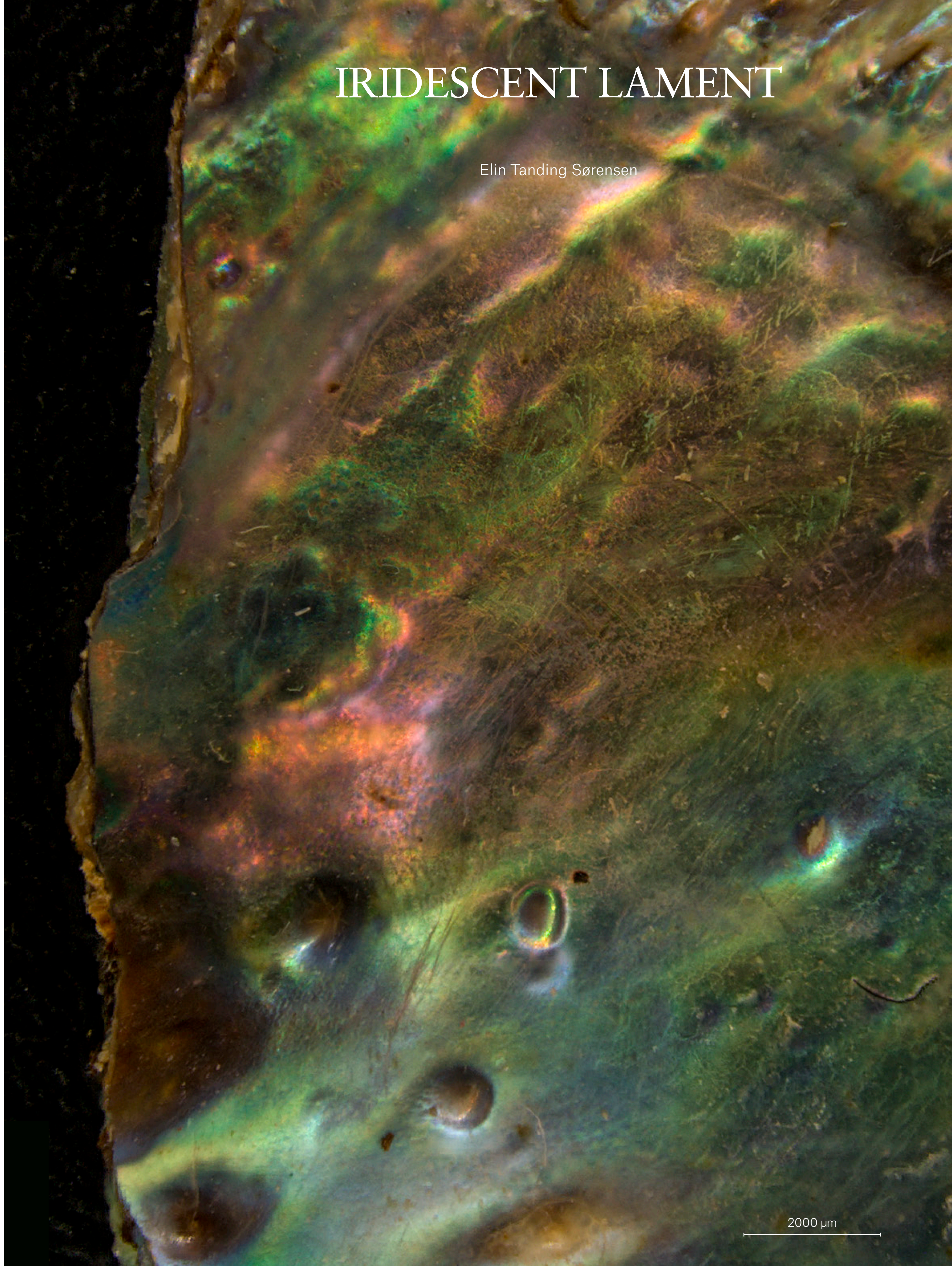
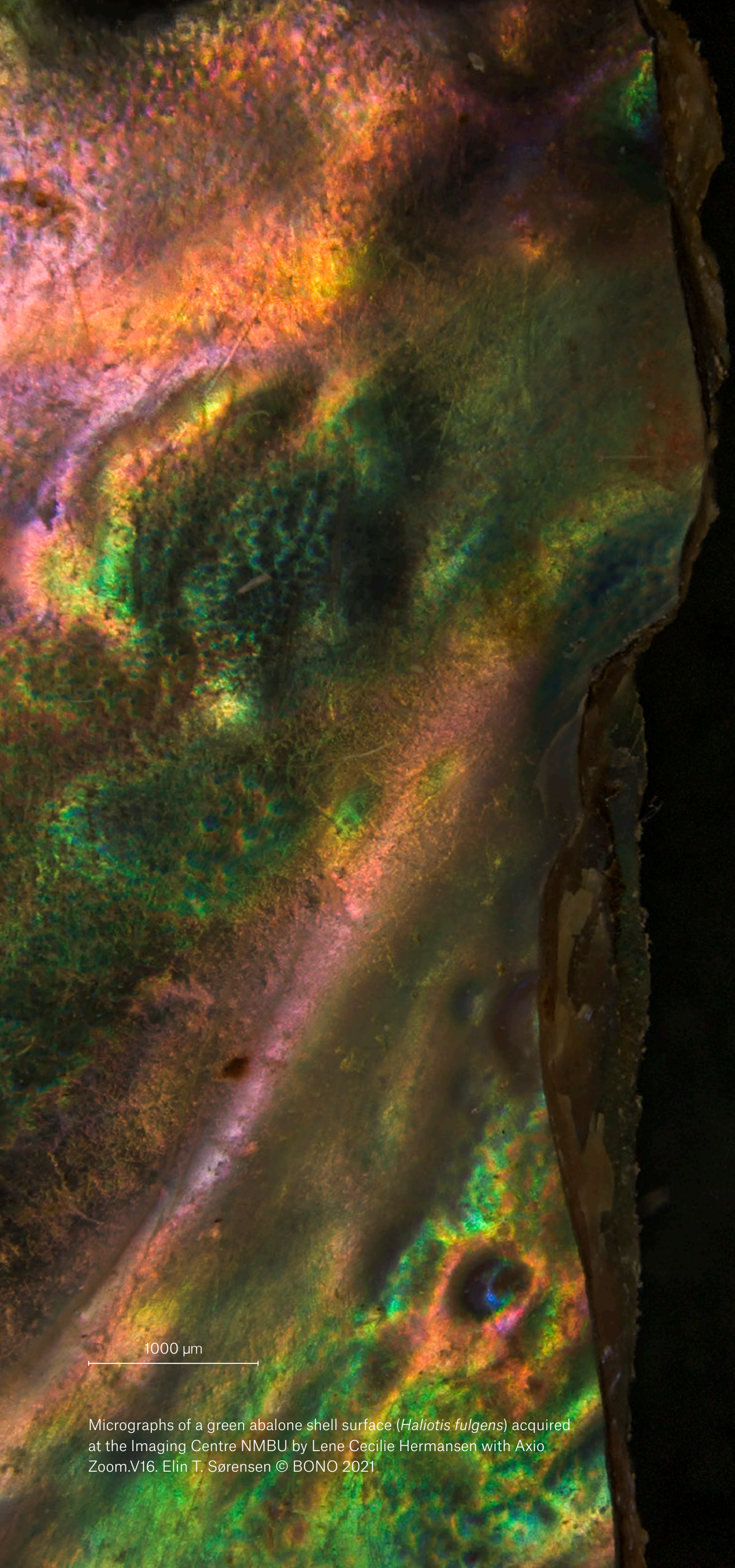
IRIDESCENT LAMENT

Elin Tanding Sørensen





Micrographs of a green abalone shell surface (*Haliotis fulgens*) acquired at the Imaging Centre NMBU by Lene Cecilie Hermansen with Axio Zoom.V16. Elin T. Sørensen © BONO 2021

The Parent of All Abalones was neither male nor female but could produce offspring. The first abalone was the first creature to live in the sea. When it dies it will let out a cry that everyone would hear. If the first abalone ever died—that would mean all the abalones had died—all of the creatures. It would be like the end of the world.[1]

I *Cry*

In an unfathomable darkness—within the timeless eternity—a crowd of dead sits about. Sometimes, in between infinite time scales, the dead talk to each other sharing their life stories. Suddenly, a loud, horrible roar cuts through.

From far down in the darkness they hear a strangely drawn out, bellowing cry—infinitely plaintive, like a beast weeping. They all knew it, but they didn't know what it was. It was something that didn't belong with them. It was a man who had lived too long ago. He sat on his haunches, he had hair over his body, his nose was flattened, his mouth huge and half-opened. No one knew who he was, not even himself, he didn't remember having lived. He only remembered a smell, a smell of a great forest, of resin and wet moss. And a smell of another being, of something which was warm like him, something which was like him. He didn't remember it was a human being. He only remembered the smell. Then he sniffed around him in the darkness with nostrils distended and bellowed like a beast weeping. It sounded horrible. It was such an agonizing wail of boundless sorrow and yearning that they shuddered. But he wasn't one of them. They lived their life, seeking and seeking, they suffered and struggled, believed and doubted; they didn't bellow.[2]

Across a vastness of time beings are interconnected by an ear-splitting sound: a cry possibly being the closest we can ever get to our earliest ancestors and perhaps even the origin of life—whether that is a fossilized microorganism or the first abalone.

I think I hear a scream so loud—as if the world is falling apart.

The First Creature(s): the earliest physical evidence of life found so far are the microfossils from the Nuvvuagittuq Greenstone Belt of Northern Quebec. Microfossils are for example fossilized microorganisms, bacteria, foraminifera, diatoms, minuscule invertebrate shells or skeletons, pollen, tiny bones, and teeth of large vertebrates. The Nuvvuagittuq fossils are present in a metamorphic banded iron formation considered at least 3.8, and possibly 4.3, billion years old: indicating that life developed very soon after oceans formed.[3]

1 Florence Silva in Field et al., 2008, p. 66
2 Lagerkvist, 1934, p. 43
3 Dodd et al., 2017; Lipps, 2021

Metamorphosed volcano-sedimentary rocks of the Nuvvuagittuq supracrustal belt. Image courtesy of NASA 2010

Living abalones in display tank at Ty Warner Sea Center on Stearns Wharf, California. Image courtesy of Sharktopus 2011 CC-BY-SA-3.0

In Native Californian creation myths, stories about abalone as the *First Creature of the Sea* are still told by Pomo-speaking people at the Kashaya and the Point Arena reservation. The story of *The Parent of All Abalones* is unique: transcending gender and linking the fate of the ocean with a small yet outstanding marine snail. To the Native Californians, the abalone is a sentient being with agency and destinies linked to the humans with whom they cohabitate: *Abalone Woman* is one such spirit being.[4]

Lament: the Greek term elegeia (from ἔλεγος, elegos, "lament") refers to sad and mournful songs. As a form of poetry natural to the reflective mind, it may treat any subject, though no subject for itself, and always with reference to the poet: as s/he will feel regret for the past or desire for the future, so sorrow and love become the principal themes of the elegy: presenting everything as lost and gone or absent and future.[5]

The Balancing Act

Abalone shells carry the essence of the ocean: "As if the animal that made the shell distilled silvery splinters from its watery home and then crystallized them. Like a painter catching on the canvas fleeting diamonds of light that glitter on the sea."[6] When an energy-dispersive X-ray microanalysis shows that the basic composition of the abalone shell is carbon, oxygen, calcium, and small traces of silicon,[7] environmental historian Ann Vilesis' descriptions stand out as astonishingly precise.

Calcium carbonate (formed by the elements carbon, oxygen, and calcium) is the key building block for most marine life, and the sea-dwelling creatures—from microscopic coccolithophores to coral-building algae and giant snails—engineer their own house-building materials directly from their watery environment. Just like magic, the dissolved chemicals are extracted to form solid composite shells. Since seawater holds as much calcium and carbonate as it can, the mineral forms more easily than it dissolve—and no less magical, the shells do not dissolve back into calcium and carbonate as soon as they are built.[8]

4 Field et al., 2008, pp. 3, 41, 82
5 Coleridge, 1835
6 Vileisis, 2020, p. 40
7 Yu, 2021
8 Encyclopædia Britannica, 2021

The six most abundant ions of seawater are chloride (Cl^-), sodium (Na^+), sulphate (SO_4^{2-}), magnesium (Mg^{2+}), calcium (Ca^{2+}), and potassium (K^+). By weight these make up about 99% of all sea salts. Inorganic carbon, bromide, boron, strontium, and fluoride constitute the other major dissolved substances. Among the many minor dissolved chemical ingredients, inorganic phosphorus and nitrogen are important for the growth of organisms inhabiting the ocean. Seawater also contains dissolved atmospheric gases, chiefly nitrogen, oxygen, argon, and carbon dioxide.[9]

In the ocean's eternal material cycle, the shell builders have adapted to thrive near the surface. This is a place abundant in calcium carbonate for the easy creation of protective homes. At greater depths, the water is less saturated with this chemical compound, and thus, the shells will readily dissolve. This fluid border, being dependent on the fluctuating concentration of calcium and carbonate, is called the *dissolving depth*. At a high concentration, the shells must sink deep before dissolving. Oppositely, when the concentration is low, the dissolving depth moves upward. As a typical feedback loop, dissolved shells add more calcium carbonate to the water, and so the dissolution depth decreases. This in turn protects other shells from dissolving. In this way, the chemistry in the deep ocean stabilizes the overall concentrations of calcium and carbonate in the sea. Also, the ocean interacts with the atmosphere at the surface when a small proportion of gases like oxygen and carbon dioxide dissolve into the water. This mix of oxygen helps the sea creatures breathe. The rising and falling concentration of the gases in the atmosphere and the amount of gas dissolved into the ocean constitute the ocean's *balancing act*.

With increased carbon dioxide in the atmosphere, the carbonate level in the ocean decreases. This makes the shell-building more difficult. In its own time cycle, however, the ocean's physics and chemistry will cause the dissolving depth to rise (or fall) and eventually balance the levels.[10] Nevertheless, when excess of carbon dioxide accumulation in the atmosphere dissolves into the ocean, the pH of the seawater tilts toward acid. Both in lab experiments and by direct observations in the high-latitude oceans, researchers see that calcifying organisms such as molluscs and reef-building corals struggle to make shells and skeletal structures in water with elevated acid.[11]

*Cry*stallization

In addition to calcium carbonate, marine shells are composed of a small quantity of protein. In the process of building their protective armour, the shellfish secretes proteins and mineral extra-cellularly from mantle tissue that is located under and in contact with the shell. As opposed to crabs and lobsters that shed their exoskeleton, the molluscan shells enlarge as they grow. The abalone (Haliotidae), for instance, add new organic matrix and mineral to their outer edge—around their mouth or apertural. The role of the protein is to bind calcium ions while guiding and directing the calcification. In this operation, the protein and calcium ions are crystalised into precise hierarchical arrangements.

The shells of marine invertebrates such as snails, clams, oysters, and many others have three distinct layers. First, an outer uncalcified layer consisting of complex conchiolin protein and chitin, from which a strengthening, naturally produced polymer emerges.

9 Duxbury et al., 2021
10 Encyclopædia Britannica, 2021
11 Vileisis, 2020, pp. 209–210

Next is a highly calcified prismatic layer followed by an inner pearly layer of calcified nacre. In abalone's mother of pearl, the prismatic layer is made from aragonite. This is a crystal form of calcium carbonate being different from the crystal shape of calcite, which constitutes the building block in the nacre of other seashells such as blue mussels (*Mytilus edulis*).[12]

Kaleidoscopic Architecture

Iridescence arises from the basic principles of wave optics. As light interacts with periodic structures, it diffracts. Periodic structures are the regular arrangement of atoms, particles, or unit cells which results in both dispersion and band gaps. Depending on the wavelength of light, the angle at which the light is spreading will change. Examples of such rainbow-like reflections can be found in shells, insect wings, gemstones, and CDs. The effect is also called *thin-film interference*—a phenomenon we can experience from the multiple colours seen in light reflected from soap bubbles or oil films on water.[13]

The lustrous interior of abalone shells originates from the layering architecture of the nacre. If a shell piece is studied through a microscope, a microstructure of tiny polygonal aragonite tiles perfectly stacked in pillar-like forms are discovered. The regular height of these minuscule towers is a key factor in producing the shell's iridescence.[14]

Microcosms Communicating New Properties of Light

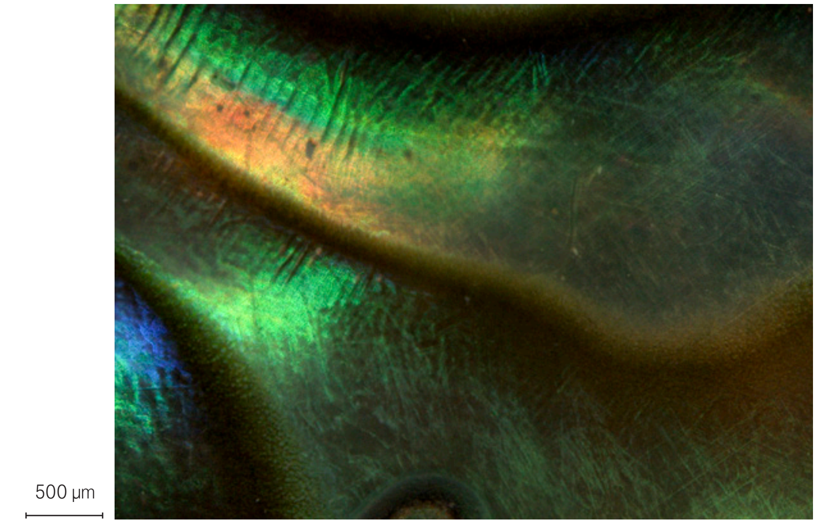
The "natural magic" of mother of pearl deeply fascinated the Scottish physicist Sir David Brewster (1781–1868), leading on to his pioneering discoveries in optics and, among other things, the invention of the kaleidoscope. In a letter to the scientific academy of the Royal Society in 1814 he writes: "In my inquiries into the modification impressed upon light by the various bodies of the animal, the vegetable, and the mineral kingdom, I have had the good fortune of discovering several new properties of light."[15]

In sensing that the nacre's magnificent colour play demonstrates "the operation of some unknown and extraordinary cause,"[16] he started experimenting with making impressions of the shell surface in materials like gold leaf placed upon wax, tinfoil, balsam of Tolu, gum Arabic, fused bismuth and mercury, and lead.

Brewster found that the diffraction of light from mother of pearl came from undulating microcosms on the shell's surface. The imprints communicated "the same faculty of producing colour,"[17] and in almost every variety of mother of pearl a new landscape was discovered: "This structure resembles very closely the delicate textures of the skin at the top of an infant's finger; or the lines parallel to the coast upon a map, by which the engraver marks the limits of the sea and land." He also found the spaces between the grooves to vary. Some could be seen with the naked eye. Others were so small he counted more than three thousand elevations per 2.5 cm.[18] Today, the optical scientists call this phenomenon *diffraction gratings*.[19] As explained by Ann Vileisis: "Light hits the parallel surface of the fine gratings, and if the size of the wavelengths is just right relative to the spacing of the miniature canyons, the light will be split into its component colours and diffract in different directions. The undulating light waves 'interfere' with each—either 'constructively,' by coalescing into the same phase, which intensifies the colour, or 'destructively,' by knocking each other out of sync, effectively shrinking the waves and diminishing the colour."[20]

In addition to this, Brewster found that some colours were not visible on the wax mold. These non-transferable colours he ascribed to additional diffractions and reflections occurring within the shell's pearly layers: "… if mother of pearl polarises light in virtue of its laminated structure, the laminæ themselves must have the property of polarising light in a manner opposite to all other bodies." What now is known as *layer diffraction*, he saw as a "new species of polarisation peculiar to mother of pearl."[21]

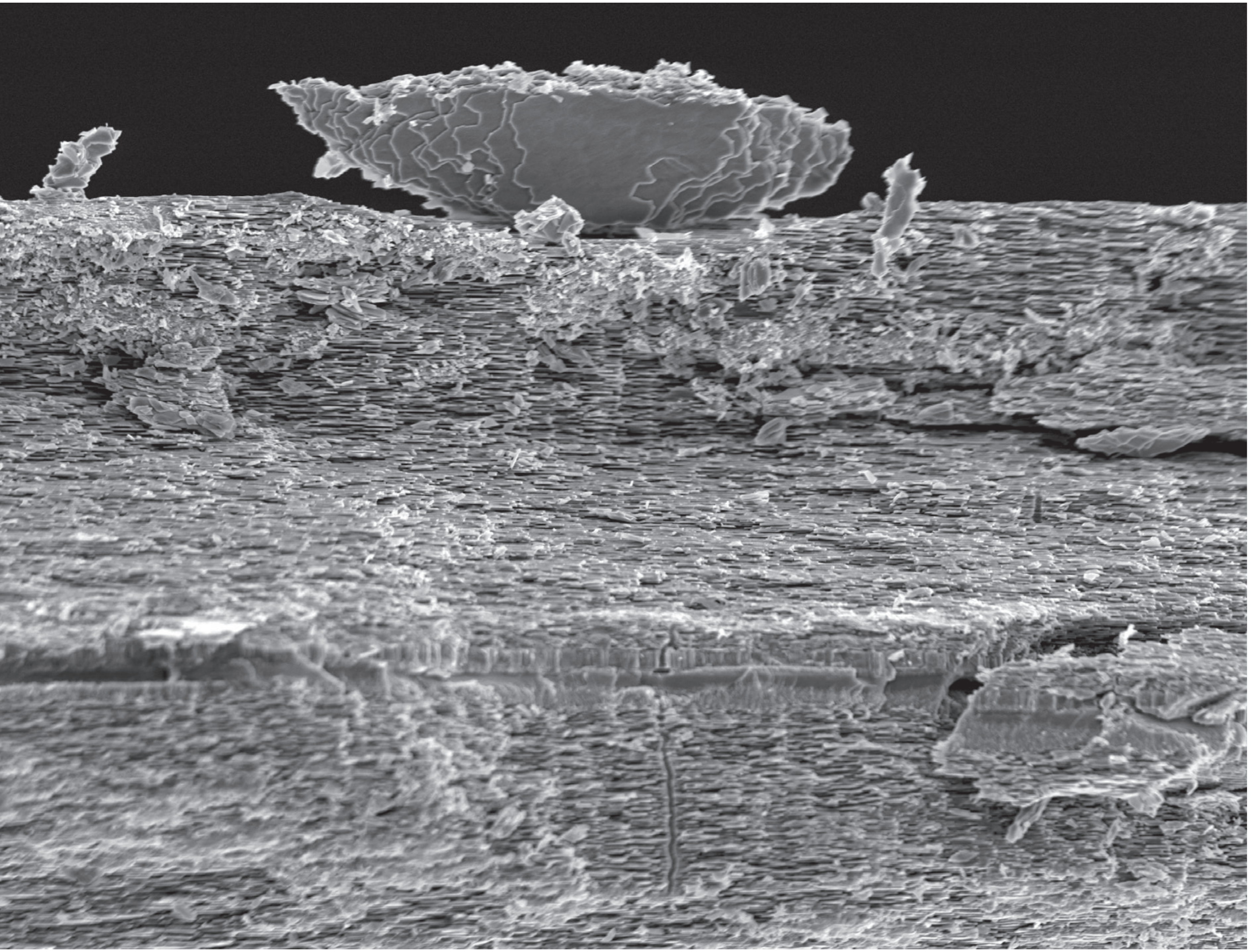
The microcosms of abalone shell surfaces resembles undersea landscapes from which the undulating formations produce the shells magnificent iridescence. Figuratively, the microstructure also resembles the natural rocky shore which is the habitat where abalone thrive. Most likely, the shimmering play of colours lining the abalone shells inside has ignited the abalone tales—linking the nanoscopic shell architecture to the wildest imagination. To some Native Californian tribes this hidden wondrous world even serve as a "looking glass reflecting visions for the future."[22]



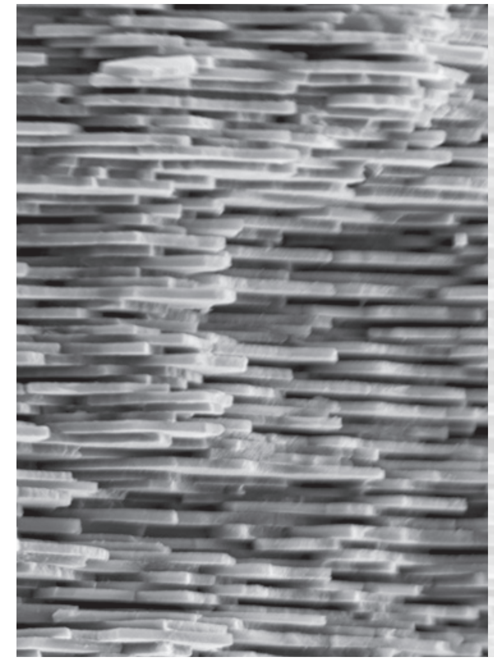
Micrograph of a green abalone shell surface (*Haliotis fulgens*).

SE micrograph of an abalone shell cross-section. Both images acquired at the Imaging Centre NMBU by Lene C. Hermansen. Sørensen © BONO 2021

12 Horne, 2006
13 Yu, 2021
14 Vileisis, 2020, pp. 40, 42
15 Brewster, 1814, p. 397
16 Brewster, 1814, p. 398
17 Brewster, 1814, p. 406
18 Brewster, 1814, pp. 409–410
19 Vileisis, 2020, p. 41
20 Vileisis, 2020, pp. 41–42
21 Vileisis, 2020, p. 42; Brewster, 1814, pp. 417–418
22 Vileisis, 2020, p. 27



10 µm



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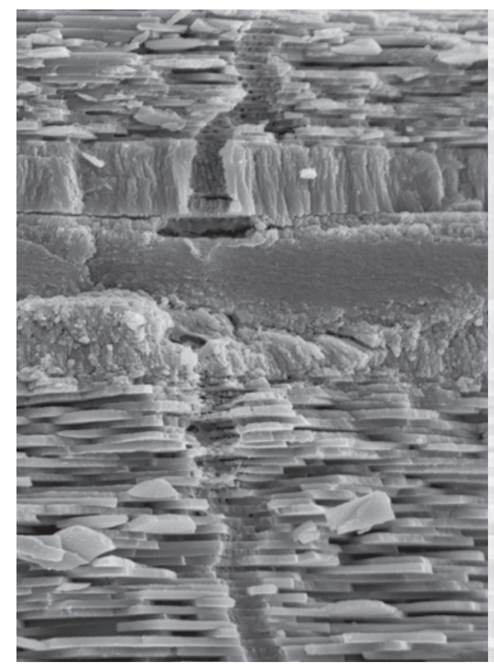

1 µm

Biomimi*Cry*: over the course of millions of years, the abalone have adapted an amazingly strong body shelter to protect them from predators and the power of the ocean—which again relate to the shell's nano-scale architecture. Marc Meyers, affiliated to the Nano Engineering Faculty at the University of California, engages in the field of "reversed engineering," where the researchers seek discoveries within the basic mechanisms through which natural materials are formed for the sake of developing new technologies. The mentioned aragonite tiles are held together by a thin organic glue which constitutes the brick-and-mortar structure contributing to the shell's extraordinary strength and flexibility. Under stress, the calcium carbonate tiles can absorb a great deal of energy without breaking. Because the tiles are "glued" only on the top and bottom, the adjacent tiles can separate from one another and slide when a strong force is applied. If fractures occur, the marine snail can self-repair. In their search for "new generations of armour," Meyers and his team have demonstrated that this highly ordered architecture is the "toughest arrangements of tiles theoretically possible."[i1] Not surprisingly, this composite is also one of the world's most researched natural materials.[ii2]

SE micrographs of an abalone shell cross-section (vertical layers) recorded in different magnifications, acquired at the Imaging Centre NMBU by Lene C. Hermansen with Zeiss EVO50 EP. Sørensen © BONO 2021

i Meyers, 2005, p. 18
ii Vileisis, 2020, p. 44

In Utter Loneliness

> **The white abalone** (*Haliotis sorenseni*) once thrived in the millions off the California coast. Today, factors such as climate change and past overfishing have severely reduced white abalone numbers from historical levels: for example, in the early 1970s, large colonies used to occupy the rocky reefs around the California Channel Islands. By the early 1990s, the marine snail had nearly disappeared. In 2001, the white abalone as first marine invertebrate was listed as endangered under the Endangered Species Act.[23]

From April 1992 through December 1993, a Californian marine research team inspected locations known as thriving habitats for the white abalone. Still, after examining over thirty thousand square meters, only three living abalones were discovered.[24] In 1996, they set out on a new underwater voyage around the Channel Islands with the mini research submarine *Delta*. After several days, the team was filled with expectations when they discovered a white abalone on the seafloor. They turned the submarine back with high hopes of running into a white abalone neighbourhood. Though, as the survey documentation reveals, in the dark depths nearly 50 meters undersea can be glimpsed a small animal clinging to a rock—surrounded by a vast desert-like landscape.[25] After mapping seventy-seven thousand square meters of habitat, alarmingly few white abalones were found present: all of them living too far apart to successfully reproduce at the levels needed to support natural recovery; all being old animals approaching the species' 35–40 year lifespan. To offer a comparison, Buckingham Palace contains about 77,000 square meters floor space. Just imagine a hopeful Queen sitting all alone in her infinitely large castle … and with certain similarities, this is exactly what the scientists found, as each of the eight specimens recorded were solitary beings. By and large, the researchers started to fear they were facing the last living white abalones on the planet.[26]

Loneliness is a humiliating feeling that inhibits wellbeing. As a human being, I experience prolonged loneliness as being physically painful, with the corrosive effect of reducing joy, vitality, and room for manoeuvre. Social neuroscientist John Cacioppo—having studied the neural mechanisms within a defined social species such as the causes and effects of loneliness for decades—claims that the need for social connection is fundamental in humans. Without it we fall apart down to the cellular level. Over time blood pressure climbs and gene expression falters. Cognition dulls and immune systems deteriorate. Under the constant presence of stress hormones aging accelerates. Loneliness, he writes, is a survival impulse like hunger and thirst. It is a need that pushes us toward the nourishment of human companionship.[27]

What about the wellbeing of other species: is loneliness eroding their quality of life too?

In fact, several social species are found to suffer. By using a new tracking system, a research team have compared the lifespan of isolated workers from timber ants (*Camponotus fellah*) with ants kept in groups of ten. They found that the lifespan of the isolated ants was shortened, and that social isolation resulted in behavioural changes amongst the lonely ants. The study emphasises social interactions "as key regulators of

23 NOAA, 2021; Davis et al., 1996, p. 42
24 Davis et al., 1996
25 Channel Islands National Park, 2017
26 NOAA, 2021; Vileisis, 2020, p. 162; Davis et al., 1996, p. 46
27 Cacioppo & Patrick, 2009

energy balance, which ultimately affects aging and health in a highly social organism."[28] Another study shows that social separation also makes cows struggle. When isolating a group of heifers from the crowd, all the animals showed increased heart rate and expressed themselves with loud grunting noises. So, this experiment also concludes that "social isolation is a severe psychological stress in cattle."[29] Learning this, I cannot help but imagine that the utterly lonely white abalone must have experienced some kind of distress. Abalone reproduce by broadcast spawning—releasing their eggs and sperm into the water.[30] With no other abalones in sight, clearly, the single marine snail[31] would never have the chance to produce offspring and become part of a viable community. Reminded of the cry of the creation myth *The Parent of All Abalones*, that if the first abalone ever died it would mean the end of the world,[32] and considering the *sixth extinction*,[33] this tale certainly has a prophetic undertone.

Cryptic Habitats

Rocky habitats support productive marine communities of plants and animals that prefer settling on irregular hard surfaces. To them, all angles and variations grant multi-use spaces. Cracks and crevices give safe areas. Porous rocks and pools retain water and trap air, providing living spaces to breathe or to stay wet.

Corals, oysters, barnacles, and tube worms are one group amongst the marine plants, animals and microorganism acting as bioprotectors. These reef building species perform habitat-forming actions that either create new habitats or modify or change the geomorphological and ecological features of the intertidal. As marine eco-engineers they contribute to maintaining or changing the surface properties in ways that benefit later colonists of native species, and as such, forming a secondary layer enhancing the living conditions for others.[34]

Before settling and metamorphosing into adult forms many hard bottom dwellers start out as free swimmers. In their early life stage, the larvae can recognize different textures by sensory organs mediating sensations of touch. They even orient themselves after chemical signals from the substrate and the surrounding community. Thus, minerals released from rocks, together with the species interaction, play a vital role for marine communities during several life stages.[35]

The intertidal and shallow subtidal rocky shore is the preferred habitat of abalone, like perlemoen (*Haliotis midae*) of the South African Eastern Cape. In addition to depth and temperature regimes, their general habitat requirements include a good supply of food, good water circulation to remove wastes and sediments, and the correct substrate for attachment and protection from predators. Perlemoen is commonly found from the intertidal down to about 10 m depth. Snails smaller than 4 cm of shell length are *cryptic*, finding shelter beneath boulders. Medium sized and large animals seek crevices or live beneath boulder spaces and on exposed surfaces. To protect from predators capable of accessing sub-boulder spaces, young on-year-old perlemoen are observed hiding within the spaces beneath the spine canopies of adult urchins. Hence, identifying and understanding the species' life history and habitat requirements are fundamental to the management of natural abalone stocks.[36]

28 Koto et al., 2015
29 Boissy & Le Neindre, 1997, p. 693
30 NOAA, 2021
31 Channel Islands National Park, 2017
32 Silva in Field et al., 2008, p. 66
33 Kolbert, 2014
34 Noffke, 2012; Fitzer, 2019
35 Bavestrello et al., 2000; Cattaneo-Vietti et al., 2005, p. 75
36 Wood, 1993, pp. 10, 18, 32, with reference to Tegner & Butler 1989

Envisioning Mesolithic Microhabitats

Loss of habitat and blue forest, overfishing, and global warming pose a great threat to marine biodiversity. Globally, coastlines are becoming extensively modified as human-made infrastructure has hardened and transformed a good portion of the intertidal. One effect is that intertidal species become displaced and homeless. The overriding problem lies in the fact that humanity's current path is unsustainable. To coexist and thrive, humans and nature alike need a new deal. For the recalibration of humanity's relationship with nature, UN Environment puts fort *five transformations* of which one is the *promotion of a better built environment*. This is a call for innovative ecological solutions to replace human-engineered infrastructure for the benefit of nature and humans—together with the implementation of a nature-conscious consumption.[37]

Regarding art and ecological restoration, these fields have something in common: both works experimentally with materials and involve processes that by nature are unpredictable. Yet, neither field can solve the current crisis alone. Therefore, to join forces across knowledge is urgent: thinking, creating, and acting together. If my previous research engaged in bridging art, ecology, and urban development through novel forms of co-learning and acting to envision new urban futures, the next step is a deeper examination of the power of art in transformative processes—that is the power of art as a driver of change.

The first time I saw the Mesolithic inscriptions discovered in the Fontainebleau Forest, they made such a strong impression it made my hair stand on end. I would guess that anyone who sees them would start wondering about their hidden meaning. A fascinating analogy is that these traces of a symbolic thinking from 10,000 years back in time resemble the signal paths of circuit boards as the engravings in stone store information to transmit meaning between people across time in a similar manner. Also, they look like abstract forms of the cracks and crevices within rocky shore habitats. Yet another analogy, the SE micrographs of abalone shell surfaces' undulating landscapes—capable of producing the mother of pearl vibrant color play—remind of rocky shore habitats. In this imaginative leap, the link between the Mesolithic inscriptions and undersea habitats gives rise to a dialogue across species and time.

In search of a marine landscape architecture, I am always attentive to patterns. Thus, the Mesolithic carvings immediately struck me as possible models for the development of housing opportunities for homeless intertidal species. Minding that the marine organisms "communicate" with their neighbours as well as the geological diversity of the rocky shore: textures, rock composition, and mineralogy are key topics in facilitating for the benthos—not least for the creation of new marine housing opportunities in the severely modified urban intertidal. What if these ancient communication patterns could be re-inscribed onto urban structures and surfaces to provide shelter and spawning ground for threatened marine life? In this way, the Stone Agers' actions could be transferred to the present, and finding their way into contemporary urban development.

By means of digital fabrication, the patterns from the archaeological photogrammetry models of Boris Valentin's research on petroglyphs in the Fontainebleau forest,[38] are transfered to sculptural restoration artifacts. As such, the relationship between nature and technology, people and other species' need for communication through time, are interlaced. As an experimental action, this cross-disciplinary conservation approach linking art and landscape architecture offers an opportunity to reconnect with nature. To change human behaviour, we need to do more than educate with science and facts; we must also find ways to connect people with nature. Art is an essential part of that process.

37 UN Environment, 2020
38 Valentin, 2016

Blue mussels living on a skerry at Kvaløya in Tromsø.
Photo by Elin T. Sørensen © BONO 2019

Mesolithic inscriptions transformed into settlement surfaces and kit-homes for vulnerable intertidal species.
Still image from 3D animation by Ivar Kjellmo based on Boris Valentin's archaeological models made by Summum 3D. Concept by Elin T. Sørensen © BONO 2021

Abalone Woman

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Ages ago when animals, birds and fishes had the forms of men and women, Ka-Luck, wild goose of the North, married Yer-ner, the abalone of southern rocky shores, and took her to his northern home.

They were very happy, gentle Yer-ner thinking only of the comfort of Ka-Luck and their many children.

Ka-Luck became troubled as he thought that during their many years together he had never seen Yer-ner partake of even a single morsel of food, though acorns, dried salmon, seaweed and all other kinds of Indian foods did thrifty Yer-ner prepare.

He watched until one day he saw Yer-ner broil a piece of kelp on the coals. This she at with much relish. That Yer-ner would scorn good food that he provided for common kelp so angered him that he leaped from his hiding place and severely beat her. Heard her crying but he did not go to her although in his heart was only sorrow for what he had done.

In the morning she was gone, with only her footprints fading away toward the South. Though he followed rapidly he could not overtake her until Patrick's Point. As he came near, he saw that she was weeping and that the tears were filling to overflowing her little cup which she carried in her hands.

**

Abalone looked sadly at Crane and said, "This shows how different we are. It is best that I go back to my people. What you call the best is not what I need […] I cannot go back. I will do something for you though. I will send the children to you part of the year, and during fall you can send them back to me. That is why geese, their children, fly south during the fall and north in the spring.

We have only a few places this far north where you can find Abalone: those places where she stopped to cry. Her tears turned into the abalone found there.

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She ran away, this time he came after her. He caught up with her at what was called Patrick's Point today.

She was crying as she walked along the shore, and her teardrops became the abalones. As she walked she prayed to the creator (above old man), that if she were to die, allow her death to be for the good of her people. Soon her husband was upon her. He slashed her back and then cut her up in pieces and threw her into the ocean. Today when you see an abalone shell the back is red depicting the slash marks on her back.

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She fled […] and she travelled along the ocean. She could see her feet in the ocean, in the sand, and she knew he would follow her. So she started walking on the rocks, and she crawled on the rocks […] And her feet, she would cut her feet on the rocks, and her feet would bleed, and she would cry. Her tears would form these abalone shells on the rocks, and the blood would fall over that, and that's the red that you see on the back of an abalone. That's her blood, and those were her tears.

*****

Despair appears on her face. The beads of sweat at the hairline forming a transient tiara. She scratches her nails into her cheeks. Red stripes across the eyes, nose, mouth: swirling and pinkish, like an unfolding foetus. As rays of light strike her tears, the interference surrounding this being forms an eternally present rainbow.

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I wish to thank Ann Vileisis for her amazingly well written book about the history and faith of the Californian abalones. Amongst some threads to investigate further from this book are Chumash oral tradition that the soul after death is blinded and that the dead are given abalone shell eyes to see anew, and traditional Chinese medicine where powder ground from abalone shell has been considered as a remedy to improve vision.

This text reflects themes and phenomena forming the basis for *Oceans' Ears*, which is the author's contribution to the artistic research project *Matter, Gesture and Soul* (2019-2023)

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*Excerpt from a collection of ancient legends collected among unnamed Yurok by the Yurok sisters Fay G. Aldrich and Ida Mc Bride (1939), found in Rosemary Bell *Yurok Tales* (1992) included in Field et al., 2008, pp. 165–166
**Told by Vivien Hailstone in Field et al., pp. 114–115
***From a prose-poem by Cheryl Seidner, former Tribal Chair of the Wiyot, in Field et al., pp. 54–58
****Told by Callie Lara from Hupa and Yurok family, in Field et al., p. 113
*****The authors' interpretation of *Abalone Woman*

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Abalone Woman: sunlight falling on teardrop-shaped crystal prisms that is broken into the rainbow of colours
Concept by Elin T. Sørensen © BONO 2021.
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