, *sorting* occurs in the paradigm form of 'pure drift', in which the suspended body is given over to the play between it and the enveloping substance. In sorting, order is produced out of the differential drifting of many bodies in the same medium. Drifting things are separated by their motion through the enveloping medium into separate 'species' of things adrift, that move in quite different ways. In the air, being 'afall' means very different things for entities of different mass and size: large and heavy objects fall in almost continual acceleration until they hit the ground; smaller objects reach a terminal velocity and then drift as they descend; the smallest particles, whose size is similar to the mean path of the vibrating air molecules around them, are subject to forces that can keep them suspended almost indefinitely (Blacktin 1934: 27-31). In streams and rivers, too, the sediment is separated into different 'loads': 'wash load' is carried along the top of the stream; 'suspended load' is carried along in the main body of flow, while heavier 'bedload' is rolled and jounced along the bottom (Leeder 2011: 121-2).

This power of separation gives drift a cunning that sorts and delivers; different kinds of drifting things 'arrive' at different destinations or at different times. Manuel DeLanda described rivers as 'veritable hydraulic computers' in which … 'pebbles of variable size, weight and shape … react differently to the water transporting them. These different reactions to moving water are what sorts the pebbles, with the small ones reaching the ocean sooner than the large ones' (DeLanda 1997: 60). Then, as

DeLanda (1997) describes, the sorted pebbles are laid down and compressed into ordered strata. For DeLanda this sorting and then sedimenting is prototypical for many other processes of structure creation in the earth – not just geological but also genetic, social and cultural and political. This kind of driftwork may be essential, but we are fortunate that there are also others that can disrupt the orderly process of creating and maintaining structures.

Secondly, *shifting* is a form of driftwork that is not done by the action of drift itself but by the entities that launch bodies (or themselves) into drift, and involves moving the launched bodies up and down the different scale-related mobility zones of the air. Here, entities are drifting in the paradigmatic sense, subjecting themselves to the power of drift to sort and deliver, but their insertion into the sorting process is altered in advance. Plants have evolved many ways to exploit the power of drift in order to move their seeds. The heaviest seeds, packed with nutrients for the fertilized ovum, occupy the gravity-dominated aerial mobility zone, and will fall heavily under the tree and maybe crack open on the ground beneath. But various clades of tree have separately evolved large, asymmetrical autorotating seeds that rotate around a vertical axis, producing lift as the wing slices through the air, or bilaterally symmetrical winged seeds that generate sideways movement as they fall, and thereby generate lift force. They are able thereby to produce large, massy seeds with more nutrients which can nevertheless reach a terminal velocity, falling more slowly, and giving them more time to drift laterally away from the parent canopy (Lentink et al. 2009). Some seeds have a fluffy, feathery ‘pappus’ or plumule above the seed or ‘achene’ that enables them to imitate the tiniest particles in the air and stay suspended almost indefinitely (Cousens et al. 2008: 28-32). Humans with their large bodies can only move up the scale-related mobility zones of the air in this way in the basket of a balloon; the envelope above us does not just makes us feel small in comparison, but also enables us to move like small things. In the basket of the balloon, however fast the wind is blowing the trees below us, we feel ‘stillness in motion’, as we move with the wind (McCormack 2018).

Thirdly, in *soaring* a body modulates the drift process more dynamically, by choosing when and where to enter drift, and/or by reorienting its body so that it crosses the streamlines of the enveloping fluid in a controlled way, usually in order to subordinate drift to directed motion. Trees such as silver birch time the launch of their tiny gliding seeds by embedding them in catkins that only disintegrate at the

right season and in a sufficiently powerful gust of wind to take them far from the tree; slight variations in wing shape also exploit the sorting power of drift to ensure that the seeds will reach different landing sites to increase the chances of some germinating. Birds can spot when to enter and leave particular air currents which allow them to save energy by soaring – gaining lift from rising air produced by thermals, weather fronts or slopes, or using dynamic soaring in a looping trajectory to extract power from differences in wind speed at different heights, only using their wings to change the conformation of their body and tweak the forces as they drift through the moving air (Vogel 1994: 259-61).

There is a politics in the dynamic between sorting and soaring, one which complicates our earlier discussion of the politics of drift and power. Who is more free, the driver or the drifter? It depends on your point of view. Consider the streamlines of fluid motion. A streamline is defined as a line which is everywhere parallel to the local velocity vector. Streamlines can by definition never cross, or meet, or diverge. The flow *must* follow the streamlines. Now think of a drifting entity that can enter and leave the flow, and move *across* the streamlines. From the point of view of the drifter, the driver is bound to the streamlines leading to their destination – is in effect being sorted. Perhaps the hitchhikers, the drifters, the vagrants, the hoboes hopping on and off freight trains, who really have the capacity to soar free, are actually more free than the drivers.

Finally, by *surging* I mean to name a modulation of the powers of drift not by individual bodies, but by multiple drifting bodies acting in concert, such that the motion of the fluid medium is itself shaped by the bodies moving through it, producing not ordered, hierarchical structures but more dynamic, unfolding phenomena. Dunes as they form (by the wind dropping sand particles) shape the flow of the sand-carrying wind over them, so that it picks up sand on the windward face and deposits at particular points on the downwind side, producing complex dune shapes that can migrate across the land surface, and even pass through each other (Kok et al. 2012). Dunes are drifts, made by drift, that shape drift, and that themselves drift. Anti-dunes are similar formations, but ones that move backwards upstream, often under fast-flowing water, as particles are removed from the downstream face and other particles are deposited on the upstream.

Turbidity flows on slopes (such as submarine rock avalanches, or powder snow avalanches and pyroclastic flows in air), are even more dynamic and

insurrectionary phenomena that use drift not to sort, but to resist sorting. As the moving fluid picks up particles, it gets heavier, so moves down the slope (itself made by drift) faster, and with more force. As it does so it picks up more and more sediment in a runaway and self-sustaining dynamic, in which even the settling sediment squeezes up fluid between the particles and thereby suspends the particles above. Turbidity flows become structured, bilaterian, hungry beasts, with a clear head and tail. Flows of turbid water down the edge of continental shelves can continue for thousands of miles across the abyssal plain, and leave deposits that are sorted in complex ways that divert significantly from calm sedimentary rocks, revealing the unruly internal dynamics that occurred in their formation.

Placed in a planetary context, the driftwork of the *dérive* can be seen as merely one example of a vast vocabulary of ways to use the powers of drift that our planet has generated. In the service of their critical mapping of the psychogeography of the city, the Situationists choose to switch into and out of drift, like the bird choosing when to glide or soar, and when to flap its wings. In giving themselves over to the pull of gradients this way and that, they are like the birch seeds, allowing drift to do its sorting work and expose them to luck and chance. But in the surge, the 'moment of madness' (Zolberg 1972), we see that more radical possibilities lie in drift as a planetary phenomenon.

Conclusion

Let us return to the market place where we began. The shoppers in the square are still putting drift to work – allowing themselves to pulled this way and that, in order to open themselves up to the adventitious, to increase their chances of coming across something new, or cheaper, or better, or more alluring. The Situationists in their *dérive* use drifting in a different way, as an epistemological tool to suspend the natural, everyday attitude, to open themselves up to other dimensions and possibilities of the city. But a planetary perspective can help us see drift in an even wider way, as a primordial power of the Earth, full of both manifest and latent powers.

In this dense and folded planetary world where primal forces endure, how can we learn how to use the endlessly renewable resource of drift? Many groups in

society already hold relevant head knowledge and body knowledge about how to use drift: sailors, ballooners, downhill ski-ers, surfers, migrants – even hitchhikers and commuters. But to make a real 'drift economy' we would need to develop a far deeper understanding of the world around us, and the processes of drift that abound in it. We also need to learn how to use drift without taming it – to drift in the middle voice, not always to subordinate it to our active-voice tendencies.

We also need to learn how to drift well – which also means living in a way that makes the world safe for drifting things. Drift reminds us that our powers and our luck are not ours alone. Drift is what 'happens', in the Old Norse sense of 'hap' as luck or fortune.[11] Before the interiorization of European experience in the 17th century, 'happiness' was not an interior subjective state but the outer condition of those for whom the best outcome has 'happened' (Barfield 1954). If drift is gift – a blessèd share of motion given without expectation of return, an action without an equal and opposite reaction – we need to ask what acts of solidarity drift should draw from us. Some can only drift safely because of the resources and networks that they happen to have – and others are forced to drift, often very precariously, for exactly the opposite reason. Drift takes John Rawls's (1971) veil of ignorance and turns it from a thought experiment into a material, embodied planetary process – one in which the phrase 'you have arrived at your destination' has no simple and univocal meaning. How would we want the world to be organized if the movement of people and goods took the form of dissemination by drift? Echoing the social model of disability, we need a socio-ecological theory of drift, one that sees things adrift as giving us clues as to the ontological condition of all moving things; to ask not how drift can be eradicated, but how the world can be made safe, hospitable, just, for drifting things, ideas and beings.

Drift is both a distinctive form of motion and helps us see the preconditions of all motion; 'floating' thus knows what 'flight' has forgotten: motion cannot fully be understood in the active voice, action is always a collaboration between the compartments of the fallen and falling world, and all our powers are powers of the Earth's planetary commons – themselves open to each other and to the cosmic gift of light.

So many thoughts, to be lofted by a child's balloon ...

Acknowledgements

Many of the ideas for this article emerged from 'The Drift Economy', a participatory experiment carried out by the author with Sasha Engelmann and Adam Fish in 2017, in which we asked people to help us imagine a radically different mobility system, in which moving things are powered solely by the energy that surrounds an object due to its specific location in the flows and gradients of the Earth system. The experiment was supported by Lancaster University's Centre for Mobilities Research (CeMoRe). Many thanks to Sasha and Adam for carrying it out with me and for so many stimulating ideas, and to Michael Kosch, Aluna Everitt, Iain Goddard and Luca Nitschke for their help in realising the project. Earlier versions of this article were presented as performance-lectures in the strand 'Suspension: Atmospherics of the Anthropocene' at the conference *Knowledge/Culture/Ecologies*, 15-18 November 2017, Universidad Diego Portales, Santiago, Chile, and at *Atmospheres*, the third annual Guildford School of Acting (GSA) Practice Research Symposium, Ivy Arts Centre, University of Surrey, 13 January 2018. Thanks to Cristián Simonetti and Manuel Tironi, and Amie Rai and Will Osmond respectively, for organising these events and inviting me, and for their feedback. I also want to express deep thanks to Tomás Saraceno and Nick Shapiro for many stimulating conversations and experiments regarding the atmosphere and how things move within it, and to Sam Hertz and Wallace Heim for conversations that were crucial in helping this essay find its voice. Etymological derivations are from *https://www.etymonline.com/*.

Notes

[1] https://twitter.com/robgmacfarlane/status/963851156396093440, accessed 16 October 2018.

[2] 'Collapse' comes from the Latin *col-labi*, 'together-falling'.

[3] 'Sift' comes from Old English *sife*, 'sieve', from Proto-Germanic **sib*, from the Proto-Indo-European (PIE) root **seib-*, 'to pour out, sieve, drip, trickle'.

[4] 'Sort' comes from the PIE root **ser-*, 'to line up'.

[5] Drift from 1300, literally 'a being driven' (of snow, etc.), from the Proto-Germanic **driftiz*, from PIE root **dhreibh-*, 'to drive, push'.

[6] 'Fly' from Old English *fleogan*, 'to fly, take flight, rise into the air', from Proto-Germanic **fleugan*, 'to fly', originally from PIE root **pleu-*, 'to flow'.

[7] 'Float' from late Old English *flotian*, 'to rest on the surface of water', from Proto-Germanic **flotan*, from PIE root **pleu-*, 'to flow'.

[8] So the Situationists' *dérive*, though translated as 'drift', and sounding similar to 'drive', in fact derives from a flow word. The second half originates from the PIE root **rei-*, 'to run, flow', which also gives us 'river' and 'run'. The root meaning of 'derive' is thus that of a flow having been deflected from its original course.

[9] Of course, the use of the words 'only' and 'undirected' here is tendentious, to speak as if directed locomotion is the unmarked category and drift is a privation.

[10] https://www.youtube.com/watch?v=v11b84Okcm8, accessed 16 October 2018.

[11] From PIE root **kob-*, 'to suit, fit, succeed'.

References

Andreotti, Libero (2002) 'Architecture and play,' in Tom McDonough (ed.) *Guy Debord and the Situationist International: Texts and Documents*, Cambridge, MA: MIT Press, pp. 213–40.

Barfield, Owen (1954) *History in English Words*, new edition, London: Faber and Faber.

Benjamin, Walter (1973) *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*, tr. Harry Zohn, London,: NLB.

Blacktin, S. Cyril (1934) *Dust*, Vol. Chapman & Hall: London.

Butterfield, Nicholas J. (2011) 'Animals and the invention of the Phanerozoic Earth system,' *Trends in Ecology & Evolution*, 26(2), pp. 81–7.

Cousens, Roger, Calvin Dytham and Richard Law (2008) *Dispersal in Plants: a Population Perspective*, Oxford: Oxford University Press.

Debord, Guy (1994) *The Society of the Spectacle*, tr. Donald Nicholson-Smith, New York: Zone Books.

Debord, Guy (2006) 'Theory of the dérive,' in Ken Knabb (ed.) *Situationist International Anthology*, Rev. and expanded edition, Berkeley, CA: Bureau of Public Secrets, pp. 62–6.

DeLanda, Manuel (1997) *A Thousand Years of Nonlinear History*, New York: Zone Books.

Holloway, William (1838) *A General Dictionary of Provincialisms, Written with a View to Rescuing from Oblivion the Fast Fading Relics of By-Gone Days*, Lewes, Sussex: Baxter and Son.

Huizinga, Johan (1955) *Homo Ludens: A Study of the Play-Element in Culture*, Boston, MA: Beacon Press.

Ingold, Tim (2007) ‘Earth, sky, wind, and weather,’ *Journal of the Royal Anthropological Institute*, 13(s1), pp. S19–S38.

Ingold, Tim (2015) *The Life of Lines*, London: Routledge.

Kaimal, J. C. and J. J. Finnigan (1994) *Atmospheric Boundary Layer Flows: Their Structure and Measurement*, New York: Oxford University Press.

Kok, Jasper F., Eric J. R. Parteli, Timothy I. Michaels and Diana Bou Karam (2012) ‘The physics of wind-blown sand and dust,’ *Reports on Progress in Physics*, 75(10), pp. 106901.

Leeder, Mike (2011) *Sedimentology and Sedimentary Basins: From Turbulence to Tectonics*, 2nd edition, Chichester: Wiley-Blackwell.

Lentink, D., W. B. Dickson, J. L. van Leeuwen and M. H. Dickinson (2009) ‘Leading-edge vortices elevate lift of autorotating plant seeds,’ *Science*, 324(5933), pp. 1438–40.

Marcus, Griel (2002) ‘The long walk of the Situationist International,’ in Tom McDonough (ed.) *Guy Debord and the Situationist International: Texts and Documents*, Cambridge, MA: MIT Press, pp. 1–20.

McCormack, Derek P. (2018) *Atmospheric Things: On the Allure of Elemental Envelopment*, Durham, NC: Duke University Press.

Pred, R. and A. Pred (1985) ‘Survey 7: The new naturalism—a critique of *Order out of Chaos*,’ *Environment and Planning D: Society and Space*, 3, pp. 461–76.

Rawls, John (1971) *A Theory of Justice*, Cambridge, MA: Belknap Press.

Romanyshyn, Robert D. (1989) *Technology as Symptom and Dream*, London: Routledge.

Spivak, Gayatri Chakravorty (2003) ‘Planetarity,’ in *Death of a Discipline*, New York: Columbia University Press, pp. 71–102.

Szerszynski, Bronislaw (2016) ‘Out of the Metazoic? Animals as a transitional form in planetary evolution,’ in Morten Tønnessen, Silver Rattasepp, and Kristin Amstrong Oma (eds) *Thinking about Animals in the Age of the Anthropocene*, Lexington, MA: Lexington Books, pp. 163–79.

Vogel, Steven (1994) *Life in Moving Fluids: The Physical Biology of Flow*, 2nd edition, Princeton, NJ: Princeton University Press.

Zalasiewicz, Jan (2010) *The Planet in a Pebble: A Journey into Earth's Deep History*, Oxford: Oxford University Press.

Zolberg, Aristide R (1972) ‘Moments of madness,’ *Politics and Society*, 2, pp. 183–207.