

Eyeless creature turns out to be all eyes

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Through the cracks of curiosity: From narrowing streams to burning stars

This collection of pages is about a world ruled by capitalism and how its inherent destructive qualities have resulted into the everyday reality of environmental catastrophe and its scattered society marked by individualism.

Or that's how I started off.

When I started writing and rambling, I soon came to the realization that I needed to tighten my grip to avoid entering the dark void of metaphysical political philosophy and Anthropocenic doom and gloom. With the well of my research having become much more of a pit of screeching echoes, I embarked on the new adventure of refilling the abyss back to its original little carving of curiosity in my brain.

I set out with this one goal: take the deep trench of dark harrowing mysteries of this ocean floor that I somehow managed to carve into my nervous system, and transform it into a gentle stream. Yet, in this desperate attempt to narrow down to the true nature of this urgent topic of interest, I found myself stuck in the narrowing of narrowing, to only narrow more in this narrowing. And in the narrowing, you can argue, that I only managed to expand ever more. From ocean crater, to infinite accumulation of streams, to black hole, to hollow ravine. The narrowing of the gap made me realize that no thing, no topic, no body can truly ever be narrowed down. Each stream will leak into another stream, will join into a river, will rain into an ocean, will constitute to the edges of a burning star

I was wrong all along: Voids need no narrowing, narrow minds need voiding. In my attempt to tackle the world, I've been brought to the very fundamentals of reality. A universe that cannot be described as an array of separate entities in themselves (an atomic mindset inevitably leading to capitalist thinking) but of ever-linked phenomena of properties, meanings, matters and structures in the making not throughout spacetime, but of spacetime itself.

So, I hope to guide you through this vast void, and have you crawl through the cracks of curiosity into the exciting wonders of the world, the rare beauty of our reality, and with it the misleading myths of our perception. A guide through perceiving reality as a whole, presented with the needed underlying theories of space, time, relativity and quantum physics. These theories will hold your hand through being a brittlestar and living the consequences of tentacular being in our entangled reality.

Why does the cuckoo, cuckoo?: Relative runs and faulty clocks

*Time is a great machine of Iron bars
That drains eternally the milk of stars*
(Plath, 2008)

Space and time are in the eye of the beholder
(Greene, 2003)

Time is a tricky mistress. Cryptic in its being, more puzzling in its passing. A seemingly static force that ticks with no effort and tocks with no hitch. Yet, is the view of time as a continuous stream we all sail without say really the truth of its passing? Or has our brain simplified the trick of time into the false assumption of a universal clock?

It's rare to see eye to eye and speak of an absolute truth in life. Perceiving a situation differently can lead to two faded seemingly separate realities. However, what if in this fading you start to disagree on something as fundamental as our fleeting hours; something as principal as time itself. This is exactly the mess we are left with since Einstein's formulation of special relativity (Rahaman, 2014). As it turns out, time was never a universal, absolute, constantly flowing river we had the honour of sailing away on. Time is relative. Everything and everyone has an internal clock that ticks differently, according to their relative speeds. May it be you, going for a very fast run, an airplane speeding up high in the sky, or an entire galaxy moving far away from us, all our times move on in relative speeds to each other. Time is perceptively subjective in its very being.

Take me, on my very fast run (a completely hypothetical situation). I've really been training for this run, and at one point I start running so fast that I take off from the earth's surface, through our atmosphere, into outer space. Now, assuming the pressure loss and atmospheric changes do nothing to me, I continue my run towards the stars. Imagine I've got the muscle density and stamina of all top athletes combined, earthly and alien, and I quickly approach the speed of light. After some time, no more than half an hour, I decide I've had enough and run back, accelerating towards earth again. On my return, I kind of expect my friends and family, TV reporters, political world leaders, Usain Bolt, to greet me with medals and applaud me for my unheard of record breaking speeds. Yet, as I walk back onto earth's surface, I am confronted with a grim reality: Everyone is dead.

In that half an hour I spent on my space-run, 150 years had passed on the earth-clock. Besides the lesson that I will never go on a space-run again, I learned once and for all that time really is relative (the hard way, the all-your-relatives-are-dead-way). Now, you may think, that's a funny thought you have there, relative times and space runs, but essentially, who cares? I'm not confronted with relative times in my slow moving, everyday life, so how does this translate to my day-to-day perception of reality?

We may have established that time is relative to all moving objects and beings, but we have not talked about what it is that time truly consists of. Is it like a stream, as mentioned, but with a new twist of us all having our own separate individual streams? Or is each tick more like a little particle of time? If reality resembles the latter theory, what is this time-particle? Or rather, what is a particle, anyway? These questions lead us from our space-run, away from the run, back to the space. For how can we understand time, if we don't even understand space?

Free-falling: Space-vessels and the fantabulous fables of Gravity

If you lived a thousand years ago and someone told you, “The only thing stopping Earth from floating off into the endless midnight of black space is a wrenching attractive force from the distant sun,” wouldn’t you think that was spooky? The only reason gravity doesn’t seem spooky is that we’re so familiar with it; we’ve absorbed it into our intuition about how the world works.
(Brody, 2020)

It’s easy to forget that we’re currently sitting on a floating rock moving around a burning ball of fire at immense speeds. Only occasionally, when looking up the sky on a clear night (away from light polluting cities and towns) we are reminded of our humble existence in this infinite universe. It is these moments of staring into the vast black nothingness brightly sprinkled with galaxies and stars lightyears away, only now reaching our very eyes and possibly long gone, that make us wonder about the very wonders of the reality we inhabit. Surprisingly, it is not the wonders of the burning stars or galaxies (or clusters of galaxies, or clusters of clusters of galaxies) or other creatures crawling through the sticky mud of our universe, that I am getting at here. What about the mud itself? The distance between the sun and her neighbouring star? Is space itself really just an empty vessel, or does this vast nothingness actually turn out to be the true star of the show?

To grasp the reality of space and time, let’s look at a Force we all know too well: Gravity. We are under a constant influence of it. If your sister pushes you down a flight of stairs, you could argue that your sister and gravity are equally responsible for your broken bones. The particular force is hard to escape. But what exactly is this pull towards the earth’s surface we experience on a daily basis? Einstein argued that we are actually not so much pulled down, as we are pushed up. Before you call me (or worse, Einstein) crazy, think about the feeling of sitting in an accelerating airplane for a moment. You are pushed back in your chair as the plane moves forward. The seatbelt-sign is on, because you would fall over if you get up, from the acceleration of the plane. Where else have you experienced falling down when you stop to hold yourself up? That’s right, everywhere! As it turns out, we are in a constant state of acceleration on earth’s surface. Think about it: the true moment one can experience free-floating, or weightlessness, is when falling from a very high building, or jumping out of an airplane. Only then are we in a steady state, free of this constant acceleration. So, Einstein concluded, Gravity is nothing else than acceleration. If we remember then that acceleration slows the internal clock of the accelerator (remember my incredibly quick run) acceleration and time are intimately and thoroughly linked, this realization carries an important consequence: space and time are not separate entities, but rather one and the same. And just like that, with the formulation of Einstein’s General theory of relativity, spacetime was born (Øyvind Grøn, 2007).

It's a marbled life: Senile dogs and anxiously awaiting waterslides

We are getting dangerously close to nonsense here - the familiar nonsense of the common-sense theory of time. But bear with me and we shall skirt around the nonsense.
(Deutsch, 1997)

It is difficult to wrap your head around at first, the seemingly empty void surrounding us, surrounding everything, actually consisting of a malleable thick substance. We can make this a little more clear by a simple analogy.

Let's play with some marbles. You have a great collection of them, varying in size and weight. Now, we are not playing on the street outside, but on a thin stretched out fabric. The fabric is so long and wide it seems to be going on forever. You roll a glass marble onto the fabric. Where the marble lands, you notice that the fabric stretches and bends down with the marble. Now, you walk to a place far away from the first marble, and throw a bigger, heavier (one of those big stone ones) onto the fabric. You notice that the fabric stretches down even more where the heavier marble has landed. Since these two marbles are lying far away from each other on the fabric, their bending does not influence one another; the marbles don't roll towards each other. You decide to make the game a little more interesting and roll a little marble towards the heavy one on the fabric. Because of the curvature towards the heavy marble, the path of the little one is influenced: as it rolls forward on the fabric, its trajectory is bent down and it circles the heavy marble, rather than moving on forever on the infinite fabric. You keep playing until the whole fabric is filled with big marbles, little marbles, massive marbles, light marbles, all moving around and influenced by the bending of the fabric they all individually create.

As you may have suspected, the fabric here performs as spacetime and the marbles of different masses and sizes represent the different celestial bodies that inhabit our universe. The heavier the object moving through spacetime, the more spacetime bends around it, influencing the trajectories of anything coming within their surrounding bend. In the absence of matter or energy, spacetime is a smooth stretched fabric, completely flat. Only with the presence of matter and energy will the otherwise smooth fabric start to warp and curve (Also, while you're at it, imagine rolling a marble so heavy, a marble of infinite mass, onto your fabric. However strong, at one point the fabric will give, the marble will cause the fabric to tear and make a hole. This is how you can imagine the singularity of a black hole: a tear in spacetime) Now, of course, the fabric analogy has the obvious flaw of its two-dimensionality, and spacetime, as we can 'see' it being at least three-dimensional, but it's a little bit hard imagining playing marbles in 3D.

With this idea in our heads we can again look at you, living on the earth's surface. Right now, as you're reading this, your body wants to slide down the curve in spacetime caused by the earth's presence, but you're not, because the chair you're sitting on (or the floor you're standing on, the bed you're lying on) is blocking your slide's way. Everything on the Earth's surface is stopping you from sliding down into the curved abyss. Were you to jump out of the window, however, you would give into the spacetime bend, and finally descend the steep slide of the waterpark that is earth's curves.

With the establishment of acceleration and gravity being one and the same thing, in this framework of spacetime, we are given a way to look at our relative times once again. One day I decide to go climb the Kilimanjaro (it's been made clear that I'm an exceptional athlete in this reality). I decide to leave my dog at home, he's too old to go for long walks. After a bit of a hike, I've made it to the top. With the top of the Kilimanjaro being 5895m above the surface of the earth, where my house and dog are quietly waiting for me, due to the warping of

spacetime caused by earth, time is passing more quickly for me than for my dog all the way down below, subject to stronger gravity. Now, the effect is so miniscule that my dog will probably not notice any difference in my age upon return. Yet, however unnoticeable in everyday experience, it remains a fascinating aspect of the reality we are all part of.

Existential dual-personality disorders: Crying cats and entangled rats

Heavy rain is simply a local manifestation of some vast entity that I'm unable directly to see.
(Morton, 2013)

Now, from the unnoticeable of the everyday, we move on to the very unnoticeable, the invisible, the incomprehensible, the epitome of modern un-mythological mythology: quantum physics. To get to the core of our understanding of reality, we have to get to the core of it all, reality's smallest constituents, we have to get to the quantum-level, even the sub-quantum-level. Let's have a look at the key features of quantum physics, without going into too much of the experimental detail (as time on our relative clock is passing quickly).

The discovery of a quantum physical world, with its own unique and counter-intuitive laws, brought about a revolutionary shift in our view about how reality can be perceived. Quantum theory managed to transform our clear reality into an opaque fuzzy mess (Clear is, of course, a very relative term. If reality was really so straightforward, we wouldn't have had to philosophise about its mysterious meanings and obscure beings since the early days of human-kind)

For years it was generally accepted that the light from the sun, the bulb of your bedside lamp, a firefly on a late summer's night, was all emitted as a wave. Much like a wave in the ocean, it would start at an energy's push and make its way through, crashing into an object or two, spread out, until it would hit your engulfed body on a late swim, or in this case: the eye's surface. So, it came to everyone's surprise when light was observed to not always behave as a wave, but as a particle too. It was measured that the energy of the light was not spread out as expected, but came in little packets, tiny discrete boxes, miniscule wrapped up gifts of light (Salasnich, 2017). Now, before you conclude: great! Light comes in packets travelling through space and not in its waveform as we initially thought, logical enough. This isn't true either. In the famous double slit experiment (Selleri, 1992) it is shown that when light shines through some slits, the light splits up and interferes, relating to each other behind the slits, showing a pattern of this interacted light on the back-wall. This pattern shows that light communicated with each other as a waves; as is made clear by the interference-pattern. So, light is a wave, light is a particle. Light has a dual personality and acts however it pleases in that particular moment. This is confusing, and it goes even further. As it turns out, particles like electrons carry this particle-wave duality character as well.

How can we interpret our reality if all of nature's constituents carry a dual wave-particle persona, waiting to crash in a definite location? We have to see these particles not as being in one place, but as being possibly everywhere, however small the chance, force it to be in the one place by the power of your perception. Like the world famous cat mentioned below, the electron is not yet in a definite location before you measure where it is. Before you look at the particle, it is floating through possibilities of where it could be; it is inhabiting the probability wave.

All can be described as these probability wave functions, and eyes make these waves crash. Eyes make the probabilities that were once spread to infinity pointed, forever stuck to that one being and location. We presume locations of specs, of bits, of light, to be set as one at all times, while possibilities are endless. They are endless, until we observe. Have you never heard of the poor boxed in cat? That's both dead and alive until it's not? The

cat that is in a superposition of lively purring mammal on your lap and long gone disintegrated sack of bones and fur? This is the life we exist in. Everything can be anywhere at once. But, once you open the box, once you plant your eyes, once you dare to look, you determine its state. Nothing was already in that determined state, but in all states at the same time (Greene, 2003).

We speak about far reaching probability waves taking over our view of individual particles. Local points of matter that turn out to not be so local after all. The non-locality of particles is a shocking result of measurements in their interaction. So far we've been talking about the location and state of particles in itself, but particles aren't always necessary alone in their being: paired particles can be entangled. I will elaborate on this entanglement, since it dramatically alters our view of the universe. 'Entangled particles, even though spatially separate, do not operate autonomously' (Greene, 2003). In the 1970s experiments with beam splitters were carried out that showed the entanglement of particles in specific situations (Selleri, 1992). Take two particles that are created in a pair. For example, an electron in an atom in excited energetic state falls down to its non-energetic state, emitting two photons (the atom emits two photons in this particular case, because energy must be conserved and two photons equal the energy that was 'stored' in the atom). It is then shown that the state of these particles are inherently linked. If you measure the one particle in a certain direction, the other particle will automatically be influenced by that measurement. This result is incredible, since it spans any separation. If you measure one photon in your basement, it will influence its coupled photon, even if it's a couple of galaxies away. Since concluding faster-than-light communication between these particles would be an unacceptable result, we must see their acquired properties as non-individual, forever dependent (Maudlin, 2011).

Particles can be so intimately bound, so entangled in one another, that you cannot speak of separate particles anymore: They are linked parts of one physical entity. Measuring a state of this entity that consists of, for example, two photons, affects the entity so also both the photons simultaneously (Greene, 2003). Quantum theory is thus fundamentally correlated with observation. This action of observation, measurement, becomes a part of the process, a vital player in the state of this entity. Niels Bohr draws from this participation what he calls the central lesson of quantum physics: We are part of the nature that we seek to understand (Kragh, 2022).

Materializing mothers: A jumpy sea of possibilities

But in a flash of terrible light all our explanations, all our classifications and derivations, our etiologies, suddenly appeared to me like a thin net. That great passive monster, reality, was no longer dead, easy to handle. It was full of a mysterious vigor, new forms, new possibilities. The net was nothing, reality burst through it.
(Fowles, 1965)

Earlier we established that the space void we so long assumed to be empty may not be empty at all, but rather filled with a thick syrup called spacetime. After a quick glance into the implications of quantum mechanics, we attempt to unify our entangled surroundings through one theory of quantum cosmology. To do this, quantum theory has to be merged with special relativity into quantum field theory. Here, quantum fields in different frequencies make up the particles that vibrate throughout space-time. Particles become a dance of fields, that emerge for a moment and escape us again soon after.

First, let us again glance up at the supposed empty space that surrounds us. This time not just with the theory of space-time in the back of our minds, but, too, through the eyes of quantum field theory. Now, following everyday experience you probably view matter as something pretty stable: Your mother wouldn't disappear before your eyes, nor have you ever seen a pizza materialize when you're really hungry and focus hard enough. Matter isn't created and destroyed out of thin air. Or is it? According to quantum field theory, that is exactly what happens. It takes on the probabilistic nature of quantum physics in its most fundamental form. Our vacuum is jumping with the full set of possible outcomes of what it may or may not become. Sometimes the odds are in the favour of becoming (matter is created) sometimes of un-becoming (matter is destroyed). There is crashing and uncrashing of the waves in the uneasy ocean of spacetime. This thick soup is rich with all subatomic particles, may it be electrons, quarks, neutrino's or photons: They're here, there, they could be everywhere. This is the very essence of their being, and with it the essence of our reality of space and time. It is not comprised of individual objects, or particles, that live in one specific place, they are ever enfolded in the exciting jittering sea of possibilities of what, where and who. As a consequence, everyone and everything, is a boundary-less being that happens to be temporarily formed in their current supposed shape. This gives us a new view of our surroundings and our very existence, with endless possibilities.

So, what we have usually called the 'vacuum' is actually a highly excited field that fluctuates constantly to a random degree, due to the intensity of these fluctuations (Bohm, 2002). To make the matter a bit more clear, in 'Wholeness and the implicate order', David Bohm describes matter, or particles as following: 'What we usually call 'particles' are relatively stable and conserved excitations on top of this vacuum. Such particles will be registered at the largescale level, where all apparatus is sensitive only to those features of the field that will last a long time, but not to those features that fluctuate rapidly. Thus, the 'vacuum' will produce no visible effects at the large-scale level, since its fields will cancel themselves out on the average, and space will be effectively 'empty' for every large-scale process (e.g. as a perfect crystal lattice is effectively 'empty' for an electron in the lowest band, even though the space is full of atoms) (Bohm, 2002).

Unfolding marmalade: Temporal origami with sticky spacetime fabric

Brittlestars know better than to get caught up in a geometrical optics of knowing
(Barad, 2007)

After talk of cats in superposition, marbles on stretched spacetime fabric, disappearing mothers in cosmic quantum fields, the time has come to lay out the materialization of matter, and our human conception of it. Rather than letting these dazzling symptoms of reality confuse us, let's use their mystical nature to form one elegant binding view; a carefully choreographed dance of the skies, a final reconceptualization of materialization. We use the view of an entangled reality that follows from our universe of quantum fields when we ponder further into the depths of this bizarre understanding.

To do so, we will look at Karan Barad's theory of agential realism. In this worldview Barad approaches matter not as static points in space and time, but as agentive and intra-active (Barad, 2007). Agency emerges when intra-active relations are formed, not through the point of initial separate entities; the continuous folding, unfolding, throughfolding, overfolding, underfolding: temporal origami of spacetime-matter relations. Matter is in its being and becoming always dynamic and engaging in the reconfiguration of our reality. Bodies, beings, environments (you, your dog, the planet, climate change) are thus not placed in the backdrop that is the world, as separate shapes and structures of particles, but are rather ever-moving temporal dynamic formations of that what space and time essentially is. The supposed problem with particle entanglement (their mutual engagement despite their spatial separation) is both the consequence as the foundation that shapes this view of reality: The particles with their separate states and instantaneous communication were never actually independent beings, but simply part of one and the same phenomenon (Barad, 2007) (earlier mentioned as being inhabitants of one and the same entity). What exactly is meant by a phenomenon here? Barad argues that primary objects are not independent items with its own boundaries and properties, but are actually phenomena. Phenomena are 'the ontological inseparability/entanglement of intra-acting agencies' (Barad, 2007). Phenomena can be mattering in itself, the ongoing differential patterns that mattering can take on.

We're inhabiting an infinite ocean of sweet and sticky marmalade. Viscous and ever stirring, clumps and clusters of sugar cubes forming and unforming in its incessant movement. It is not a composition of these clusters individually. The ongoing flow of agency, in which structures with internal and external relationships are formed and stabilised, then unbalanced and disintegrated, happens through weaving and unweaving of the fabric of spacetime. As Barad puts it: 'The changing topologies of the world entail an ongoing reworking of the notion of dynamics itself. Dynamics are a matter not merely of properties changing in time but of what matters in the ongoing materializing of different spacetime topologies. The world is intra-activity in its differential mattering.' (Barad, 2007). By thinking with intra action we give up on cause and effect relationships in its traditional sense. From within this framework we review and let go of assumed boundaries and borders and linear time.

Barad mentions an article brought out by the New York Times in 2001 that mirrors their theory so elegantly: 'Eyeless creature turns out to be all eyes'. They discuss the brittlestar, a brainless invertebrate who was long thought to be eyeless too, but turned out to consist of a skeletal crystalline structure forming one giant eye. It's a remarkable discovery, and a big leap, too: no eyes to all eyes. The brainless brittlestar merges viewing, living, being, morphing; they do not distinguish, they entangle and let themselves be entangled. Sometimes they lose an arm to distract a predator. An arm to a brittlestar, is just as valuable as all other body parts. A part of their being merges into their environment, and their brittle morphing skeleton of all eyes moves on in the ocean. Brittlestars manage to perfectly enact Barad's point of the entanglement of knowing and being; the 'agential realist ontoepistemological view' (Barad, 2007). The brittlestar is a living example of a being who is, views, gives and takes from its environment without the drag of hesitation.

Let's shake tentacles: Decolonising the narcissistic mind and the sympoietic flight of ant

Tentacularity is about life lived along lines—and such a wealth of lines—not at points, not in spheres. “The inhabitants of the world, creatures of all kinds, human and non-human, are wayfarers”; generations are like “a series of interlaced trails.” (Haraway, 2016)

The precise timing of the ant flight is an outcome of a semiotically structured ecology. The ants emerge at twilight—that blurry zone between night and day—when nocturnal and diurnal predators are least likely to notice them. (Kohn, 2013)

Donna Haraway translates the entangled view of reality to the multispecies realm in her beautiful framework of tentacular thinking, in which making of becomes making with, and mattering is the playful act of string figures weaving. These woven paths are never closed loops. They go under, over, cross into ever-changing active patterns, never settling down to one. These string figures tell the stories of our reality. ‘It is the pattering of possible worlds and possible time, material-semiotic worlds, gone, here, and yet to come’ (Haraway, 2016)

The pattering above is a sympoietic system (M. Beth, 1998). These systems, weavings, are living in a dynamic balance of creative self-organisation, with new beings and information folding in and out, causing their ever transformative nature. They are wonderfully unbounded yet evolutionary; ‘depending on cooperative relations among components.’ (M. Beth, 1998). As evolutionary progression leads the way for rising complexities, patterns meet new forms, foldings touch upon system, growing weavings grow ever more entwined and fantastical.

In ‘How forests think: Towards an Anthropology Beyond the Human’ (Kohn, 2013) Eduardo Kohn lives not in but with the forest. The important difference creates an even ground for weaving into one another, without imposing hierarchy. Kohn aims in his book to change thinking among relations. By quoting Viveiros de Castro “la decolonisation permanente de la pensee”, he highlights the key underlying issue from which we must move away: The colonization of our thinking about relationality. We must be cured from our narcissism. ‘We can only imagine the ways in which selves and thoughts might form associations through our assumptions about the forms of associations that structure human language. And then, in ways that often go unnoticed, we project these assumptions onto nonhumans. Without realizing it we attribute to nonhumans properties that are our own, and then, to compound this, we narcissistically ask them to provide us with corrective reflections of ourselves.’ (Kohn, 2013)

Tim Ingold too explores this relation between species (human and non-human) and forests from different observations of tribes and hunters and gatherers in ‘The Perception of the Environment: Essays on livelihood, Dwelling and Skill’ (Ingold, 2000). He expresses in his findings that once again the humans do not perceive the environment as just a physical backdrop, but as themselves in an ‘intimate relationship and interdependence with the plants, animals and hala’. Hala, beautifully, is the name given to the beings that brought the forest into the world, cares for it, and thus cares for the humans interconnected with it. We could say that Hala is just another word for the invisible string figures, the kin-making, the intra-active weaving of the fabric of reality. I am Hala, you are Hala, everything is Hala. We are interwoven beings brought to intimately care for and care with, along the entwined lines and paths in their patterns of rare-found universal order.

Fungal roommates and unlikely friendships: Oh, to be lichen!

We are all lichens; so we can be scraped off the rocks by the Furies, who still erupt to avenge crimes against the earth. Alternatively, we can join in the metabolic transformations between and among rocks and critters for living and dying well' (Haraway, 2016)

Before launching you into Marxist manifesto's with entangled minds and brittle arms, I want to lead you through an example of wholesome collaboration. One that lives under our noses and brightens our cemented lives.

Single-celled or low-celled organisms are hard to see when flowing amongst us, in us, through us. Only in grouping forms they start to make a little sense to our limited vision and brain. Much like how you can't see individual particles, but when they clump together into fleshy blobs in complex orders, they suddenly appear in their, arguably, ugliest form: the human being. This encapsulated accumulation of cells is then ready to catch glimpse of the wonders of the everyday.

Normally hiding from the naked eye, in symbiosis their vibrant patchworks enter our world. A rare occasion in which strong mutual friendship between species is so brightly apparent to us, humans. Lichens thank their existence to gentle bonds and lively trades; Lichens thrive on friendship. Three roommates happily living together in a house they've built and maintain equally. Looking from where I am sitting, on a ledge, staring into the abyss of mortgages, crippling debt and extreme housing inequality, this sounds like an unrealistic dream, and a rather ambitious one at that. So how do they do it?

The fungus makes for a steady base: From the bottom down, they build the house's foundation, complete with concrete walls and built-in plumbing. They make sure that the house is never short of mineral filled water, for their partner Alga. Now alga's greatest talent isn't building houses with steady water income, but they do happen to be in possession of that one quality that made this boiling, toxic wasteland called planet earth habitable for multi-celled mammals like ourselves. They take some of the water and minerals from the fungi and some of the rays from our ever-burning friend, the sun, and magically fuse, melt, transform it into a tasty treat: sugar. Some of it they keep for themselves, to maintain their cells and grow stronger and bigger. The rest of the sweets they gift to their fungal roommate, to thank them for letting them live there and share their water. Together now they have food and water, shelter and kinship, with the bare minimum amount of effort (III, 2008).

More often than not, a third partner asks to join the house: yeast (technically a type of fungus, but single-celled and with qualities of their own to bring to the dining-room table). With the use of a little bit of water, and a little bit of food, the yeast manages to produce antibodies, enough to ward off diseases and pests. For a nice wage, yeast has become the doorman of the house. And just like that, the house pretty much has it all: Shelter, food, water, kinship, health and protection.

On first glance a single organism, on second glance three beings working together in calm cooperation. What about a third glance? Is it really just the three beings living in this house? The house may seem a closed off system, but it is constantly receiving and returning: like a well-functioning library, it merely borrows each element it takes. It borrows the energy of the sun, to transform into endless new shapes and sizes. Even that miniscule ray of sunlight that against all odds happens to reach that particular lichen-covered rock formation, will years and years from now again return to its original photon-in-a-burning-star state. The fact that this ray by chance travelled all this way in the direction of earth and made it to its surface, is nothing but a happy coincidence. The capturing of electromagnetic energy into carbon bonds, only to be turned into ever more bonds and then broken down again is a mere step in the process of ever-increasing universal chaos. But let's not yet go down the dark inevitable path of high entropy and vast nothingness. Let's stay on the (relatively) light side of

earthly occurrences and look a little more into the consumption of lichens, and what it tells us about deeply destructive human behaviour (I did say relatively).

One must realize, ecosystems are all about sharing the food, redistributing the wealth, for it is not about the survival of the single plant or mushroom: it's about the survival of all species. When a plant gets sick, it sends off a chemical through its roots, a warning message so to speak, reaching both close companions and distant acquaintances (Becard, *How Plants Communicate with their Biotic Environment*, 2017). These plants will then start to produce antibodies against this specific disease, before it has reached them. Together then, they beat the disease to the race. With barely any losses, most plants stay strong and alive, and through working together, the species thrive.

If you glance at the world, not through the tinted gaze coloured with human greed, but as if looking at a trusted friend who has been kind enough to host you through all these years, the relation between earth and its homo sapien inhabitants changes dramatically. Like you and I, the earth and all its citizens, human and non-human, have wants and needs that need to be met to be able to, in turn, give back. Isn't it horribly ironic that humans have, in a sudden peak of misplaced arrogance, somehow managed to take their entire species and set them apart from the rest, to then completely disrupt the balanced ecosystems that had been accomplished, settled and polished to perfection for over billions of years. As I started this lichen-dominated chapter of symbiosis quoting Haraway, I will do the same to finish off on a slightly pessimistic note. But worry not, things might be looking up this next chapter.

'Corals of the sea and lichens of the land also bring us into consciousness of the Capituloscene (a term alternative to Anthropocene, the currently contested timescale marking the era of human determination of the planet's lifecourse, since it is not the properties of man causing drastic world alteration and destruction, but those of capitalism), in which deep-sea mining and drilling in oceans and fracking and pipeline construction across delicate lichen covered northern landscapes are fundamental to accelerating nationalist, transnationalist, and corporate unworlding' (Haraway, 2016).

Coin tossing towards a postmodern worldview: Cutting the ultimate umbilical cord (Entangled living within ecological dynamic thinking)

The Master views the parts with compassion, because he understands the whole
(Laozi)

We have finally gotten to a point where it's time to, through the agential realist gaze, tackle the challenges arising from the philosophy of global capitalism and lay out economic alternatives, evoked by the entangled vision, and its outcomes. To translate our entangled reality to its socio-political counterpart, process thinking is essential and inevitable.

In their Manifesto for Organic Marxism (Philip Clayton, 2014), Clayton and Heinzekeher lay out the alternative reality based on ecological thinking, in which reality is an array of interrelated events (the earlier mentioned phenomena), instead of individual, isolated beings. Their Manifesto is founded on the principles of process thinking, based on the following four main features. The first one is a relational view of reality: Every event reality is built up of relationships to other events. This horizontal networking inevitably brings us to the second feature: Influence without determinism. Events, while being heavily influenced by the past, are not completely determined by it. Events as phenomena in manifold patterning are open ended, new developments can occur and change outcomes that form new centres of following events.

The Aesthetic value of these events (our third characteristic) is its capacity for relationship and creativity (18, 154). The term 'aesthetic value' can be misleading in our every-day westernized interpretation, so let's zoom in on its translation in the context of process thought. We must understand value through traditional Chinese philosophy: 'Value cannot be understood without discerning harmony; and harmony cannot be understood without considering the perspective of the whole'. Aesthetic value thus all comes down to perceiving as a whole, to finding true harmony. Finally process thought is about Balance between private and public, which summarizes as taking responsibility for your freedom, or even: Responsibility is freedom and freedom is responsibility.

David Bohm discusses process as a translation of reality (Bohm, 2002). By describing events as process, Bohm adds a flavour of relativity to the mix and again brings us back to the analogy of a stream: 'The best image of process is perhaps that of the flowing stream, whose substance is never the same. On this stream, one may see an ever-changing pattern of vortices, ripples, waves, splashes, etc., which evidently have no independent existence as such. Rather, they are abstracted from the flowing movement, arising and vanishing in the total process of the flow. Such transitory subsistence as may be possessed by these abstracted forms implies only a relative independence or autonomy of behaviour, rather than absolutely independent existence as ultimate substances.' (Bohm, 2002).

Ecological thinking and the study of ecosystems has strong links with Marxian analysis of class, whereas liberal individualism can be linked to and reflected by atomism in physics; the idea that all can be divided into individual point-like particles. A key essence pointed out in Clayton and Heinzekeher's work is 'Any viable Marxism for the twenty-first century will consider humans in their entire context of their existence on earth. All living things, all natural resources, in short, the entire planet – is relevant to the class struggle.' (Saito, 2017), which demonstrates their ecological and environmental translation of Marxist philosophy (in the current day, organic reform), at its core. This stands in stark contrast with the capitalist structures we exist in, and feel the destructive consequences of.

According to political philosopher Alfred North Whitehead, all life and non-life, all of existence are connected in and by a never ending process. In his theory on the philosophy of organism he suggests ‘The notion of an actual entity as the unchanging subject of change is completely abandoned. An actual entity is at once the subject experiencing and the superject of its experiences’ (Philip Clayton, 2014). The foundation of the philosophy of organism resonates with the agential intra-active dynamic entangled reality we have been laying out, reflecting its fundamental ideas to the macroscopic scale of the human order.

The philosophy of organism is based on three core principles. The first one is Interconnection: No human is an isolated unit, we are rather constituted by our connections and relationships. The second principle is Ever-changing process: Nothing is identical across time, the only thing that is constant is process itself. Holism is the third principle: The whole is greater than the sum of individual parts. This characteristic is vital for the nature of decision making. Only from the perspective of the entire system or civilization, holding a complete vision throughout, individual steps can be chosen wisely.

Where throughout this text I have advocated that it is the fundamentally false view of man and nature as separate beings, with its inherent dissected outlook on reality, that is the underlying issue with all proven disastrous consequences, Slavoj Žižek undermines this view as being the true source of the world’s climate change problems. In his collection of essays ‘In Defense of Lost Causes’ (Žižek, 2008) he suggests that not the breakdown between man and nature is the obstacle preventing us from radically confronting the ecological crisis. Žižek poses that it is much more deeply rooted than that: ‘it resides in the unreliability of our common sense itself which, habituated as it is to our ordinary life-world, finds it difficult to really accept that the flow of everyday reality can be perturbed’. People refuse to, or rather are unable to, believe that such catastrophe can occur, catastrophe that is so invisible in the everyday. Žižek then concludes that to tackle this we must embark on the ethical task of un-learning the coordinates of our immersion in the world, as we can have no more basic trust in our common sense of this exact world.

Where Žižek claims that it is our inability in grasping the full scope of potential (right now, inevitable) disasters from our comfortable throne of the now that is the underlying issue that halts acute action against global warming, as opposed to the separation of man and nature, I argue that one does not underly the other, rather, the issues go hand in hand, and even, enforce one another.

The separation between human and nature is a direct consequence of the worldview built up of separate individual entities, bodies, environments, instead of man and nature being phenomena of one and the same; intra-active inseparable materializations from the same fabric of reality. If one sets themselves apart from their surroundings, as mere visitors, an immediate barrier is formed, granting protection when disaster strikes. Following this (deceitful) separation, mankind can no more imagine global warming having disastrous consequences for them, after all, they can always rely on the protective shield that isolates human from nature. Consequently, in this separation, real danger becomes implausible, if not, absurd. By this logic, disassociation with nature, and our trust in common sense; our faith in the pressing reality itself, become two sides of the same coin.

From whichever angle you decide to look at the issue of ecological crisis and its causes and consequences, we reach the same conclusion: It is essential to look at reality not in isolated parts of a whole, but a uniform whole we are part of. Now is the time to finally alter and broaden our perception of the world. Or, as Žižek puts it: ‘We should really grow up and learn to cut this ultimate umbilical cord to our life-sphere.’ (Žižek, 2008)

The dazzling sky of brittlestars

Our reality never seems to stop amazing us with its mesmerizing mysteries and unexpected twists of fate. In the latest turn of events, I will leave you with a final bit of magic: We are all the eyeless creature that turns out to be all eyes. Eyeless in our reduced, flawed interpretation of the world around us, the view of ourselves as individual beings. For how could we be truly individual creatures, if we are actually all eyes: in constant contact with our surroundings with every organ, cell, particle or probability wave of our being, in ability to merge this being and knowing in the way the nimble invertebrate has already shown us.

All is brittle in its existence. Strong bonds are formed out of fluctuating fields, and broken again into crumbs that eventually melt back into our viscous vacuum. The dough rises into snappy biscuits that float and form, demerge and crumble.

The brittlestar shines, winks at us with its countless eyes, as we embark our journey through the mysteries of being. The brittlestar encompasses our sense of self. We are a vessel of absorption, reception. We take in our surroundings with each cell of our temporary self, much like the brittlestar does. We absorb our surrounding information, not through the skeleton of eyes, but through our groupings of cells and lines that edge the outer.

With a belly full of life, I must leave you to your cross-cosmos journey. From the bottom of my being I wish you the brightest of entangled days ahead, swimming through the marmalade of this wondrous existence. I hope to cross lines with you again in our extraordinary woven web of space-time. Until then, respect each being to cross your path: Every knot of life and non-life is an essential and equal crumb of our universal loaf.

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Additional reading that guided and inspired (and may it do the same for you)

Ecological entanglements in the Anthropocene

Nicholas Holm, Sy Taffel

A brief history of time

Stephen Hawking

In the ruins of Neoliberalism: the rise of antidemocratic politics in the west

Wendy Brown

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