Thesis by Stelios Markou Ilchuk
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Perpetual Connections of Uncertain Forces

and sentimental ways of viewing them

-1. Intro: *forever...*

The evolution of an animal is a force in constant flux, guided by external and internal factors that actively interact and revolve around, within and with it. Organisms are capable of infinite variability and have an inherent tendency to change when environmental shifts occur. Including geological and meteorological changes, environmental shift refers to and is caused by a number of things. For example, some of the most important elements in an organism's environment are other organisms. Adapting to their environments, two or more organisms can evolve together and shape each other's behavioural and physical frames and patterns through direct or indirect processes, fuelled further with every generation.

"Evolution is so efficient that no ecological niche is left vacant for long. Something will always develop to fill it."[1] This leads to a spectrum of very complex and unique links between animals; a web of interconnected relationships and interchanging arsenals in this pool of genes and tactics, behaviours and forms. Burdens become blessings and vice-versa in an unstoppable path carved by fluid in a fluctuating balance where it fills every crevice and satisfies every niche, separating and overlapping paths to create hybrids and new configurations all together.

This happens to every life form on Earth, including us. Visible and pivotal changes materialise after many generations, with new species being formed after myriad trials in an ever-changing game of survival, influence and adaptation. But it's interesting to think that, in a very small way, every single living being, every individual organism, is a species of its own. Every birth a new version amongst millions, running on slightly different settings, facing unique encounters that shape it and the individual paths it chooses to take. The next generation, a microscopic fraction of the process, the latest addition to a chain stretching back millions of years.

0. STILL DRIVE

I often catch myself thinking about an article I read online: *"Researchers Tracked a Wild Salamander That Stayed Completely Still for Seven Years."*[2] A lot can happen in seven years. But the salamander is steered to inaction. In every instinct inside it, and as with every species sculpted in their genetics, the drive to stay alive is always present, and the salamander does what it considers best for itself. Whatever that might mean for a salamander. "*Sometimes you find a tiny patch of rock in an underwater cave that's so perfect that you just have to sit there for seven years without moving."*[3] Given that these species of salamanders live for up to a century and have a reproductive cycle of every twelve years, they're in no apparent rush to go anywhere. The great chains of being hold it in place.

1. PARALLEL LIVES: Hold me brother...

> *The ground rumbles, signalling a night of re-birth. Rarely witnessed by mortals, the annual mass metamorphosis initiates. Triggered by biological clocks, calibrated by environmental cues which signify the passage of time,*[4] *the nymphs surface.*

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1 Dougal Dixon, *After Man: a Zoology of the Future* (London: Breakdown Press, 2018), 15

2 Ben Taub, "Researchers Tracked A Wild Salamander That Stayed Completely Still For Seven Years," *IFLScience*, accessed February 10, 2020, https://www.iflscience.com/plants-and-animals/researchers-tracked-wild-salamander-stayed-completely-still-seven-years/.

3 Taub, "Researchers Tracked A Wild Salamander".

4 Kevin Fitzgerald, "How Do Cicadas Know When to Emerge from the Ground?," *Entomology Today*, March 22, 2016, https://entomologytoday.org/2016/03/22/how-do-cicadas-know-when-to-emerge-from-the-ground/.

Having spent up to 17 years underground, cicada nymphs emerge from their burrows, and, after a few steps, cling to the first surface they deem adequate for their conversion. *The Goddess of beauty, Aphrodite born in the foam of crushing waves,*[5] cicadas rise from within their juvenile forms as fully grown adults, achieving full metamorphosis. *Cicada Level Two: Adult Formation.*

Once common tunnel dwellers, eating and growing as much as possible, they expand into a new, though very short, existence. Food is now forgotten, an issue left to the commoners, as the cicada spends its remaining days singing and cruising through the air. The summer serenaders, thousands at a time, the males in chorus, synchronise their mating calls, giving summers in Cyprus a distinct buzzing soundtrack. For them, a romantic ballad for their female counterparts, but also a sonic barrier that repels predators and perhaps a favourite pastime. For me, the sound of every summer growing up, the sound of searing heat.

They are normally active only while the sun is up, but they don't seem to differentiate between lamps and stars. I often hear them at night as they get confused by the brightness of the street lamps and carry on singing, sometimes catching an individual cicada performing solo to a crowd of one, me, a passer-by. *"Where is everyone?"*

The veil of Isis momentarily lifts. A fragile milestone, an intimate moment with a bug.[6]

Freshly moulted, still clinging to its ghost shell, it waits motionless while its new body fills with *petrichor.*[7] The cicada's wings expand to their full length, stretching its anatomy into the final act. The pale colour of the stage-in-between fades, and the cicada slowly gains its characteristic grey-brown camouflage patterns, ideal as cover in the summer fauna of Cyprus. Dried solid and fit snug into its new armour, the cicada abandons its past self. The trees during that time are covered with their empty shells, often clinging even to each other. Like suits of armour displayed standing in castle halls, they still feel alive. Motionless like the salamander, the transparent gold remnants of the cicada's reproductive rituals act as sentinels of an ongoing relationship, and like *Kodama Spirits*[8], sedentary omens of a balance in the environment. A cycle that has been happening for thousands of years continues undisrupted. The shell, clawing its fragile remains onto the surface, gains a parallel life to that of its original host. *A Bug/Ghost-type.*[9]

Two players testing different settings in this biological marathon carry the same armour.

I found the same seashells on two nearby beaches. Pointy, like wizard hats, with patterns of black, ochre-green and dark blue, they glimmer iridescent in the golden-hour sun. The residents of these identical shells are two completely different species. The sea snail was born with and is attached to that shell, owning one for life until death breaks down its flesh, leaving the shell vacant and discarded for anyone to take. The other, a hermit crab, co-evolved with the snail as once a shell is abandoned, the hermit crab claims one that fits his size, switching between a number of them throughout its lifetime as it grows bigger. The sea snail neither gains nor loses from this process, yet the crab benefits and is dependent on the life and death of the sea snail.[10] However, acquiring a shell is not just a matter of waiting for snails to discard theirs. Shells can also be stolen, swapped or fought for by other crabs. Fragile bodies, protected from frying in the sun and from the mouths of predators by an organically forged shield, an extension past its creator's purpose. The shell, once again, gains a parallel life to that of its original host.

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5 Aphrodite is the ancient Greek goddess of beauty and according to mythology her birthplace is Paphos, my hometown in Cyprus.

6 An intimate moment with a bug: https://youtu.be/f-7JQGYRekU

7 The fluid that flows in the veins of the gods in Greek mythology.

8 Kodama Spirits are spirits in Japanese folklore that inhabit trees. See also: the Hayao Miyazaki film *'Princess Mononoke'* (produced by *Studio Ghibli* and released by *Miramax Films,* 2000), where Kodama Spirits act as omens of a healthy or recovering forest.

9 Nincada, an Insect-Pokémon which is based on a cicada nymph, evolves into two different Pokémon: Ninjask, resembling a fully-grown cicada, and Shedinja, a Ghost-Pokémon resembling the abandoned shell.

10 Mary Bates, "Watch 'Pom-Pom' Crabs Fight with Anemone-Tipped Claws," *National Geographic*, January 31, 2017, https://www.nationalgeographic.com/news/2017/01/crabs-anemones-pom-pom-clones-fight.

The pom-pom crabs are another example of animals re-appropriating other life forms to their advantage. They gained their nickname by developing a symbiotic relationship with anemones that sees them placing anemones on their two claws, using them as toxic shields in a manner that resembles cheerleaders holding pom-poms. Research shows some species are picky about what type of anemone they carry but others are not. There's even a species in Japan that, instead of an anemone, uses a tiny species of slug in the same way, attached to its front claws. When wielded by the pom-pom crabs, the anemones protect the crab from predators and the crab provides the anemone with easier access to food, though it's arguable how mutualistic this relationship really is. The crab controls how much food its sea anemones get, maintaining them as small *bonsai* versions. "*We can say with almost certainty that the crab is dependent on the anemone. For the anemone, it is more unclear."*[11] The crab now absorbs the anemone by maintaining it as a living armour grafted onto its front limbs, solidifying an ongoing relationship but casting the crab helpless and vulnerable without it.

2. PARALLEL LIVES 2: I evolve so you can hate me!

These encounters in motion generate relationships that last millions of years, in some ways fusing the species involved into one, as an extension of each other, intertwining their identities and connecting them at the very core. Encounter leads to assimilation, whether by physically fusing bodies or through constant interaction. A dance in motion with no constraints, casting no play or formation out of bounds. Life contracts where the terms vary with each encounter. Everything goes, even at the point where an individual's rare mutation becomes the main characteristic that defines the rest of its lineage.

> *A hybrid entity embracing its mutation by straying from the ancestral path. Prosperity is ensured by grafting its own branch on this tree, solidifying its place with every generation.*

With autumn almost over, the mating season has reached its end. The moose's antlers glisten bloody red in the little sunlight that peaks through the clouds as velvet skin hangs loose from the stripped-bare bone. Since the mating season is over, the moose will eventually drop his calcified antlers to conserve energy for the winter. A moose can sprout up to half a metre of new bone growth in a month prior to the mating season, as antlers are the fastest-growing bone in the animal kingdom. The reason for this lies in the animal's arsenal of genes. "*Antler growth is more like that of bone cancer than that of typical bones. However, in contrast to bone cancer, where tumours grow unchecked, antler growth is tightly regulated by the activity of tumour-suppressing and tumour-growth-inhibiting genes."*[12] All horned animals have one common ancestor that had some sort of cranial protrusion. Somewhere along the evolutionary path, one of those early ancestors got bone cancer, and not only survived, but found that the mutated cancer cells worked to its advantage, ensuring the continuation of its unique genes and leading to the evolution of a new version of horns; the antlers we know today. Bone cancer might be a disease but it's not a life form in itself. It's a mutation in the organism's genes that causes unusual cells to grow out of control in the bone. It is possible that mutations such as these are the result of external factors like exposure to radiation or cancer-causing chemicals, or some other sort of shift in the environment. Interconnected and co-evolved in this way with its habitat, the animal becomes one with its surroundings by embracing the mutation. This past encounter and the ongoing relationship between animal and disease sculpted a new evolutionary path within the species, creating a new family of Cervid subspecies.

> *Evolved* (ELOVL6) *by radiating light* (FOS)*, like a rib taken from Adam* (ADAMTS18)*,*
> *the Cervids gain new form.*

Proto-Oncogenes (genes that have the potential to cause cancer) found in Cervids: FOS, REL, FAM83A
Tumour-Suppressing Genes found in Cervids: PML, NMT2, CD2AP, ADAMTS18
Tumour-Growth-Inhibiting Genes found in Cervids: ELOVL6, S100A8, ISG15, CNOT3, CCDC69 [11]

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[11] Yisrael Schnytzer (researcher at Marine Biological Laboratory in Woods Hole, Mass), as seen in Rebecca Hersher, "Crab Teases Anemone, Anemone Splits In Two, Crab And Anemone Live On," *NPR*, February 8, 2017, https://www.npr.org/sections/thetwo-way/2017/02/08/514132920/crab-teases-anemone-anemone-splits-in-two-crab-and-anemone-live-on?t=1606065343601.

[12] Nini Wang et al., "Genetic Basis of Ruminant Headgear and Rapid Antler Regeneration," *Science Magazine*, June 21, 2019, https://science.sciencemag.org/content/364/6446/eaav6335

This relationship is hidden in the genes of the moose, something that we only know after a very long history of scientific research into evolution and a process of specimen analysis and comparison, under the microscope, in calculations, theories and history. Evolutionary encounters and relationships are not always so hidden. The form of an animal sometimes truly shouts the evidence of the impact another species has on it.

> *"I evolve so you can hate me! Countless generations of killing the most appetising of us, our lives as trial runs in a process of survival of (what you consider) the ugliest. It's like you drew out what you despise the most on our body; your appetite defines my form."*
>
> *Predator and prey ride off into the sunset holding hands…*

Gradually, over millions of years, predator and prey sculpt each other's character and characteristics. With every generation the prey becomes better at avoiding and defending against its predators, and the predator becomes better equipped to detect and catch its prey, preserving and persevering with an ongoing relationship, preventing any animal from wreaking too much havoc through checks and balances developed by the ecosystem.

In the forests of Borneo there is a moth whose wings feature two symmetrical patterns resembling flies feeding on bird droppings.[13] Many of this moth's predators tend to avoid bird droppings and anything close by, associating them with potential disease, so the pattern acts as a very effective defence mechanism. The moth also emits a pungent odour that adds another layer of believability to its disguise. A big part of the moth's identity is now directly dictated by its predator's tendency to avoid bird droppings. But that also means the predator gradually evolves so it can better distinguish real droppings from the moth. Through this process, predator and prey co-evolve and fine-tune each other's survival skills, and I would like to imagine that someday, if this relationship remains stable, the moth's wings will truly be a photographic image of flies feeding on bird droppings. What amazes me is that the moth is *probably* unaware of the fact that it looks like bird droppings, as the whole process is guided by a force beyond its control, and perhaps beyond its perception. The moth's predator becomes its sculptor, and vice-versa; both hybrids of each other, existing in parallel. Like the anemone and the pom-pom crab, companions for life.

A tarantula species in south-eastern Peru is known to keep a tiny frog species[14] as what we humans would recognise as a *pet.*[15] The spider, very capable of killing and eating the tiny frog, allows it in its proximity, giving it shelter and protection from predators, while also allowing it to feed on leftover scraps of uneaten prey. The spider benefits from the presence of the frog as it specialises in eating ants, and ants are one of the major predators of spider eggs. Mama Spider's best friend, a housekeeper and a guardian for the babies.

3. Animal Prosthetics

A companion for life, man's best friend. *"There cannot be just one companion species; there have to be at least two to make one."*[16] The dog's biological history is so intertwined with human history that they become inseparable. They expand our emotional capacity and practical capabilities as we project our deepest needs into their genes. It's a relationship based on trust and on gratifying each other's needs, though eventually in this case, dogs got the short end of the stick.[17] All domesticated dogs have

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13 Spooky N/A, "This Asian Moth Is Probably Nature's Ultimate Camouflage Master," *Oddity Central*, August 2, 2019, https://www.odditycentral.com/animals/this-asian-moth-is-probably-natures-ultimate-camouflage-master.html

14 Naish Darren, "Tiny Frogs and Giant Spiders: Best of Friends," *Scientific American Blog Network*, May 16, 2015, https://blogs.scientificamerican.com/tetrapod-zoology/tiny-frogs-and-giant-spiders-best-of-friends/.

15 Ross R. Erhendr, "5 Animals That Have Learned How to Keep Pets," *Cracked.com*, July 22, 2014, https://www.cracked.com/article_21321_5-animals-that-are-clearly-keeping-other-animals-as-pets.html.

16 Donna J. Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (Chicago: Prickly Paradigm Press, 2020), 189, iBook.

17 "What Unethical Breeding Has Done To Bulldogs," *Puppy Leaks (blog)*, March 8, 2019, https://www.puppyleaks.com/done-bulldogs/

one common ancestor and, despite their varied forms, all dogs can inter-breed, meaning all breeds are still the same species. A true testament to our power as creators and our ego-logical approach to the species we hold second-dearest to our own. As the moth portrayed what its predators hated, we selected what we loved in dogs and bred them accordingly to emphasise those characteristics and sculpt our ideal versions of them, often with little regard to what this meant to the animal. Whether bred to be the fastest, the cutest, the smartest or the smallest, each dog breed highlights an emotionally- or practically-driven niche, fulfilling and expanding a specific human need or following a cultural trend.[18] Unconditional love built upon generations of inbreeding and laborious training. The human imposition lasting over lifetimes upon lifetimes, perpetuated by necessity and love.

> *I cut its branch from the tree, and plant it in my own garden. I propagate its growth and use my shape as a mould, my behaviour as dogma.*

Grafting allows two separate plant species to artificially combine and join bodies. A tree that bears two kinds of fruit, loaded with the extra weight. This process shortens the plant's average lifespan while also leaving it more vulnerable to viral diseases. Existing through the amalgamation of two Gods, the hybrid becomes a demigod, equipped with the combined arsenal of both its parents, but also burdened with their flaws. Steering the organism's natural development using artificial means, we shape these beings into existence and into our reality.

We ourselves are grafted beings, semi-synthetic cyborgs, using custom augmentations to enhance our restricted bodies. Since the Early Stone Age, we have taken advantage of our surroundings by crafting and using tools, literal extensions of our short reach and lack of strength. Like in our relationship with the dog, as we evolved our tools evolved with us. Now most human beings on earth are in one way or another artificially augmented. Things we sometimes take for granted: glasses and contact lenses to enhance our poor eyesight, mechanical vehicles that transport us from A to B faster than we could ever travel alone, portable tablets and smartphones that expand our reach and knowledge capacity on a global scale and even clothes as second skin, a frail armour that regulates temperature and allows physical and mental comfort. Things we wear and carry with us; solutions to our mortal flaws and problems, that create new burdens in the process.

The dog in many ways is a man-made prosthetic, multi-purposeful like a Swiss-Army knife, our most advanced artificial enhancement. That ancient encounter between human and canine ancestors carved two paths, now seamlessly fused, as one could not be without the other. This relationship has been essential to our prosperity as a species across thousands of years, as the dog and domestication of animals in general propelled us to a higher level in terms of progress and expansion. Now electricity and fuel move our metallic limbs, stretching our reach as deep as the Mariana Trench,[19] and far into Interstellar Space.[20]

> *my mechanical arm stretches…*
> *plucking the anemone from its spot on the coral, I walk through the deep-sea valley and lie down on its grimy surface. I hold the anemone, I pluck its limbs one by one…*
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> *She loves me… She loves me not…*

4. Animal Prosthetics 2: Expansion

"When I sprain my ankle, a stout stick may help me walk, and I enlist its assistance. I am now an

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[18] WENN, "Activists Protest Disney Dalmations," *Cinema.com,* August 30, 2000, https://www.cinema.com/news/item/103/activists-protest-disney-dalmations.phtml

[19] The Mariana Trench is the deepest part of the ocean and the deepest location on Earth, with the deepest dive by a human reaching 10,927 metres deep into the Pacific Ocean.

[20] The most distant human-made object is the spacecraft Voyager 1, which reached Interstellar Space in August 2012.

encounter in motion, a woman-and-stick."[21] The taming and domestication of other organisms is one of our most advanced tools. With these enhancements to our being, we are now a hybrid with our own creations. As we adjust them to our needs they become human, making us a human-and-human hybrid. By breeding, training and shaping animals, they transform into organic cyborgs whose existence becomes anchored to ours. We create vessels that can carry our demands and wishes, as we sculpt them in such a way that they are more receptive of and submissive to our vision. The domestication of animals covers many of humanity's needs and niches, whether emotional, practical or nutritional; we have used them as a stepping stone, implementing them and making them essential to our prosperity and outspread on this planet.

Our expansion, besides being global, is also embodied in the individual. With continuous technological advancement, we can enhance our flaws and surpass physical limits. As we have used technology to tame animals, we use technology to enhance them. We expand their reach as they expand ours. Past my emotional reaction[22] to witnessing a dog with prosthetic limbs, I am looking at an encounter in motion, a human-and-human-and-human hybrid. A prosthetic on a prosthetic. Though, not only domesticated animals are worthy of our enhancements. This applies also to any other organisms we have had or still have an impact on, including animals in zoos and sanctuaries, victims of our excess, whom we also augment with our 'help'; acts of self-indulgence through mixed feelings of guilt, awareness and/or care for another living being. Either way, we make ourselves feel better by doing so, administering never-ending upgrades as we constantly fix or enhance ourselves through them.

> Dog with birth-defected paws walks with prosthetics.[23]
> Bionic cat Vito becomes 'superstar' with his prosthetic legs.[24]
> 3D Printed Orthotic Shoes for a Tiny Dog.[25]
> 3D printable Horse Hoof Boot (Design).[26]
> Eagle wounded by poacher gets new beak, new look.[27]
> Winter the Dolphin Swims With Her New Prosthetic Tail.[28]
> How 3D Printing Helped Mr. Stubbs, The Tailless Alligator.[29]
> SeaTurtleReportFinal—Designing a Biomimetic Prosthetic Flipper for a Kemp's Ridley Sea Turtle.[30]
> Tiger is fitted with a golden fang at German rescue centre after cracking hers.[31]
>> Scientists Grow a Human Ear on the Back of a Rat.[32]
>> The goats with spider genes and silk in their milk.[33]

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21 Anna T. Lowenhaupt, "Contamination As Collaboration," in *The Mushroom at the End of the World: on the Possibility of Life in Capitalist Ruins* (Princeton, NJ: Princeton University Press, 2015), 29.

22 :-(

23 USATODAY, "Dog with Birth-Defected Paws Walks with Prosthetics," video, uploaded to YouTube, February 23, 2018, https://www.youtube.com/watch?v=6s02VSdMVu0

24 "Bionic Cat Vito Becomes 'Superstar' with His Prosthetic Legs," BBC News, December 17, 2019, https://www.bbc.com/news/world-europe-50821392?ocid=socialflow_twitter.

25 Tye Rannosaurus, "3D Printed Orthotic Shoes for a Tiny Dog," *Instructables*, July 26, 2020, https://www.instructables.com/3D-Printed-Orthotic-Shoes-for-a-Tiny-Dog/.

26 FuzNuz, "3D Printable Horse Hoof Boot (Design)," *Thingiverse*, November 19, 2019, https://www.thingiverse.com/thing:3986143.

27 Nicholas K. Geranios, "Eagle Wounded by Poacher Gets New Beak, New Look," *Statesboro Herald*, June 21, 2008, https://www.statesboroherald.com/nation/national/eagle-wounded-by-poacher-gets-new-beak-new-look/.

28 Marine Aquarium, "Winter the Dolphin Swims With Her New Prosthetic Tail," video, uploaded to YouTube, May 29, 2019, https://www.youtube.com/watch?v=9Tsz0Vwfx10.

29 Richie Hertzberg, "How 3D Printing Helped Mr. Stubbs, The Tailless Alligator," *National Geographic*, August 14, 2018, https://www.nationalgeographic.com/animals/2018/08/alligator-tailless-mr-stubbs-prosthetic-tail-news/.

30 Frederick Burgwardt et al., *"Designing a Biomimetic Prosthetic Flipper for a Kemp's Ridley Sea Turtle"*, Bachelor project report, Worcester: Worcester Polytechnic Institute, 2016.

31 Chris Pleasance, "Tiger Is Fitted with a Golden Fang at German Rescue Centre after Cracking Hers," *Daily Mail Online*, October 29, 2019, https://www.dailymail.co.uk/news/article-7625529/Tiger-fitted-golden-fang-German-rescue-centre-cracking-hers.html.

32 Anthony Bouchard, "Scientists Grow a Human Ear on the Back of a Rat: Plants And Animals," *LabRoots*, February 1, 2016, https://www.labroots.com/trending/plants-and-animals/2366/scientists-grow-a-human-ear-on-the-back-of-a-rat.

33 "The Goats with Spider Genes and Silk in Their Milk," BBC News, January 17, 2012, https://www.bbc.com/news/av/science-environment-16554357.

>>> Pig Embryos Injected With Monkey Cells Successfully Brought To Full-Term.[34]

Is this natural progression? We are in a position now where we can create monumental encounters that shape us and our environment on a biological level. We *contaminate*[35] our surroundings as our touch both creates and destroys. Mass extinctions and environmental disasters: the impacts of our excessive prosperity and our historical trail, which still bears its effects.

5. The Uncomfortable Big Picture

"The movement, which has dominated the discourse around climate change for decades, is predicated on one axiom: Nature is sacred and separate from humans who shall not disturb it."[36] Beyond our impact on a planetary scale, the usage of animals as test subjects in indiscriminate numbers, the silent soldiers behind major medical breakthroughs, is another example of this. Vladimir Demikhov[37] was a Soviet-era scientist, known as an organ transplantation pioneer, but is most famous today for his experiments on animals, specifically for his dog head transplants. Literally grafting one dog onto another, resulting in two-headed dogs, a different kind of human-and-human-and-human hybrid. The existence of these monsters didn't amount to much and was short-lived, yet these brutal acts provided invaluable data that lead to major medical discoveries.

"Monsters are cautionary tales that dictate which elements of Nature are acceptable for humans to play with, and which ones are not."[38] Some can be subject to endless permutations without causing moral scandals, like the grafting of plants, as it is the fastest way of growing a variety of fruit on a large scale, or burning fossilised dinosaurs to power cars. But in cases like these experiments, we're seemingly playing God, declaring our independence from Nature and solidifying our existence as 'separate'. In the big picture, though, these brutal and violent acts enhanced our knowledge of organ transplantation, which led to thousands of human lives being saved and cared for, perpetuating the prosperity of our species.

The animal kingdom can be brutal in its own ways, and ethical questions can easily be applied to everyday scenarios in animal lives, but that doesn't seem to be a factor in their actions. Violent behaviours and inherent relationships dating back millions of years have, through a balance developed by the ecosystem, become essential to its maintenance. Animals have thrived for millennia due to the direct or indirect effects of these relationships. Of course, through training and mental gymnastics we can impose our ethics on the animals—mostly our pets—and make them *seem* like they are acting according to our moral standards, developing pseudo-ethical behaviours as part of their adjustment to our ways. But the rules and systems behind morality are limited to our understanding of good and bad, something which really varies based on geographical location and historical circumstance, even between individual human beings. Disregarding ethics and feelings like empathy and trying to look at the use and abuse of animals in such a macabre way from a non-human perspective (if that's even possible), a bigger picture is revealed to be at play.

During this winter in Cyprus, I encountered a relationship between two animals that I never thought I would be a witness to. Something I had only seen in animal documentaries filmed in tropical forests and far-away lands, a relationship centring on an act so brutal and otherworldly that the fact that it was also happening in the place where I have lived most of my life was truly mind-blowing: a relationship between two insects, the parasitic wasp and the caterpillar, with the wasp using the

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[34] Madison Dapcevich, "Pig-Monkey Chimeras Born For The First Time," *IFLScience*, December 1, 2020, https://www.iflscience.com/plants-and-animals/pigs-embryos-injected-with-monkey-cells-successfully-brought-to-full-term/.

[35] Lowenhaupt, "Contamination As Collaboration," 29.

[36] Chiara Di Leone and Luiza Crosman, "Planet of the Monsters," *Tank Magazine*, November 20, 2020, https://tankmagazine.com/issue-84/features/strelka/.

[37] Nikolay Shevchenko, "A Dog with Two Heads: How a Soviet Doctor Pioneered Organ Transplantation against the Odds," *Russia Beyond*, October 26, 2017, https://www.rbth.com/science-and-tech/326540-dog-heads-demikhov-soviet-medicine.

[38] Di Leone and Crosman, "Planet of the Monsters."

caterpillar as a literal vessel for its young.

The parasitic wasp lays its eggs inside a living caterpillar, with a venom that rewires the insect's behaviour, turning it into a guardian surrogate.[39] Once they hatch, still inside the caterpillar, the larvae feed on its blood, slowly growing but careful not to kill it. An uncomfortable truce that lasts days. The caterpillar carries on with its life, gorging itself, seemingly unbothered by the larvae inside it. Once the larvae grow large enough, they emerge from the caterpillar by literally eating their way out. Then they start spinning their cocoons to transform into adults. With the venom still active, the caterpillar even helps spin their cocoons with its own silk, adding another protective layer. Still alive, it remains with the growing larvae, acting as a sentinel and protecting them from any possible predators. Like the hermit crab's shell, the caterpillar's body gains a parallel life, and like the frog for the spider in Peru, it is Mama Wasp's best friend.

This is the stage where I encountered this seemingly brutal relationship. A caterpillar guarding a yellow silk sack of small cocoons, much smaller than itself. At first, I wasn't sure if this was the same thing I had learned about from animal documentaries, but it made me wonder, as I was sceptical as to whether or not caterpillars laid eggs. Usually, a butterfly or moth lays their eggs, from which caterpillars emerge, eventually spinning themselves into a cocoon and transforming into their winged forms. I visited the caterpillar a few times, as it clung on to the cocoons seemingly still, but definitely alive. It moved in a defensive way when I blew air on it. The caterpillar was there for days. I found some of those yellow cocoons on the ground, detached from the sack that the caterpillar was protecting, and placed them in a cup, sealing it with cling film. After a couple of days, the caterpillar was dead from starvation, still holding on to the now-empty cocoons. To my surprise, some of the cocoons I found on the ground and saved in the cup also hatched. Unable to escape the cup, my theory was confirmed. These were not caterpillars or butterflies in any way. This was the work of the parasitic wasp. After releasing them, the rest of the cocoons started to open up and the rest of the freshly born adult wasps flew off to re-enact this cycle over and over again.[40]

Looking at individual cases like this one through a human lens, they may seem extremely brutal, but if we step back, we can see the big picture and the process is revealed as integral to a balanced ecosystem. In some ways, this relationship is similar to that between the pom-pom crabs and the anemones, and in other ways, to the hybrid dog experiments of Vladimir Demikhov.

6. A Fraction of a Second

It can be argued that the division between us and Nature is seen not in the *brutality* but the *excess* of our actions, though the two can't be totally separated. It's as if there was a seemingly perfect balance that held everything on a steady course, until we came into the picture. We were once unaware of our impact and therefore it could be considered natural in its development. But now that awareness has warned us against the possibility of survival, these transformations are seen as artificial and that they should be stopped.[41] However humans aren't the first living organisms to cause radical transformations to Earth's atmosphere. Approximately 2.4 billion years ago, an occurrence known as the Great Oxidation Event was responsible for a massive mutation of the planet's environment and the extinction of many organisms. Caused by microorganisms, this oxidation of the Earth's atmosphere eventually changed the composition of the biosphere, enabling oxygen-dependent life to develop and thrive, while causing the extinction of other life-forms.

It's hard not to condemn humanity for all its wrongdoings—all the extinctions, and the pollution that covers this planet today. And it's hard to compare these with any previous mass extinctions or

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[39] Matt Simon, "Absurd Creature of the Week: The Wasp That Lays Eggs Inside Caterpillars and Turns Them Into Slaves," *Wired*, October 17, 2014, https://www.wired.com/2014/10/absurd-creature-week-glyptapanteles-wasp-caterpillar-bodyguard/.

[40] Over and over again: https://youtu.be/Lz1qKzaTl-s

[41] Di Leone and Crosman, "Planet of the Monsters".

environmental shifts caused by other organisms. The awareness of our actions has led us to frame ourselves as disconnected and now separate from Nature. But at the same time, our presence and all its burdens somehow feel part of it all. Another asteroid that has crashed into Earth. Humanity occupies *a fraction of a second*[42] on this planet, and total destruction brought new life time and time again before our arrival. Rebirth becomes part of evolution. Life and death become the same, acting as the ebb and flow that perpetually oscillate the evolutionary currents, to the point where extinction *doesn't feel like destruction at all.*[43] Just like the relationship between the parasitic wasp and the caterpillar, death becomes essential to life. A sign of cyclical forces at play, lifespans spin like wheels that drive the whole process forward. In the big picture, I can see our rise and downfall along with its effects as part of this cycle, our violent and ego-driven actions as natural in their development. While understanding this, I also really struggle with it. As a human being myself, and part of this species and its excess, it feels *wrong.* It's a feeling of inherent guilt and of the weight of responsibility, which comes through the awareness and partial understanding of other entities, the environment and the impact we have on them, which eventually impacts us.

7. Purity is Not an Option

6,331 groups of genes common to all living animals have been identified, pointing towards a single common ancestor that lived 650 million years ago, which was basically a worm.[44] A universal ancestor that, through the process of evolution, expanded its genes to countless forms, adjusted to constant environmental shifts and truly thrived. As individual species, we may have drifted apart from each other in terms of form and behaviour, heading off in truly wonderful and inconceivable directions, but the interconnectedness between everything is undeniably there, as "*purity was never an option."*[45]

Symbiosis is when organisms of different species live together for a prolonged period of time, whatever the terms of those relationships may be. Every animal or plant or even fungus that we look at and label and consider an individual is in fact many different individuals.[46] As for humans, we estimate that more than 10,000 microbial species occupy the human ecosystem, and that inside your body well over 90% of the genes are non-human.[47] *You* were always *Them.*

> *They only thrive as colonies. "The whole thing looks like one animal, but it's many thousands of individuals which form an entity on a higher level."*[48]

We may not look like one animal through our mortal eyes, but our collective prosperity and survival is based on that fact. Life can only exist through these interconnected relationships, as each organism is supported by shaping one another. An interconnectedness that is partially revealed to us through scientific research that traces the biological histories and behaviours of animals, uncovering the importance and influence of other organisms throughout each other's natural progression and coming-

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42 If we scale down Earth's existence to 24 hours.

43 T. Riedelsheimer, *Rivers and Tides: Andy Goldsworthy Working with Time* (Mediopolis Film- und Fernsehproduktion GmbH, 2020), film.
Andy Goldsworthy's sculpture made of logs is being washed away into the sea with the rising tide, slowly scattering it to pieces. He describes: *"It feels like it's being taken off into another plane, taken off into another world or another work. It doesn't feel at all like… destruction. That moment is really part of that cycle of turning... That's a way of understanding for me. Seeing something you never saw before that was always there but you were blind to."*

44 Arthur Wallace, *Evolving Animals: The Story of Our Kingdom* (Cambridge: Cambridge University Press, 2014).

45 Lowenhaupt, "Contamination As Collaboration," 29.

46 Dorion Sagan and John Feldman, "Chapter 7: Symbiosis Is The Way of Life," in *Symbiotic Earth Study Guide for the Documentary by John Feldman SYMBIOTIC EARTH: How Lynn Margulis Rocked the Boat and Started A Scientific Revolution*, ed. by John Feldman (Spencertown, NY: Hummingbird Films , 2018), 35.

47 Benjamin H. Bratton, "Notes on Extinction, Emergence and Biochemical Design," *EXTINCT.LY* , http://extinct.ly/texts/#bratton.

48 Matt Simon, "Absurd Creature of the Week: The 100-Foot Sea Critter That Deploys a Net of Death," *Wired*, August 29, 2014, https://www.wired.com/2014/08/absurd-creature-of-the-week-siphonophore/.
Siebert talking about the Siphonophore, a species which only exists as colonies: "The whole thing looks like one animal, but it's many thousands of individuals which form an entity on a higher level."

to-be. Scratching only the surface, as we can only view this filtered through a human lens, providing a tunnel vision of human bias. We can't deny sex and violence in Nature as common phenomena and general inclinations, but it's not just about that. We can't just project our economic values as a rigid framework based on rules and hierarchies to explain every animal behaviour.

Evolution is anything but rigid. We can't judge everything by the criteria of survival and reproduction, disregarding individual suffering and happiness. Through these criteria domesticated chickens and cattle may be an evolutionary success story, but they are also among the most miserable creatures that ever lived.[49] Such thinking blurs and puts into question what really constitutes a winner or a loser, if those roles even exist in evolution and in life as whole. It was never through competition,[50] but through these ever-changing currents of fluctuating relationships and systems that we've built our whole lives, whether we realise it or not. We only function as a whole. Even if now, in the present, we may see ourselves as disconnected from Nature and in some ways freed from these currents and secret forces at play, we are not. We brought change, meaning nothing changed, as change was always the only standard.

The change we brought seems like destruction driven by our ego and excess in the forms of pollution and extinction, but life and death act as one, becoming the working forces that perpetually drive and connect our ever-evolving existences, and not the end results. However, supporting the idea that we should carry on 'destroying' our environment because our impact is (only) also a natural progression seems misguided. But unable to do so differently, and maybe for the best, we can only act as human beings. The human lens we view the world through can be beautiful, if we try to reconfigure the way we understand these relationships and their unstable manner. Being certain of uncertainty is perhaps the way we can do that. Though understanding it might be impossible, perhaps the only way we can truly appreciate it is through feeling it.

The veil of Isis momentarily lifts, and through the smallest encounter I can feel it.

8. Outro: *...together*

Waiting to dry, I was lying on the beach looking at the sand right next to my head, examining all the seaweed and tiny rocks, and the occasional cigarette butt. A 3mm hole with what seemed like two claws, horns or jaws poking out caught my eye. I touch it and it rushes back into its hole, and then slowly back out again. A 3mm giant.[51] I started interacting with it using a piece of seaweed, and I stayed there inspecting it long after I dried off. It happens right in front of me. It moved as if annoyed. Did I ruin its cover? Was it also waiting for something?

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[49] Harari, Y. N., Casanave, D., & Vandermeulen, D, "Part Two The Agricultural Revolution—History's Biggest Fraud," in *Sapiens* (London: Vintage Classics, 2011), 166.

[50] Agustín Fuentes, "This Species Moment," interview by Krista Tippett, *On Being,* November 25, 2020, audio, 50:58, https://onbeing.org/programs/agustin-fuentes-this-species-moment/
Agustín Fuentes on *Evolution*: *"It was never just about winners and losers. And actually, it's really a bunch of small tweaks and moves and shifts, and most of it's quite boring, [laughs] from a structural thing; it's not all sex and violence."*

[51] A 3mm giant: https://youtu.be/5my7h3KTXds