

Atelier Luma Algae Review

ATELIER LUMA ALGAE REVIEW

*Everything you always
wanted to know about algae*

The algae review is a curated newsletter dedicated to algae knowledge and Atelier Luma's Algae Platform activities. By mapping existing algae knowledge — from literature to scientific research — Atelier Luma aims at consolidating a community of international algae practitioners, creatives and experts to actively participate in the research, understanding and valorization of algae resources.

“In the act of feeding, all species meet and must meet. Eating is the most universal multi-species gathering in the world. By eating each other (much more than in their genealogical links), the different species produce a world, made of the same flesh, something unitary and interdependent. It is by eating (i.e. by encroaching on their own boundaries) that they constitute a universal community: the community of communities beyond their differences in nature, habitat and life forms.”

— *Métamorphoses*, Emanuele Coccia,
Editions Payot & Rivages, Paris, 2020
(translated by Atelier Luma)

FOOD

Algae is one of the oldest and most abundantly eaten foods. Seaweed, marine macroalgae, shaped human migrations some 15,000 years ago with nomadic tribes following a coastal route known as the “Kelp Highway”, encouraged by the rich marine diet on offer. Today, phyco colloids (alginates, agars, and carrageenans) extracted from seaweed are used as thickening and gelling agents and are extremely common in processed food.

In 1974, the United Nations World Food Conference declared that spirulina — a type of microalgae — was “the best food for the future”, praising its nutritional benefits. Later in 2008, the United Nations Food and Agriculture Organization (FAO) released a report in which they urged governments to reevaluate the potential of this alga to fulfil food security needs.

Yet despite indirectly feeding us by forming the very basis of the food chain and sustaining complex and large ecosystems, with the exception of Asia, algae have not yet invaded our plates.

In this edition of the Algae Review, we will look at it from the perspective of food with the aim of shedding light on the nutritional potential of algae, the challenges faced by aquaculture, the downsides of new food trends in a globalised world, the fundamental role of algae in food chains, the initiative of a vegan cheesemaker in Sardinia and the intertwined history of algae and humans.

ALGAE TO FEED THE WORLD?

By Johanna Weggelaar

The Covid-19 pandemic has exacerbated concerns about possible food shortages in a globalised, and therefore fragile production and distribution system. The crisis has also highlighted the link between human health and the external conditions that increase our vulnerability to disease — in this case, air and soil pollution and poor nutrition. In light of this, it has encouraged many people to think about the most sustainable and healthy options when it comes to food and to reconsider their privileged access to it. Schemes to support socially responsible, shortened food supply chains, such as the AMAP in France, have seen their clientele double over a short period of time. Many have started to grow their own produce at home or within shared gardens.

Reflecting on the future of food, one cannot avoid algae. We spoke with Philippe Stefanini, Doctor in biological anthropology and researcher into sustainable food at the CNRS in Marseille.

Around 10% of the global population is undernourished and one billion people live in areas threatened by desertification. The overconsumption of junk food, and the resulting health problems, is now the leading cause of death in the United States and Europe – ahead of smoking. Among nutritious and healthy foods, algae are regularly proclaimed as the new miracle food. However, their consumption, be it of microalgae or seaweed, remains anecdotal around the world (excluding Asia where they are commonly used in traditional gastronomy). Despite the oceans covering two thirds of the world's surface, food of marine origin accounts for only a very small proportion of the human diet around the world.

Stefanini holds *Homo sapiens* responsible for this gross neglect. Indeed, faced with the (illusory) infinite abundance of land resources, humans have long neglected their marine counterparts. However, as soil depletion worsens and new generations are turning away from excessive meat consumption in search of better sources of protein, things are slowly changing.

Discovering algae

The neglect of using algae as a resource stems in particular from a lack of understanding of the nutritional potential it offers, and the variety of species that the term «algae» covers. For example, what is commonly referred to as «algae» also includes some species of bacteria, such as spirulina. It would be like talking about cereals, with no distinction between wheat, corn, rice, and so on.

Algae have an impressive nutritional potential. If we take the example of microalgae, they consist of up to 70% protein in their cells which is also much better assimilated than animal protein.¹ In addition to this, they are rich in valuable compounds such as antioxidants, vitamins, minerals and essential fatty acids in varying proportions depending on the species. The cells have different types of membranes that are more or less well digested, and therefore make the compounds inside the cells more or less accessible. For example, the chlorella membrane contains a cellulose wall that is more difficult to digest than the thin membrane of spirulina composed of polysaccharides.

Adopting the use of a new food requires getting to know it and understanding how our bodies and digestive systems re-



act to it. It also requires learning about its potential for diversity and the contributing factors, such as the diversity of species, of landscapes, of weather conditions and of methods of cultivation, harvesting and processing. Different production conditions lead to foods having different qualities. Can we expect a species of spirulina grown in a laboratory in Germany to have the same taste and nutritional properties as another species grown outdoors in the south of France?

As we can see, the learning process surrounding what we consume is crucial. Stefanini regularly organises educational sessions in schools where he introduces his young audience to algae through smell, touch and taste.

Wild and domesticated strains

Many species of algae grow naturally in marine areas or wetlands, offering fabulous food reserves to those willing to harvest them. In Chad, the harvesting of a local variety of spirulina – called Dihe – in the waters of the Lake Chad region is traditionally practiced according to artisanal techniques solely by the women of the Kanembu tribe. Stefanini has travelled the world in search of these wonderful foods and their harvesting traditions in different cultures. He has referenced many lakes around the world that abound with endemic species of spirulina and that remain unharvested. Each year a few thousand tons of this algae species could, therefore, benefit local populations while preserving the local biotope through environmentally sound harvesting techniques.

Yet nearly all algae biomass produced in the world comes from domesticated species grown in dedicated facilities.² Macroalgae are cultivated in aquaculture systems on coastal areas. Microalgae are cultivated in open race-ponds or closed photobioreactors on land, offering viable options for farming in urban areas.

Our knowledge of existing algae species is still in its infancy and new discoveries are a regular occurrence. It is crucial that these species remain in the public domain and are not privatised by companies capitalising on its cultivation.

Challenges for aquaculture

Agriculture accounts for 70% of the total freshwater consumption globally and is responsible for more than a quarter of greenhouse gas emissions, demonstrating the urgent need to think about the future of agricultural practices. Algae farming has undeniable advantages: microalgae can be cultivated on non-arable land with minimal consumption of freshwater per kilo of proteins — and in the case of some species, no freshwater at all - and high yields per hectare.³ and as for seaweed farming in coastal areas, neither fertilisers nor freshwater are required. Today, the largest part of the algae production in the world is dedicated to human consumption: more than 70% of the harvested micro and macroalgae are either eaten directly by humans or indirectly consumed through processed food.

Granted by governments, the authorisation for the cultivation of algae species is key to speeding up the development of the algae farming industry. These are often very political issues and met with some opposition; changing our eating habits does not happen without calling into question existing food practices.

Considering algae solely for their protein content, their record yields and their low operating costs it's no surprise that the industry in search of low-cost proteins for humans and cattle is taking a close interest in these organisms: are they the new soya? Given this there is a risk of locking algae farming into intensive and extractivist practices for mass production; the threat of monoculture looms.

However, from artisanal to high-tech methods, algae farming offers a wide range of options. One should encourage the sector to explore new formats of aquaculture farms that combine traditional agricultural knowledge with technical expertise, explore new territories and reinvent production and distribution channels. Not forgetting the domestic environment: growing algae at home might become a new type of gardening in the future. Aquaculture can offer a model for new sustainable practices while encouraging an evolution of dietary habits and gastronomic cultures.

¹ Protein digestibility is quantified by measuring NPU (Net Protein Utilisation). The NPU of spirulina varies between 53% and 61%, and is far superior to the NPU values for lentils (30%) and beef (15%).

² The global production of macroalgae is mainly based on aquaculture: only 3% of macroalgae were harvested from wild stocks in 2016. Europe has a different production pattern as most of the macroalgae are harvested from wild stocks. It is important to mention that Europe only contributes to 1% of the global macroalgae production.

³ The protein yield from microalgae is reported to be 4-15 tons/ha/year compared to land-based crop production of 1.1 tons/ha/year for wheat and 0.6-1.2 tons/ha/year for soybeans.



HARVESTING WILD ALGAE IN BRITTANY

In France, the first Marine Natural Park was created in 2007 off the coast of Finistère in order to protect this remarkable marine area marked by exceptional natural resources and a rich cultural history linked to marine activities. In particular, it benefits from an amazing abundance of seaweed. The Iroise Marine Nature Park is working at reviving and structuring the tradition of seaweed harvesting that historically belongs to the area. In collaboration with other actors from the region, they published a Good Practice Guide dedicated to professional harvesters who wish to develop sustainable harvesting practices and for promote organic seaweeds. The guide teaches how to respectfully harvest each species of algae in order to ensure recovery of the stocks.

SOURCE

→ RÉCOLTE DES ALGUES DE RIVE GUIDE - DE BONNES PRATIQUES • BY MANUELLE PHILIPPE, DECEMBER 2013



MOROCCO'S RED GOLD RUSH

The red seaweed *Gelidium sesquipedale* grows naturally along the coast of El Jadida on the Moroccan Atlantic coast. The seaweed is used to extract agar, a natural gelling agent used in pharmaceuticals, cosmetics and food that has long been harvested and exported. However, the growing demand for alternatives to animal-based gelatin, stemming from vegan diets and religious motives, has led to a drastic rise in the price and over-harvesting of the seaweed. This has caused both social and environmental damage. The divers harvesting the algae need to go deeper than ever (up to 25 meters) and are often using rudimentary equipment, placing themselves in harm's way. The algae play a crucial role in the marine ecosystem and the rapid reduction in their population size is leading to ecological disaster.

In 2010 the Moroccan government set quotas and minimum prices to try to prevent the over-exploitation of the local red seaweed supply. However, the situation remains fragile for both the harvesters and the local marine ecosystems.

Just like the examples of quinoa and avocados, the case of *Gelidium* in El Jadida shows how a popular food trend can perversely cause social and environmental disasters at the other end of the chain. The high demand for agar has led to similar scenarios in other areas of the world, such as in Chile where overexploitation of the alga *Gracilaria* has led to the decline of wild stocks and threatened the communities that depend on it.

SOURCES

→ **HARD TIMES FOR 'RED GOLD' DIVERS IN MOROCCO'S EL JADIDA** • BY JALAL AL MAKHFI, FEBRUARY 12, 2015



THREATENED FOOD CHAINS

In the frozen Arctic, a special type of algae grows on the bottom of the ice. Known as "ice algae", it creates meadows that feed animal plankton that are in turn eaten by bowhead whales, fish and squid. They themselves become prey for narwhals and beluga whales; the microscopic ice algae support an entire food chain leading up to the immense whale.

The algae are now threatened by climate change. Having adapted to survive in very low light levels, unlike phytoplankton, these organisms "are like the shadow plants of a forest. They thrive in the half-light," says Ilka Peeken, a polar biologist at the Alfred Wegener Institute. As the ice recedes, more light hits the surface, leading to blooms of phytoplankton (microalgae). This causes a sudden abundance of food but of a lesser quality as phytoplankton appears to be much less nutritious than ice algae. Furthermore, the shorter bloom period disturbs the diet of many other organisms, some of which are able to adapt, but others are less flexible.

When the ice is gone, the algae will be gone too: "If you lose the ice, the whole system falls apart" Hillary Glandon warns, a whale biologist from the University of North Carolina Wilmington.

SOURCES

→ **MELTING ICE MAY BE A BOON FOR SOME ARCTIC WHALES—THEN A BUST** • BY OLIVE HEFFERNAN, JULY 2, 2019

→ **DISAPPEARING ARCTIC SEA ICE PUTS VITAL MARINE HABITAT ON THIN ICE** • BY JILL HEINERTH

VEGAN CHEEZE FROM THE BLUE ZONE IN SARDINIA

In conversation with Marcello Contu, founder of Veghu, May 2020

By Henriette Waal

Vegan cheesemaker Marcello Contu has been busy developing a Sardinian vegan cheese culture with wild and farmed produce from the island, including algae. As part of this process, he passionately collects information on plant proteins, plant oils and plant-based fermentation from all over the world.

By using the plant-based resources of the island in his products, he tries to contribute to a healthy way of living and to find an alternative to dairy farming which is known to be unsustainable. It is a contributor to declining water quality and conventional agriculture in general is the biggest contributing factor to the loss of ecologically important wetland habitats. In this way, the wetlands of Oristano in Sardinia have been damaged and around the world wetland areas have been drained and converted for agricultural use over the years.

HW: As more people show an interest in a vegan diet, plant-based cheese producers are expanding. What does the world of vegan cheese currently look like?

MC: The vegan cheese movement started with the cheesemakers that are creating products that imitate the taste and texture of cheese using starches, aromas, food additives, E-numbers, artificial flavours. These are industrial products. Vegan cheese has diversified since the nineties, following the traditional way of making cheese but with a different base. Instead of cow milk or sheep milk, we use ingredients such as cashew milk, cashew paste and almond milk. We ferment the base, sometimes with moulds that are used in Camembert or Roquefort for example and then we age the cheese. It's a completely different approach than with the imitation cheese. In Europe, this way of working was first explored in the UK. Still today, there are only a few guidelines to follow, which is why I'm working on an anthology to serve as an overall reference book. People are experimenting profusely, so in two months from now we will already know much more than we do now.

HW: You used to work as a food trainer in NGOs in Barcelona and now you are a vegan cheesemaker. Can you tell us more about this?

MC: My enthusiasm for traditions and food inspiration stems from my mother. When I was about 20 years old I started to become very interested in food. I became a vegetarian and then made the decision to become a vegan. But when it comes to cheese, I so much like the depth of the taste, the flavours and how they feel with-in the mouth can wildly differ from one cheese to the next. I was really disappointed by the vegan cheeses that were on the market at that point. Ten years ago, only industrial vegan cheeses were available that tasted like coconut oil with a plastic-like texture. My first attempt to create a vegan cheese was not a huge success. But then, slowly but surely I improved. I did a course in Australia; I was collecting information, practising and learning about fermentation. My interest came from the need to fill the void created by not eating cheese and the desire to replicate that specific unique flavour. I also



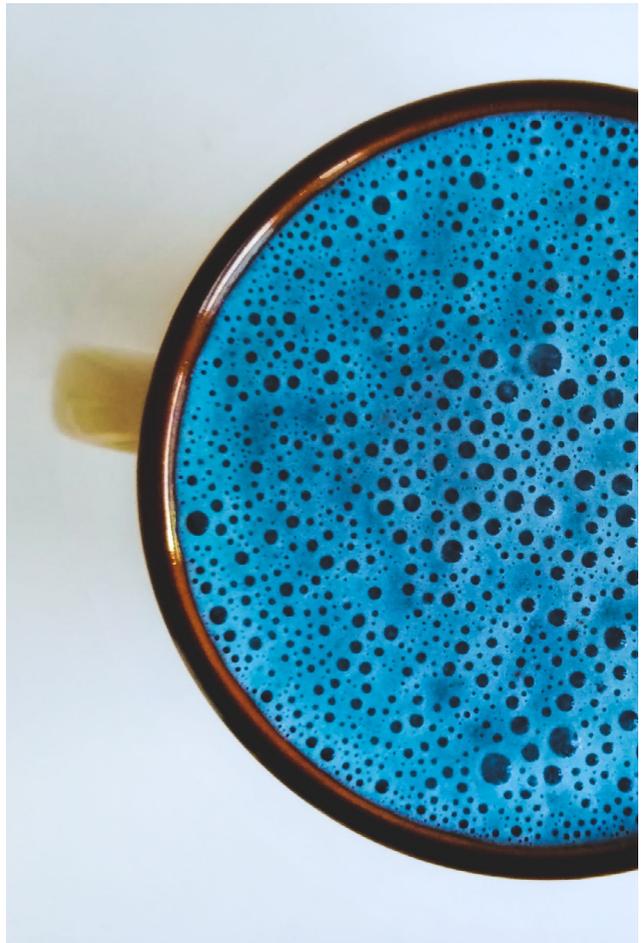
participated in a traditional cheese workshop, because I wanted to understand the various cheese traditions of the island. To relate to the craft, you have to know the techniques.

HW: Can you tell us a bit more about your project on Sardinia?

MC: I'm about to move to a super remote location. It is right in the middle of the island, next to lake Omodeo, 45 minutes from the wetlands of Oristano. The area has a long history of traditional pecorino, the renowned sheep cheese, which is the reason why I want to develop my project there. I'm collaborating with SU FERRERI, a culinary retreat centre with a guesthouse, where guests can follow yoga classes. I will further develop Veghu there in my own vegan cheese laboratory while hosting events and workshops. When people go to the retreat, they can join my workshops and buy cheese. I could have opted to develop my project elsewhere, for instance in Barcelona or Amsterdam, or even in Cagliari, to attract bigger crowds, but that would have meant a whole lot more competition and stress, which I'm trying to keep out of my daily life. Because this kind of cheese is also a rural project, the cheeses are handmade with ingredients from the surroundings and here I am in the middle of a rural area.

HW: What is the potential of algae for vegan cheese?

MC: The nice thing is that we do have seaweed, but we don't use it on the island. There are just a few species that are edible. The use of seaweed from the island and the use of seaweed in our diet is the same: they are not part of our culture. We now see the first examples of seaweed in the supermarkets. This is usually seaweed from very far away, from Galicia at least, even though it grows here on the island. I myself use Mediterranean



Lettuce (*Ulva Lactuca*). This type of seaweed is also very popular in Naples and Galicia. They use it in their *frittelle*, their local type of fritters. I use the ulva to wrap the cheese in and let it age inside the cheese cave for a few weeks. Some of its flavour is absorbed by the cheese and it protects the cheese from bacteria. I sterilise the ulva sheets a few seconds in boiling water and then wrap it around the cheese. You have to be careful not to add something with stronger bacteria than the cheese bacteria because that would destroy it.

HW: Besides *Ulva Lactuca*, what other types of algae do you use?

MC: We have some of the biggest spirulina farms in Europe on Sardinia. One of them is located in Milis, close to Oristano, they've recently opened up a lab for research and a new farm. The other farm is Arborea.

So far, I've used the *Ulva* and different varieties of spirulina both inside the cheese and for the aging process.

I've made little spirulina ricottas which have the mild flavor of ricotta, but with a spirulina aftertaste: salty and sappy. I also made a cashew-based blue cheese, with nice blue veins of the spirulina, which was really attractive looking. I also made a spirulina kechek. Kechek el fouqara is a type of cheese from Lebanon, it means "the cheese of the poor". It originates from an area in Lebanon where the people couldn't even afford to have a goat or to buy milk. The only thing that was available to them was bulgur, which they started to ferment using only wheat and salt. I did the exact same thing and added some spirulina. I'll show you the result [*picks up a light green ball from a big jar*]. They have a nice umami taste, a salty flavour and they are easy to make. You can keep them for years and they continue to develop new flavours.

HW: Could you - besides the flavour and colour of algae - include the protein of algae in your work?

MC: Yes, I think I could!

HW: What is the cultural reception of seaweed on Sardinia?

MC: Even my mom buys spirulina. She is a typical traditional Italian mama. Spirulina is seen as something healthy. 70% percent of people that buy my cheese are actually dairy eaters. They just want to try something different, out of curiosity.

HW: How much room is there to renew traditions and be creative in the cheese industry or in Sardinia?

MC: I think there is lots of room for new products. First of all, because vegan cheese is not exclusively for vegans, it's also for people who are lactose intolerant. The idea is to make plant-based cheese by using local products. So far, the vegan cheese movement focused mostly on almonds and cashews. There are almonds on the island, but cashews are imported from abroad, or even the other side of the world. With these cashews you can not be a hundred percent sure how they were grown, but with our almonds, you can. And this is how you support your local economy. You can also use rice, cauliflower, potatoes, oats or acorn as a base. There are a lot of local products that can be used and aren't much explored locally yet. What I'd like to underline is that we should stop comparing everything with traditional cheeses all the time. There is so much more to explore still. There's no need to copy and paste ideas. We're using the exist-

ing techniques of cheesemaking, but the proteins bind differently and you have to press the cheese differently. My mission is to carve out our own market segment. The area to where I'm moving is very close to Sardinia's Blue Zone*. The diet of people here is 80% plant-based, the air is not polluted, water and nature are rather pristine still. My plan is to promote this key territory for preservation and to tell its story.

HW: Are there legal challenges involved in bringing your products to the market?

MC: Yes, for example with Rejuvelac. This is a cultured probiotic drink made by fermenting freshly sprouted grains in spring water and it's full of beautiful bacteria which I use for fermenting my cheese.

For the food certification laws, the use of Rejuvelac is not allowed, because it is a wild fermentation. In Italy, there are very strict rules for this. I can't use it, I have to buy my own bacteria and they need to know where I bought my bacteria. When I went to the food certification department to present one of my vegan cheeses, they asked: "Vegan cheese? What do you mean?". It's controversial to label plant-based fermentation as 'cheese' and it's legally not allowed.

HW: What can you call it then?

MC: I still call it cheese, but if I want to sell it legally, I'd have to change the name. Like cheese with a 'z'.

HW: Plant-based cheesemaking is still a very young practice. As a movement, it develops through open-source collaboration. Do you share your findings and recipes?

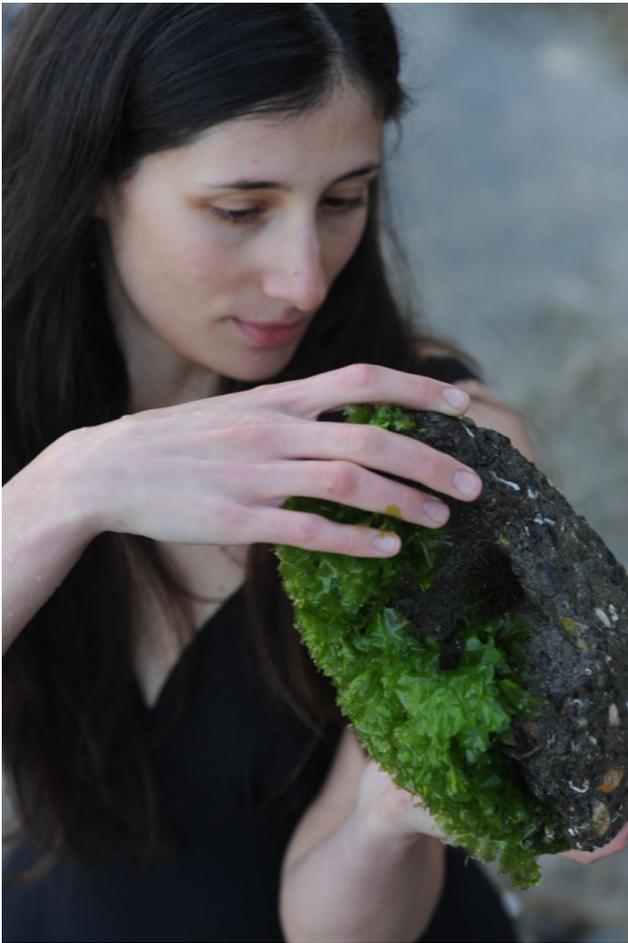
MC: If I do workshops: yes. If I post something and people ask me for the recipe: no. Because the process is nothing like following a recipe. Sometimes you have to live with the cheese for one and a half months. You're monitoring microbial activity, you have to know what to do in terms of humidity, when to turn them over. It is not like a cake, where you mix a list of ingredients and an hour later you have a product. It is a more difficult process. I'm a strong believer of 'autoproduzione': do it yourself. I have done a few workshops. In Europe, there is no center yet that specialises in training people in vegan cheesemaking for a few months, let alone for a few hours. I would be happy to see more people educated in this.

HW: What are your ideas for your next cheese?

MC: There are plenty of things I would still like to try. There's a traditional recipe on the island, it is called "*Sa Zibba*" in Sardo (Sardinian language). It is a boiled fish with sea salt and water wrapped in a weed from the lagoon. I was thinking that this weed would be perfect to try with vegan cheese. And there's also the sea asparagus and the sea mustard to experiment with. I'm interested to integrate the foraging culture of Sardinia with the culture of vegan cheesemaking, by using what nature gives us — using due diligence, of course.

* Blue Zone is a term coined by Dan Buettner in 2005 referring to parts of the world with an unusually high number of centenarians — people living to over 100. They don't just live long: they're generally also happier with their lot in life. Buettner identified five regions as «Blue Zones»: Okinawa (Japan); Sardinia (Italy); Nicoya (Costa Rica); Icaria (Greece); and among the Seventh-day Adventists in Loma Linda, California (United States).

Follow Marcello Contu on Instagram: @bluebeatsardinia



A STONE BROTH

Experience of the Mediterranean Landscape in the (per)form(ance) of a soup

By Vera Scaccabarozzi in collaboration with Atelier Luma

Life on earth began with a soup. More precisely, a broth – the primordial broth. Aleksandr Ivanovič Oparin, a Russian biochemist, was the first to propose the theory of the primordial soup in 1924, retracing the origin of life back to a time when the seas on earth were comprised of a vast warm ocean full of microscopic life some 4.5 billion years ago.

During that period, the sun was vigorously bombarding our atmosphere with ultraviolet radiation, which broke up and transmuted molecules on earth. Torrential rains were hitting the surface of the globe, causing carbon and nitrogen from the air to accumulate in the sea. Those basic elements provided the fundamental ‘ingredients’ for the broth and enabled the shift from inorganic to organic. As a result of this transformation, unicellular organisms appeared which were coded by DNA and were able to split and reproduce.

At that time the air was deprived of oxygen and consisted of a high concentration of toxic gasses. Cyanobacteria, also called blue-green algae, appeared and developed the ability to photosynthesise: they found a way to feed on light and carbon dioxide, converting them into sugar which in turn could be used by other organisms. Through this process, the algae

started to release oxygen as a by-product, slowly transforming the atmosphere and creating the conditions for aerobic life to evolve. We can breathe today thanks to the algae and plants on this planet which are still producing precious oxygen through photosynthesis.

This primordial algae broth generated life as we know it today and in more recent history, algae have continued to nurture human life. Recent archaeological discoveries in Asia and the Americas have contributed to our knowledge of historical human migrations and the beginning of agriculture by revealing the existence of the Kelp Highway, a coastal migration route linking what is now mainland Japan to Chile. Some 15,000 years ago nomadic communities followed this coastal road, with the sea remaining on the right-hand side for thousands of miles. It was previously thought that the first settlements on the American continent were reached via an inland route. Along the Kelp Highway, dense marine vegetation hugged the coast, consisting mainly of huge kelp – a type of seaweed – where crabs, small fish and molluscs thrived, providing humans with a reliable source of food.

In Japan, traces of seaweed were found in the bottom of a ceramic bowl made about 16,000 years ago by the nomadic Jomon people. This demonstrated that the use of ceramic in Japan was linked to a nomadic tradition, unlike in Europe and Africa where it marked the beginning of agricultural civilisations.

The entangled relationship between algae and humans has continued throughout history. Recipes of algae broths can be found in the cultural heritage of many coastal peoples and from China to the Mediterranean there exist many variations of it. Being harvested like wildflowers, the algae are not cul-



tivated nor hunted; the soup comes like a gift from the sea, a meal that provides extraordinary nutritional properties. Predrag Matvejevic, a Yugoslav scholar who collected tales and traditions from the Mediterranean, describes a recipe for this humble dish. It strives to make the most of the nourishing qualities of the sea, even including the stones to which the algae are anchored. The teeming life of the sea is collected and transformed into food:

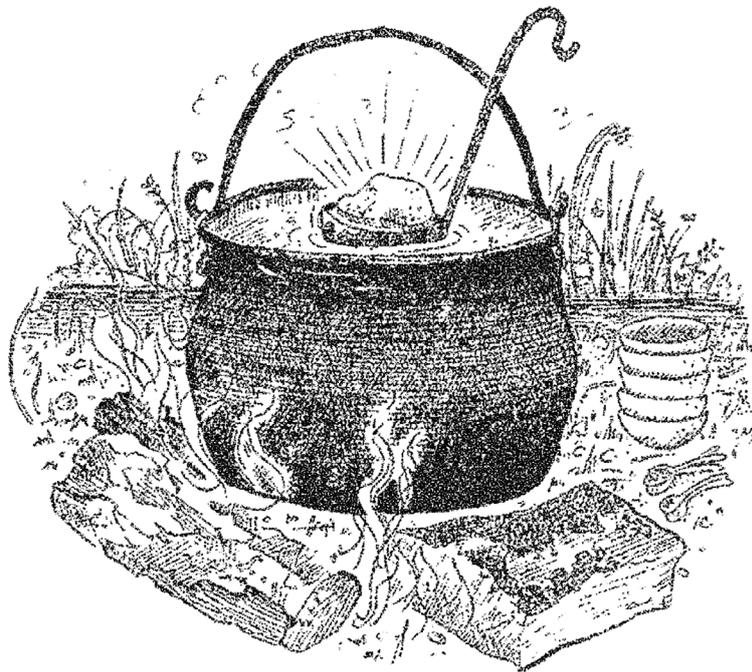
“You take two or three stones from a site where the low tide doesn’t reach, not too small and not too big, darkened by their prolonged time on the bottom of the sea; you must boil them for a long time in rainwater until everything has come out of its pores; you add a few bay leaves and thyme and, in the end, a tablespoon of olive oil and vinegar. [...] This type of broth, known all around the islands of the Ionian Sea, the Mediterranean and the Tyrrhenian Sea, was a traditional dish for the Greeks, the Illyrians, the Liburnians and possibly even Phoenicians, Etruscans and Pelasgians. The stone’s broth is as old as misery in the Mediterranean.”¹

During the XXII Triennale di Milano, ‘Broken Nature: Design Takes on Human Survival’, and as part of the Algae Platform exhibition and program, we designed a performance around

the preparation and sharing of this algae meal. Following the recipe described by Matvejevic, I carefully collected all of the ingredients on the coast of Liguria. I cooked the soup in a pot, repeating gestures that have been the same for millennia: choose a stone encrusted with seaweed, collect seaside herbs, boil it in seawater on a fire, pour into a bowl and finally take a sip. A soup that collects a landscape.

Reviving those ancient customs is a way to reunite the histories of humans, algae and food. We wanted to serve the dish in revisited replicas of the typical Jomon bowl, a vessel with a curved bottom. Henna Burney, a designer at Atelier Luma, produced a series of bowls using clay from the region of Arles, south of France. During the performance in the Triennale building, in the room located next to the busy café buzzing with loud conversations, I served the algae soup in the bowls and invited participants to share the meal. This became a very intimate moment. Everyone held the cup of broth in their hands, sipping the warm liquid, in a gesture that encapsulated infinite sea stories.

¹ Excerpt from Predrag Matvejevic’s *Mediterranean Breviary* first published in 1987 (original title: *Mediteranski brevijar*)



ALGAE FORUM

The theme of algae as food opens up some exciting questions. We are extremely curious to hear your thoughts and opinions on the subject. **In particular we would like to propose the following questions:**

→ Is it beneficial for us to learn about the seaweed and algae growing naturally in our surroundings and learn how to consume them? Are you already an algae forager? How does algae foraging relate and compare to the growing movement of wild plant foraging?

→ How can aquaculture, and algae farming, in particular, change agricultural practices and the social and cultural conception of it?

→ What are the main obstacles to increased consumption of algae?

→ What are the limitations of current food labeling practices? What solutions for better traceability of our food and improved valorisation of healthy and local products are there?

Send us your ideas, contributions and questions on the subject to: algaeplatform@luma-arles.org

ALGAE SUMMIT

The Algae Summit that was initially planned for May 27th and 28th 2020 could not take place due to the ongoing Covid-19 pandemic. Given the persistent uncertainty regarding international travel and physical gatherings over the coming months - and the necessity to feed reflections about the world in which we live - this year the Algae Summit has evolved into a longer-term research project centered around the role of algae as a tool for transitioning towards a bio-based, circular and responsible society. Alongside the extended reviews, physical and digital events will be planned as part of the research project, prompting moments of reflection, debate and restitution.

We want to turn the Algae Summit into an opportunity to conduct more in-depth reflections, to offer a platform for exchange and to propose ideas for an uncertain future.

ARTICLE 1

Image 1: Spirulina bloom in Camargue
© Johanna Weggelaar

Image 2: Good practices for harvesting wild seaweeds in Brittany © Florent Richard and Manuelle Philippe

ARTICLE 2

Image 1: Moroccan man harvesting the red seaweed *Gelidium sesquipedale* from the coast of El Jadida
© AFP

ARTICLE 3

Image 1: Communities of sea-ice algae on the underside of Arctic sea ice
© Jill Heinerth

ARTICLE 4

Image 1: Marcello Contu, vegan cheesemaker in Sardinia © Marcello Contu

Image 2: Spirulina Kechek, a type of cheese originating from Lebanon, produced by Marcello Contu in Sardinia © Marcello Contu

Image 3: Marcello Contu presenting his Spirulina Kechek during the interview
© Henriette Waal

Image 4: Smoothie with spirulina, by Marcello Contu
© Marcello Contu

COLUMN

Image 1: Vera Scaccabarozzi collecting a stone encrusted with seaweed on the coast of Liguria
© Michele Mulas

Image 2: Wild onion on the coast of Liguria
© Michele Mulas

Image 3,4 & 5: Vera Scaccabarozzi serving the Stone Broth at the Triennale di Milano, in April 2019
© Victor Picon

Image 6: The stone soup, illustration of an old folk tradition © Emily Chappell

Editing : Matilda Sims