



Healing the Planet:

ONE MICROBE AT A TIME

Nancy Adajania

Even now, after so many years, if she were to close her eyes, she can see that gorgeous tree in the Sundarbans biosphere reserve.

“I came upon this magnificent mangrove tree with a sprawling network of aerial roots or pneumatophores spread across a vast area. [1] I knew at once this was not just any tree. This was a conscious, intelligent *system*.” [2]

In her thirties, the memory of the Sundarbans became overlaid with images of her field trip to the Pichavaram mangrove forest in Tamil Nadu. A dense tangle of red roots, the mangroves there were teeming with life. In the nearby Chidambaram temple, she grew curious about the temple sculptures portraying a particular species of mangrove trees, Thillai or *Exocoeria agallocha*, which grow in the Pichavaram wetlands. They are associated with the tutelary deity of the temple, Shiva, who could scorch the cosmos with his *tandava* dance. Shiva is said to have roamed in the Thillai Vanam, the Thillai forest. [3]

Sonia Mehra Chawla (b. 1977) is showing a selection of her works, made during the last seven years, at 1x1 Art Gallery, Dubai. These works zigzag across the mediums of photography, printmaking, painting and film. The exhibition title, ‘(Un) Containable Life’, makes deft use of the parenthesis: it deconstructs the extractivist modes of controlling human and non-human lives in the age of the ‘Capitalocene’ (in Jason Moore’s phrase). [4] Framed in the form of a mini-retrospective, this exhibition is a prayer against the relentless destruction of the planet. It offers us a substantial account of the artist’s journey so far.

This essay began with the artist’s epiphany of the mangroves as an intelligent ecosystem that nurtures marine bio-diversity. As we join Sonia on her expeditions across India’s mangrove forests, wetlands and salt pans, and a tidal island in Scotland, we sense her empathy with ecological ruins and indigenous communities, and her disquiet at the manner in which such communities have been marginalized from the surroundings they have conserved for hundreds of years. I would argue that, in the last few years, an extraordinary transition has taken place in the artist’s practice: she has moved from focusing on the modernist, singular art object functioning as a portrait of a botanical specimen or an interconnected ecology, to embracing a more collaborative, processual understanding of art as a means to transformative knowledge. For Sonia, art is now indissolubly wedded to an ethic, even a politics of multi-species co-existence. Indeed, her artistic research could itself be seen as a political act, in which she has conspired with oceanologists, microbiologists and climate-change scientists, as well as fisherfolk who speak from their deep reserves of traditional wisdom.

Sonia’s turn from representation to participation is best exemplified in her most recent work, ‘The Non-Human Touch’ (2020). Here, she refuses to convey an easy

aesthetic of the sublime by approaching the uninhabited beaches of Cramond Island from a remote distance. Instead, she gathers soil samples from the island and studies them in Petri dishes and Winogradsky columns in a laboratory. Rather than representing an external and awe-inspiring reality as an aesthetic construct, she prefers the messy engagement of being part of what is seen, what is being shown, what is larger than us yet within us, thus implicating herself viscerally in the crisis of the Capitalocene.

But now I am getting ahead of myself. Let us begin at the beginning.

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One of the earliest works in the show, a large mixed-media triptych, 'Embryonic Plant, Hyperbloom' (2013), is staged as a maximalist spectacle of microbial life. Here we see Sonia in silhouette, a tiny figure perched on a vast network of roots. This work was triggered by a photograph of a fallen tree that she took during her UK residency. In strategic places, the roots twin into heart-shaped Rorschach forms. Or are they female genitalia? An over-sized seedpod of the popular flowering plant from the buttercup family – Love-in-a-mist or *Nigella damascene* – floats above the diminutive figure, heralding a new life. The hormonal changes in the artist's body during her pregnancy had sparked off a profusion of spores, seed-pods and planktons in her triptych. As a corollary, the nascent body growing inside her made her increasingly aware of how microbes define our existence. It is said that there are more microbial cells than human cells in our bodies.

While this work may run the risk of performing a simple correlation between women and Mother Nature, it does not merely reduce both entities to their biological ability to procreate. Instead, the artist emphasises ecological principles of cooperation and interdependence over processes of patriarchal and capitalist domination. Retrospectively, Sonia recalls: "The fallen tree offered both shelter and food to many wildlife species. It was teeming with fungi, insects and nesting birds. Even as its limbs decomposed, a microhabitat favourable for new growth was created."

Sonia's predilection towards printmaking is reflected in the rich layering of different media in 'Embryonic Plant...'. By processes of addition and subtraction, she overlaid hand-pulled silkscreen prints over digital prints; washed them with acrylic and oil; and in turn, overlaid the layers with hand-drawn hybrid plant forms. Nature itself seems to function like an artist here. The cellular structures of the microorganisms and plant forms look like architectural details – consider a radiolarian, which looks like a stained-glass rosette in miniature. Sonia was "inspired by the historic prints of radiolarians, diatoms, sponges, corals and other minute marine organisms" from the German naturalist Ernst Haeckel's *Kunstformen der Natur* (*Art Forms in Nature*, 1899-1904). Haeckel's phantasmagoric illustrations of microorganisms made him

susceptible to the charge that his artistic vision outdid his scientific inquiry. A more serious blot on his legacy is the scientific racism of which Haeckel (1834-1919) was a proponent. His infamous quote, "politics is applied biology", was taken up by the advocates of Nazism to propagate their eugenics-based racist and nationalist ideas. [5] We also register the influence, on Sonia's work, of the German photographer Karl Blossfeldt (1865-1932), whose ornamental closeups of seeds, plants and flora, portray sculptural mass and volume unparalleled in naturalist representation.

From a young age, Sonia knew that her deep affinity for the life sciences, especially biology, would be enriched by a parallel study of the humanities. However, the Indian educational system of the time did not give her a chance to choose such electives. Since 2015, her ongoing research into the coastal ecosystems of South India at the M S Swaminathan Research Foundation (MSSRF) has initiated her into a complex understanding of the political and ethical dimensions of scientific research [6]; how science can be weaponized in the wrong hands but how, equally, it can be used for public good if calibrated correctly.

The 'Scapelands' series – a set of etchings and a film on the mangroves of Tamil Nadu – took birth between 2014-2015, in the runup to her conversations at MSSRF, whose initial research was on the Pichavaram mangrove region in the late 1980s. The etchings, brimming with aerial roots and water – illuminated by sunlight and silenced by shadow – are monochromatic, relieved by a sepia or green tint. Looking back at this series, we realise that these etchings, though radiant, seem to be wrapped in an archival slumber, invoking a certain *pastness*. Their companion piece, the film 'Moving Inwards', on the other hand, follows the rhythmic rowing of a boat as it navigates through the mangrove swamp, a watery maze. We move along with the boat like a baby moving in its mother's womb.

Bewitched by the ever-receding vanishing point in the distance (as if the film were a still-moving painting), we follow the boat as it traverses the watercourse. The traditional vanishing point in a landscape painting imposes visual coherence with respect to the viewer's gaze, such that all the elements in the painting are organised in relation to a sovereign perspective. But in 'Moving Inwards', the classical rules of picture-making do not apply – the vanishing point keeps shifting, disrupting the hold of a sovereign order that produces a field of containment.

'Residual', a stark video made a year after the 'Scapelands' series, directs our attention to a desolate landscape. What were once trees have fallen like dismembered arms. Deeply melancholic, this spectral scape is made all the more haunting by a suspenseful music score mixed with the lament of wind and water. We can't put a name to this landscape, it is somewhere but could be anywhere. Its hope for a not-yet seems to have long passed into a sublime nowness. Its bleak beauty – cracked earth spreading like craquelure in a painting – is disrupted every now and

then by grim intertitles. What are these words full of admonition and terror? Is this a found poem, a *donnée* that the artist came upon during her wanderings?

A landscape makes the lymph (the soul) flow, not blood. You do not associate. No more synthesis...

You pray to heaven, to provide for you in your wretchedness. The wretchedness of a soul rubbed raw by the tiderace of matter.

The self is left behind, sloughed off, definitely too conventional, too sure of itself and over-arrogant in the way it put things into scale.

In order to have a feel for landscape, you have to lose your feeling of place. A place is natural, a crossroads for the kingdoms and for the homo sapiens.

A landscape is an excess of presence. Is this still...a displacement of the vanishing point? A vanishing of a standpoint, rather.

These quotes, which appear like a miscellany across the video, carry both an ontological and epistemological charge. They question our normalized, axiomatic ways of being and knowing. As the end credits reveal, these are passages from Lyotard's essay 'Scapeland', from *The Inhuman: Reflections on Time* (1991). [7]

Lyotard's 'Scapeland' is a work of art in itself, in which he systematically dismantles the philosophical legitimisation of the anthropocentric worldview, based on the human-nature binary, which we have inherited from the Enlightenment and Renaissance humanism. I would like to annotate and expand on some of Lyotard's quotes, used in an aphoristic manner in Sonia's video. Out of context, these Lyotardian word-shards could be mistaken for mystical meanderings, but in actuality they have a political purpose.

A vanishing point, as I have said earlier, places an artificial order on nature's wild profusion and organizes it for the delectation of the singular sovereign human gaze. By exteriorizing the power of this gaze, a vanishing point asserts human authority over nature. Another outcome of this is that the sovereign human being arrogates to herself/himself the right to observe, map, name and frame all creation. Taxonomy intervenes between our consciousness and experience. Ironically, this mastery exacts a cost on the human being: from the Renaissance onwards, sight has been privileged over all the other senses. While sight becomes identified with the light of reason, the other senses are demoted as organs of the base or animal nature, our expertise in them is either stigmatized or hyper-specialised. As a result, our other senses either atrophy or are elaborated into art (which includes the mysterious arts of the perfumier, the sommelier, and the tracker).

But what happens when the artifice of conceptual coherence breaks up and there is instead a 'vanishing of a standpoint'. [8] Would it be appropriate to interpret this Lyotardian epiphany as a recognition of a polycentric universe? We could develop this further. By getting rid of the singular gaze and replacing it with a diversity of gazes, all beings (not only human beings) will have a role to play or an investment to secure in the ecology at large.

A landscape that has one overall scale, dependent on a human observer, now gives way to an interplay of interdependent scales, each connected to a separate actor. As Lyotard observes, a mountainscape sketched from an aerial perspective is different from the one sketched from the plain. Or for a bird, he writes, a mole's tunnel seems distant, dark and difficult to breath in – "a landscape which abolishes limits." [9]

When a sovereign gaze no longer has primacy in a landscape, the landscape becomes, as Lyotard, says an "excess of presence". [10] A well-behaved visibility is replaced by a sensorium that makes different claims on the landscape through touch, smell and so forth. And finally, as Lyotard warns us – "In order to have a feel for landscape, you have to lose your feeling of place". [11] The notion of a place emerges from *a priori* mappings. Lyotard wants us to dismantle all received frameworks in our perception of the landscape.

Sonia's interruption of her video, 'Residual', with Lyotard's epiphanies is undoubtedly intuitive. She makes Lyotard's voice her own in the full awareness that the texture and timbre of his voice and the intensities of her visual language may converge at times and falter at others. Along with the footnote on Lyotard's essay 'Scapeland', the end credits give us the coordinates of 'Residual'. It was filmed in the Vedaranyam swamp in the Cauvery Delta of South India and the degraded mangrove belts along the Coromandel coast.

As 'landscape' becomes 'scapeland', it loses its shimmer as an art historical genre and begins to tremble with the fate of other half rhymes such as 'wasteland' or 'hinterland' – it becomes striated by human greed, ecological dystopias and difficult to erase caste, class and regional lines. While the 'Scapelands' series (2014-2015) was not able to immediately fulfill the scope and ambition of its title, it marked a significant augury in the artist's trajectory. Sonia's way of approaching this subject reminds us that there is a *critical tension between the aestheticization of land into landscape on the one hand, and on the other, the history of ecological and economic changes that affect and afflict land*.

With this in mind, we return to 'Residual'. The coda to this video work creates a surprising detour. We transit from an abstract landscape steeped in decay to a manifesto-like denunciation of the late-colonial and postcolonial forest policies that

have resulted in large-scale felling of mangrove forests and their conversion for the monocultural cultivation of commercial species. The artist acknowledges the names of the scientists who guided her research: Dr V Selvam and Dr M S Swaminathan, an agricultural scientist and geneticist of world-renown, and founder of the eponymous research foundation.

The seemingly metaphysical intertitles throughout the video suddenly come face to face with an ecological warning in the coda. Is this a startling contradiction? Or, as I have shown above, does the notion of the Lyotardian 'excess' imply both an ungraspable aesthetic and philosophical surplus, as well as a political resistance to the Capitalocene? It is from these productive contradictions between the metaphysical and the political that Sonia's retrospective '(Un)Containable Life' acquires its chlorophyll.

The landscape as an 'excess of presence' gets mediated in this exhibition through a poetics of scale and an interplay of gazes and sensations. 'Signs of Skin II', a video documentation project initiated by Sonia in 2015 to study the 200-year-old traditional method of fishing in the Muthupet mangrove wetlands, steps out of the pathological pull of a decaying landscape and enters the habitat of a local fishing community that has nurtured the 'land' held hostage within the construct of the 'landscape'.

Or, to put it another way, we meet fisherfolk in a 'scapeland' that they have conserved despite the ravages of commercial fishing and climate change. One of the traditional methods featured in 'Signs of Skin II' is canal fishing, where the human-made canals allow for the free flow of water in and out of the mangroves. "The fish", Sonia learnt, "are trapped in these canals during the late-monsoon season and harvested by the fishers till the end of the post-monsoon months". This method averts stagnation and ensures the maintenance of the right levels of moisture and salinity to restore the bio-diversity of the mangroves.

'Signs of Skin II' begins on a convulsive note, with the insistent spluttering of a motor boat engine tearing through the silent scape. But the video soon segues into a quiet contemplation of labour. The fisher Murukan's every move is in consonance with nature. We know that his practised hands will reel in the *chippi valai* or gill net tied to the aluminum pot, that they will land the thrashing silver catch in his pot.

In 'Signs of Skin II', Sonia imbibed the fisherfolks' heuristic knowledge of the mangrove ecosystem, which they have arrived at by trial and error and by leaps of the imagination in the most challenging situations. With 'Universe in Details' (2016-2019), she journeyed from the travails of a micro-history of survival to a more speculative realm. The fishing net spread across the swamp and the bobbing aluminum pot were replaced by the sterile Petri dish and experimentation conducted in con-

trolled conditions. While she worked with the MSSRF's coastal research department for 'Signs of Skin II', she engaged in research with MSSRF's bio-technology department for 'Universe in Details'. [12]

Sonia's documentation of the process of culturing the microbial diversity of a variety of mangrove tree and plant species resulted in a series of photographs titled 'Universe in Details' that echo Blake's perennial line, "To see a world in a grain of sand and heaven in a wild flower". In this photographic series, we see images that may resemble a tree of life, a salt stain, fungus, grains of rust, a rash, a painter's palette or a bit of intestine. These seem to be infused with live matter even as they skirt the edges of artifice. Taken as a whole, these image references may seem incongruous. What they have in common is an unsettling beauty. This catalogue of accidental beauty is a manifestation of the several strains of bacteria that have been cultured.

The artist informs us that none of these prints have been digitally manipulated: these are naturally occurring patterns. We could see these forms in a genealogy that leads us to Blossfeldt – the leaf turning into an ornament – or Haeckel's portrayal of microorganisms floating in a world of fantasy.

'The Salt Lab' series (2017-2019) researches the devastating effects of salinity on crop quality and production. The artist observes that "more than 50% of all arable land in the world would be salinized by the year 2050." In order to understand how bio-salinity works, she has documented twenty indigenous saline-tolerant rice cultivars – Pokkali, Matla, Kaksal, Nona Bokra, Nona Soren, Gheus and Rupsal – from the coastal regions of India, as well as transgenic plants in which genes from some of the mangrove species are introduced into the genome through a genetic engineering process, at the MSSRF lab. [13]

An extended caption accompanying one of the photographic prints in this series caught my eye: "Genetic homogeneity increases genetic vulnerability, disease and pests. Bt cotton covers large areas and that is very dangerous." The artist was keen to provide the pros and cons of genetic modification. Bt cotton is a transgenic plant: a pest-resistant genetically modified organism or GMO. As Dr Swaminathan has cautioned us, GMOs like Bt cotton promote dangerous monocultures [14]. He would know, since he was one of the major catalysts of the Green Revolution in the 1960s.

Newly independent India had inherited from a brutal colonial empire a legacy of extreme ecological degradation and repeated cycles of famine, and peasants who had been immiserated by rack-renting. The Green Revolution, being technology-intensive, pulled India out of this slough. It contributed towards the industrialization of Indian agriculture with the development of high-yielding variety (HYV) seeds,

fertilisers, pesticides, tractors and irrigation methods. This led to self-sufficiency in wheat production and higher agricultural productivity in food grain production. In the long run, tragically, the green revolution caused soil erosion, a drastic fall in the groundwater levels and killed bio-diversity. Deploring these unfortunate outcomes, Swaminathan has observed, “I have always said that the green revolution should not become a greed revolution and therefore we should ensure that the long-term productivity of the soil and water also becomes a part of the technology.” [15] This summarized history of the green revolution helps us to better comprehend Swaminathan’s position and by corollary, the artist’s warning regarding Bt cotton. As Swaminathan has frequently reiterated, technology is not good or bad in itself – it must be ethically deployed to ensure that it is ‘pro-poor’, ‘pro-women’ and ‘pro-nature’. [16]

Sonia’s latest video, ‘The Non-Human Touch’ (2020), delves deeper into the question of an ethically inflected scientific worldview and initiates a parallel inquiry into the intersecting discourses of art and science. Her research on the tidal ecosystems of the North Sea was supported by the ASCUS Lab in Summerhall, Edinburgh.[17]

Sonia deliberately chose an uninhabited island – the cold and blustery Cramond island in the Firth of Forth, scarred by the concrete pylons of a World War II Scottish defence site that reminds her of ‘decomposed teeth’. As this piece of Brutalist architecture is gradually devoured by water and infested by shimmering algae and other jewel-like denizens of marine life, we might be deceived into believing that we are in a ‘picturesque’ landscape (courtesy the art historian Heinrich Wölfflin) interrupted by historical ruins. But this illusion is quickly dispensed with, as soil samples gathered by the artist and Jiri Jirout, an expert in environmental microbiology from the site, are brought into the ASCUS lab and prepared for experimentation.

Instructively, Sonia calls her chosen site the ‘Zone’, immediately bringing to mind a militarised or demilitarised space. And although she does not mention it in the film, the Zone in Tarkovsky’s 1979 film, ‘Stalker’, comes strongly to mind. In ‘Stalker’, only men go on this dangerous expedition of self-discovery – the writer and the professor with scientific aspirations are led by the guide to the mysterious Zone surrounded by a military cordon. Women either try to protect their loved ones from foreseeable danger or possess an uncanny psychic energy even when deformed by their circumstances. This ominous sci-fi, psychological thriller has been current in people’s mind each time the planet is struck by a nuclear devastation – Chernobyl in 1986 and more recently the Fukushima disaster in 2011. [18]

Now imagine a woman in the Zone. She is not psychologically damaged, but she is disturbed. She may not be a hero-questor looking for the holy grail. She may not even want to go in search of the room in the Zone, which could fulfil all her desires. But she *is* looking for something. She stands transfixed by the edge of the sea. She

feels for all life forms, not just ego-hardened human beings. She ponders: “What is the prerequisite for sustaining all life on Earth? What lies beneath the surface and the soil? What enigmas and nightmares lie beneath the palpable?” [19]

Today, when the Zone is no longer a nightmare unfolding in Tarkovsky’s ‘Stalker’, but has spread contagiously across the planet, this woman thinks not of doomsday miracles or total annihilation. She is neither an enigma nor a soothsayer, nor yet a whistle-blower against the dark forces of capitalism. She may be a gardener tending to miniature microbial gardens teeming with lush, living landscapes. You may have heard her championing of “collaborative survival in a multispecies landscape.” [20] Don’t be too disconcerted by her use of polysyllabic nouns or adjectives.

She does not have the expertise of a scientist, and she has also renounced the power to officiate from Mount Olympus as an artist-genius. She is a precarious hybrid being. An artist who has modified her DNA so that she can participate in the micro-actions that can heal the planet, one microbe at a time.

What indeed is ‘The Non-Human Touch’? It occupies a semantically unstable ground extending itself into several loci of experiences. Is it a film essay; a diary of an expedition; a lab log; a *materia medica*; a microbial and geochemical processes glossary; a project report? The film may speak in many tongues, quoting a variety of sources, but its ground note rings clear [21]. She tells me: “I do not believe in a hierarchy – human beings as creators and microbes as waste. There are no hierarchies, just systems, we are not separate from nature.” In this, she is inspired by the animal physiologist and biochemist Prof Margaret McFall Ngai who believes that human beings should not see their bodies as fortresses with microbes as their enemies; they should be seen as ‘nested ecosystems’. [22]

Under Jirout’s guidance, Sonia chose to study microbial diversity in the Winogradsky Column [23], which functions like a self-sustaining ecosystem when exposed to natural light. [24]

Since different parts of the column receive varying amounts of light and oxygen, diverse species thrive in adjacency to each other. In different phases of growth and decay, the variations in the microbial populations appear in different colours. These living, breathing landscapes may look like atlases of a lost continent with gorgeous waterbodies and gold-hued earth, or like a satellite picture of the earth after having received a blunt trauma. We are quick to project our anthropocentric analogies onto these landscapes but they manifest an ‘excess of presence’, resisting our interpretations.

Over the months, the artist observed the changes in the layers, zones, smells and colours in the column. But as Mathias Grote writes, the tropes at play here are

those of “abundance, mixture, variability, and interdependency, in short: diversity”. [25] This mixing and interplay between different microbial species provides immense potential for cohabitation and collaboration. What the column offers us is a lesson in evolving a life sustained by mutuality and heterogeneity. Sonia Mehra Chawla would champion such a life, which would connect us, not only to our own species, but also to the multitude of other species with whom we share this planet. [26]

Notes

1. Pneumatophores are root structures that grow out from the water surface to facilitate the aeration necessary for root respiration in mangrove forests.
2. All quotes from the artist, unless otherwise mentioned, are from a telephonic conversation between the author and the artist, 10 November 2020.
3. For the story of Shiva and the Thillai Vanam, see: http://www.chidambaramnataraja.org/about_temple.html (accessed 25 November 2020). The temple sculptures depicting the Thillai trees date back to the 2nd century CE.
4. The environmental historian Jason W. Moore believes that global warming has not been caused by the machinations of an abstract humanity; it is capitalogenic rather than anthropogenic. With this move, he emphasizes that the origins of the present ecological crisis lie in the history of capitalism, which must not and cannot be isolated from questions of class and empire. See Jason W Moore, ‘The Capitalocene, Part I: On the nature and origins of our ecological crisis’, *The Journal of Peasant Studies* (2017). Accessed from <http://dx.doi.org/10.1080/03066150.2016.1235036>
5. See the entry ‘Ernst Haeckel’ in ‘Famous Scientists: The Art of Genius’, accessed on 25 November 2020 from <https://www.famousscienists.org/ernst-haeckel/>
6. MSSRF is a not-for-profit trust founded in 1988. It works with public and private sector organisations, as well as local communities.
7. See Jean Francois Lyotard, ‘Scapeland’ in G. Bennington & R. Bowlby, trans. *The Inhuman: Reflections on Time* (Stanford: Stanford University Press, 1991), pp. 191-204.
8. *Ibid.*, p. 187.
9. *Ibid.*, p. 182.
10. *Ibid.*, p.187.
11. *Ibid.*, p. 187.

12. MSSRF has expanded its scope over the years to study climate change and its effects on India’s various mangrove regions: Tamil Nadu, Andhra Pradesh, Orissa and the Sundarbans in West Bengal. The foundation has used its findings in biotechnology and research on coastal ecosystems to lobby for changes in public policy, which affect the lives of millions of India’s most vulnerable citizens.

13. See artist’s statement regarding the ‘Salt Lab’ series, accessed on 25 November 2020 from <http://soniamehrachawla.in/exhibitions35.asp>

14. The use of GM crops in India has excited much controversy. Bt cotton, for instance, has been criticised for encouraging corporate monopoly over seeds and further marginalising resource-poor, small farmers. Sandhya Ramesh in her article, ‘How M S Swaminathan, father of India’s green Revolution got GM crops ‘all wrong’ ‘ (*The Print*, 19 December, 2018), reports on P C Kesavan and M S Swaminathan’s review of GM crops which was called ‘pseudo-scientific’ and pulled down from the journal, *Current Science*. Accessed on 25 November 2020 from <https://theprint.in/science/how-ms-swaminathan-father-of-indias-green-revolution-got-gm-crops-all-wrong/166011/>

Here are some quotes from the article, where Dr Swaminathan has clarified his stance on GM crops by providing a holistic response: “Technology always creates divergent viewpoints. This is why it is important to have a transparent regulatory mechanism which is supported by professionals, government departments and the private sector.” Further: “Genetic modification is the technology of choice for solving abiotic problems like drought, flood, salinity etc. It may not be equally effective in the case of biotic stresses since new strains of pests and diseases arise all the time.”

15. *Ibid.*

16. Quoted from MSSRF’s mission statement. Accessed from -- <https://www.mssrf.org/content/history-1> on 25 November 2020

17. ASCUS Art and Science, a non-profit organisation, has the UK’s largest publicly accessible laboratory for experimentation in art and science.

18. See Danny Leigh, ‘The powerful resonances of Andrei Tarkovsky’s *Stalker*’ (*The Guardian*, 8 April 2011). Accessed on 25 November 2020 from <https://www.theguardian.com/film/filmblog/2011/apr/08/andrei-tarkovsky-stalker-japan-fukushima-nuclear>

19. See Sonia Mehra Chawla, ‘The Non-Human Touch: What Values can Emerge from Ruined Landscape’ in *Solitude*, Journal 1, ‘Collective Care and Response-ability’, July 23, 2020, p.124. Accessed on 28 November 2020 from

<https://www.akademie-solitude.de/de/solitude-journal/the-non-human-touch-what-values-can-emerge-from-ruined-landscape>. Most of Sonia's essay recourses over her lengthy script of 'The Non-Human Touch'.

20. *Ibid.*, p. 124.

21. In the end credits, the artist acknowledges her use of excerpts from the writings of Brian Dillon, Anna Lowenhaupt Tsing and Margaret McFall Ngai in her film script.

22. *Op. cit.*, Margaret Mcfall Ngai quoted in Sonia Mehra Chawla, July 23, 2020, p.129.

23. According to Mathias Grote, microbes have become popular in recent years. Natural history museums have begun to exhibit microbial life and display the Winogradsky column, which was named in honour of the Russian-French microbiologist and microbial ecologist Sergei N Winogradsky, who pioneered its use in the 1880s. See Mathias Grote, 'Petri dish versus Winogradsky column: A longue dure'e perspective on purity and diversity in microbiology, 1880s–1980s' (*Springer Nature*, 29 November 2017. Accessed on 25 November 2020 from <https://www.geschichte.hu-berlin.de/de/bereiche-undlehrstuehle/wissenschaftsgeschichte/publikationen/grote2017-article-petridishversuswinogradskycolu.pdf>

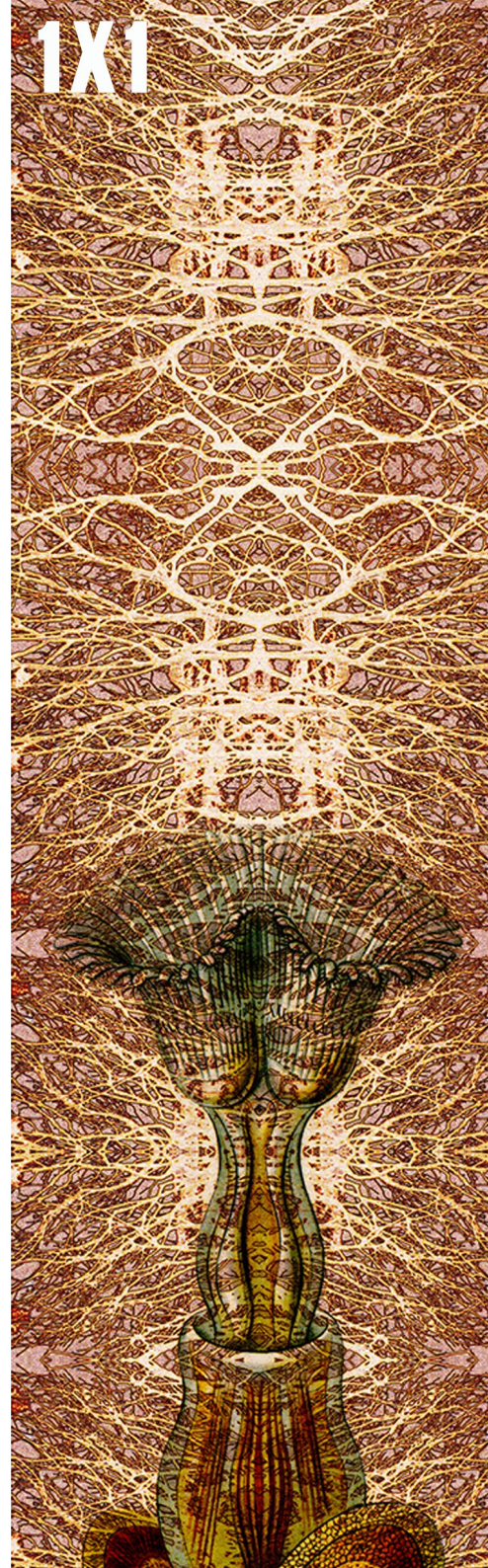
24. Sonia prepared the columns by filling them with mud, as well as additive nutrients and supplementation including carbon and sulfur sources.

25. *Op. cit.* Grote, 2017, p. 2.

26. Apart from her research for 'The Non-Human Touch' in Edinburgh, Sonia also sourced archival microscope slides of diatoms dating back to 1807 and 1932 from the Artscience Library in Summerhall. Both 'Drifters and Wanderers 1' (engravings paired with photomicrographs) and the video, 'Vital to Life', portray clusters and details of diatoms or microalgae with glassy, siliceous cell walls, which are highly patterned. These gorgeous patterns remind us of cosmograms and mandalas, as well as honeycombs and star constellations. But the ornamental abstraction arising from these organisms is not the only reason why the artist was attracted to these translucent forms. Since diatoms are important markers of climate change, they contribute towards the conservation of our ecosystem. As Sonia observes, summarising current knowledge on the subject: "Diatoms are used to monitor and assess past and present environmental conditions in water biotopes around the world, as they respond sensitively to chemical, biological and physical changes within these ecosystems such as nutrient concentration and temperature."

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END



(UN)CONTAINABLE LIFE SONIA MEHRA CHAWLA

22 NOVEMBER 2020 - 14 JANUARY 2021
1X1 ART GALLERY | ALSERKAL AVENUE, DUBAI, UAE