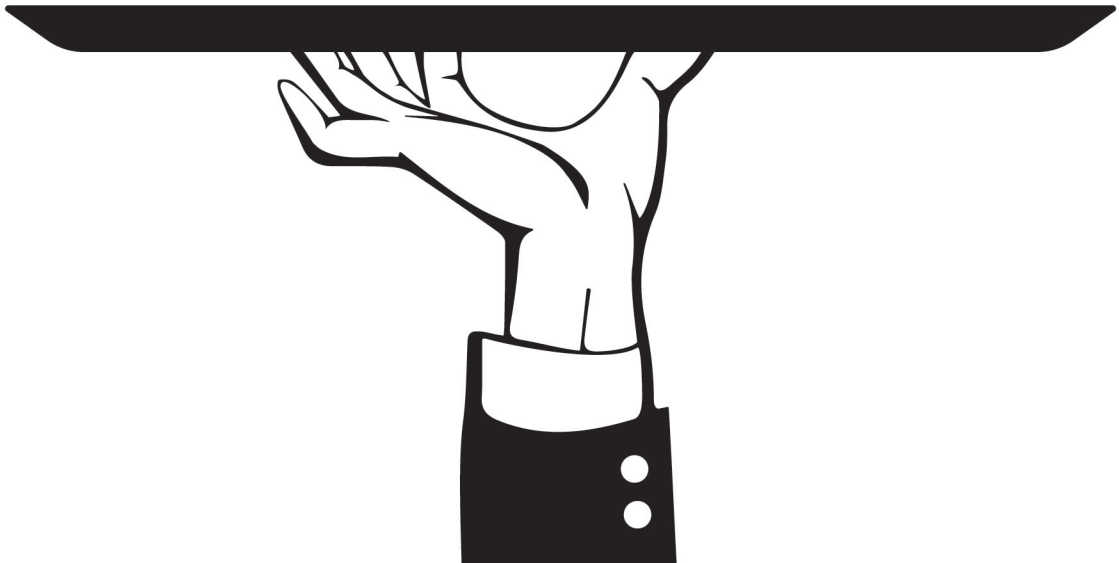


“

e-PLATE

every dish has
its own story
to be told





e-PLATE

every dish has
its own story
to be told

Food design that fosters Sustainable Development



Politecnico di Milano - School of Design
Master of Science in Integrated Product Design
Thesis paper

Thesis supervisor:
Fortunato D'Amico

Thesis advisor:
Ettore Giordano, Giulio Ceppi

Partners:
Schola Italica, Fondazione Links, Fondazione Giannino
Bassetti, Cittadellarte/Fondazione Pistoletto

Student: Daniele Trappetti

The best thanks go to my family who allowed me to be here today and let me find luck away from home.

Thanks also to Milan, the city that made me a brand new person.

And finally, thanks to all the people most beloved to me, far and near, who have been part of my growth path over the last two years.

Love you all!

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Introduction

In this thesis paper, I'm going to tell you the path that I followed to design a product for the sleepy Italic community.

First of all, I'm going to explain to you who are the Italics, individuals that embrace Italian culture and lifestyles unconsciously without knowing to belong to a large aggregation of people like them. That is the mission of Piero Bassetti that wrote *Let's wake up Italics!* in order to create a community to share values, interests, and experiences.

The project is based on the concept that an Italic ambassador, thanks to his great link with the Italian culture, has to awake a sleepy Italic in a special occasion with an IoT product: thus the sparkle happens!

So, I'm going to tell you the story of my Italic ambassador Lucio Fontana that has translated into arts the Italian desire to look beyond the first impression of the things, to fly and to discover the space. Then, I'm going to talk about Massimo Bottura, taking him as a medium to reach the target of my product: the foodies. Those people that deeply enjoy the experience of eating and want to know everything around food.

Then I will explain how the project develops in light of the climatic and environmental problems of the millennium. Therefore, how design can also have a social responsibility towards the actual 17 Sustainable Development Goals (SDGs). I will illustrate how food consumption models are

turning towards sustainable agriculture and what Italy is doing to achieve these goals.

After, I will make a short benchmarking on how, until now, "foodtelling" - storytelling with food - has been made, taking examples from two different approaches: analogical and digital.

Finally, I will show to you how the sparkle between the Italic source and awakened will happen through my IoT product: the e-PLATE.

Enjoy the reading!

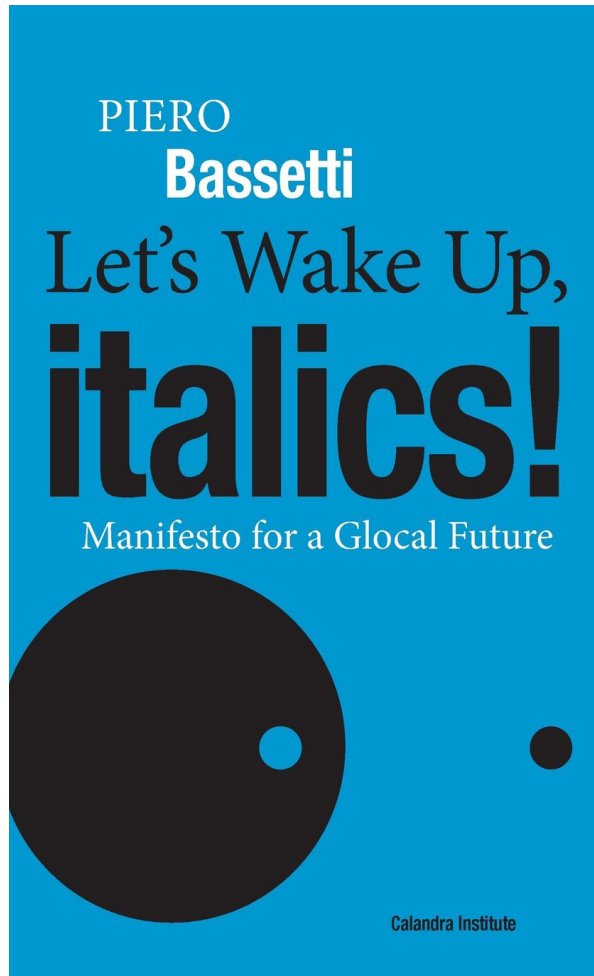
01

01. Italics: a sleepy community

The term Italics was coined by the politician Piero Bassetti that, with its book *Let's wake up Italics!*, has made a “rallying call” to them. But who is he talking about? «Italics are not just Italian citizens in Italy and abroad, but also their descendants; Italian-Americans, those of the two Americas and of Australia; as well italophones, Italian speakers, and italophiles. All those people who might not have a drop of Italian blood in their veins, but have nonetheless embraced our country's values, lifestyle, and shared behavioral models. I estimate that we are talking about approximately 250 million people»^[1]. Thanks to his cultural and political engagement, Piero Bassetti has realized that the globalization-driven change - both economic and social - has created a hidden world community of people that unconsciously share the same feelings in living this world. «They have different citizenships; they live in countries and societies that are far apart, both culturally and geographically. They speak different languages. But they feel the same»^[2]. So the purpose of Bassetti is to awaken their power and foster the aggregation into a world community, where all have to play a new role: sharing their values, interests and experiences. So Italicity is not linked to passports or flags but to a pluri-identity that does not imply to choose to be, for instance, Italian or American but it can be richer as it becomes wider and more nuanced. Bassetti also refers that the Italic community has to face with a “glocal” future: the

relation between the global and local dimension. Italics are now living the shift between stability to mobility. A revolution that is slowly overlooking the concept of nationality, that sometimes has brought to mankind divisions, and focusing on the value of hybridization fostering meetings and merging identities.

Piero Bassetti, to reach his goal, has created the website Italic Net (<https://www.italicanet.com/>). An online meeting place where the Italic can share news, interests, experiences related to several fields, such as art, music, design, business, innovation, food, cinema, fashion, sport, language, and tourism. «Italicity is a common feeling, a way of being in the world and giving meaning to the world that is based on universalism, sociality, sense of beauty and goodness, sustainability, explorative vocation, scientific talent and innovative ability»^[3].



1. The cover of Bassetti book: *Let's wake up Italics! Manifesto for a Glocal Future*. The logo of the Italic community has been designed by Italo Lupi. A black circle, the globe, that contains a smaller one with a different colour. And, nearby, a third circle with the characteristics of both the others: black like the first and small like the second: the representation of the local out of the global, but anyway linked together.

02

02. Lucio Fontana

Lucio Fontana (Rosario, Argentina, 1899 - Varese, 1968) was one of the most important figures on the international art scene of the 20th century. His work has deeply influenced generations of artists and is still today a reference for its uniqueness. Fascinated by the cosmos and aware of the new horizons presented by the scientific discoveries of the time, Fontana has investigated the concepts of matter, space, light, emptiness, using the most diverse materials to extend the boundaries of art. Next to ceramic, plaster, cement and paint, he experimented with neon, Wood's light and fluorescent paint, but also with new media such as television. An artistic practice that Fontana has theorized in some manifestos delineating his research through the definition of spatial movement.

The early years

Born in Rosario in Santa Fe, Argentina, in 1899, from a family of Italian origins, Lucio Fontana developed his passion for arts thanks to his father who was a sculptor. From the age of 6 he was sent by his uncle to Varese, in Italy, where he began his studies. Reached by his father in Italy, he began to work in his studio. He participated in the First World War as a volunteer and once discharged, due to a wound on the battlefield, resumed his studies obtaining a diploma in construction. In 1921 he returned to Rosario to work in his father's studio *Fontana y Scarabelli*, whose production was focused on memorial

cemetery works. Thanks to some public competitions, his name and fame grew so much as to allow him to open his own studio.

In 1927 he returned to Italy, in Milan, to attend the sculpture course at the Brera Academy of Fine Arts. Here he met his teacher Adolf Wildt and graduated in 1929. In this period he made works for the Monumental Cemetery of Milan, he participated at the 17th Venice Biennial and he presented his first personal exhibition at the Milione Galley in Milan: here he exposed the sculpture *Uomo Nero* (1930), strongly breaking with the teachings of the master Wildt. From here it became clear his propensity to despise the easy paths that led to immediate success and his dedication to abandoning all old traditions in search of a new way to trace. The result of his research were his neo-baroque statues made of plaster or cement and colored with bright colors such as black, white, gold, silver, red. In continuous research, from 1935 to 1939, he dedicated himself to the activity of ceramist, working intensively in Albisola, in the manufacture of his friend Giuseppe Mazzotti and maturing a passionate interest committed over the years on works of a religious nature, such as the three Via Crucis.

Space exploration through arts

During the Second World War, Fontana returned with his father to Argentina where he continued his activity




as a sculptor receiving various awards that earned him the appointment of professor in art academies in Rosario and Buenos Aires. It was here that in 1946, being in contact with young artists and intellectuals, he drafted the *Manifiesto Blanco*, laying the foundations of the spatialist movement. Back in Milan the following year he began to spread his first exhibitions with the fruits of his research for an art that went beyond the limits of the canvas or the single sculpture. Fontana warned «the

urgent need to proclaim the inadequacy of the “easel painting”, of the distinction between the painting and the statue, and he felt the importance of creating an art capable of transcending the narrow limits of the canvas’s surface to extend itself in a larger dimension, such as to become moreover a “creator of atmosphere”, a future art “transmissible in space” through the new discoveries of science and technology. His spatial art included not only painting and sculpture but also television transmission,

1. «Fontana ha toccato la Luna», Raffaele Carrieri, article published in "Tempo", XI, n.8, 1949 (particular)^[5]. It shows the *Spatial environment with black light*, Lucio Fontana, 1948.
2. Lucio Fontana and Yves Klein, 1957.

luminous graphics and spatial plastics» (Gillo Dorfles)^[4]. His *Spatial environment with black light* (1948) with fluorescent elements of Wood light suspended from the ceiling, was only the first of many spatial interventions that earned him the collaboration with the major Italian architects of the time, including BBPR, Figini and Pollini, Marco Zanuso, Luciano Baldessari. In these works Fontana has combined painting, sculpture and architecture reflecting on the themes of his environmental research: the overcoming of the static conception of the plastic form, color reduction to monochromy, use of neon lights or Wood, construction of corridors and mazy spaces. In 1949 he began the cycle of *Buchi*: monochrome canvases characterized by the presence of holes. In *Concetti Spaziali* – the way he called them - the absence of matter symbolized the interruption of the two-dimensional spatiality from which emerged the emptiness behind, projecting towards the search for a further dimension, the space-time, the Infinite, the Nothingness. A research also shared by the young artist Yves Klein, who, with his blue canvases (*International Klein Blue*) and his performances (*Saut dans le vide*), represented an immaterial, cosmic and spiritual space in an attempt to reach the Absolute and the sensation of the void. The two artists met in Milan where the young French painter was presenting his paintings; Fontana was always ready to defend the young avant-garde artists by buying their works.





*“Io buco, passa l’infinito di lì,
passa la luce, non c’è bisogno di
dipingere... tutti hanno creduto
che io volessi distruggere: ma non è
vero, io ho costruito, non distrutto,
è lì la cosa...”* ^[6]

*“I hole, it passes the infinity of there, the light
passes, there is no need to paint ... everyone has
believed that I wanted to destroy: but it is not
true, I have built, not destroyed, it is there ...”*
Lucio Fontana, interview with Carla Lonzi, 1967

3. Domenico Modugno singing «Volare, nel blu dipinto di blu» at the Sanremo Festival in 1958.
4. Fonti di energia, neon ceiling for "Italia 61", Turin, 1961 (reproduction at Pirelli Hangar Bicocca, 2017).
5. Concetto Spaziale (Attesa), 1958.

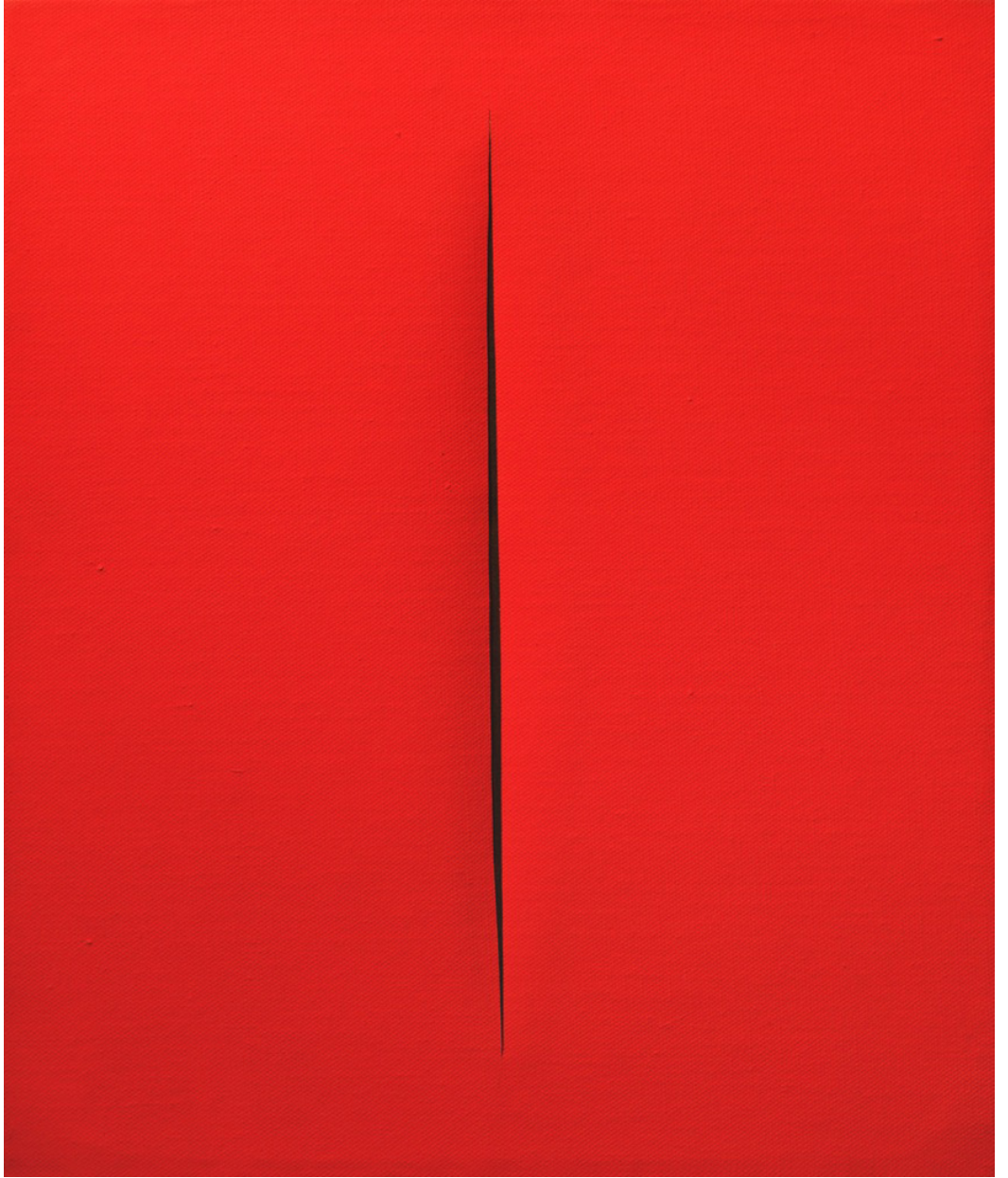


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Fontana's spatialism was able to translate the Italian desire to look at the Space and fly. The end of the 50s marked the beginning of the Space Race, with the launch into orbit of Sputnik I, the first satellite to circumnavigate the earth while the Italians were singing on the notes of «Volare, nel blu dipinto di blu» by Domenico Modugno. In 1958 he showed for the first time the iconic paintings of *Tagli. Attesa* (or *Attese* in case of more cuts) was the name with which Fontana called these canvases torn by vertical slashes that, following the same concept of *Buchi*, were representing possible openings to the elsewhere, towards a third dimension beyond the limits imposed by the flatness of the painting. Having lost any figurative function, the painting became a monochromatic surface containing a breach, a passage to a parallel universe. Meanwhile, Fontana continued his activity as a sculptor in Albisola where he made the great *Nature*, immense spheres in terracotta or bronze marked by deep rifts. In his last years he began to work on several cycles of paintings: the *Quanta* (mainly trapezoidal shaped canvases united in a discontinuous way to form a complex constellation), the *Fine di Dio* (oval canvases with constellations of holes, gashes or graffiti), the *Teatrini* (where the polished and lacquered wooden frame served as a protagonist projecting on the curtain perforated background), and others.



4



6. Fine di Dio, 1963.

7. Via Crucis in white ceramic, 1955 (particular).

In 1968 Lucio Fontana died in his studio in Varese. He left an indelible mark in the world of contemporary art, wavering the boundaries between painting and sculpture and bringing the Space closer to the Italians, so that people could admire, touch and explore it, unveiling a dimension that they had not yet perceived.





03

03. Massimo Bottura

1

Talented, adrenalinic, brilliant, with a cultured and inspired speech and thousand projects in mind, Massimo Bottura is, nowadays, the best chef around the world that turned his restaurant, Osteria Francescana, into the gem of the Italian gastronomy obtaining twice the first place of *The World's 50 Best Restaurants* in 2016 and 2018. «A poet, storyteller and artist as much as a cook, Bottura weaves narratives through his dishes, playing with traditions and experimenting with ingredients from the Emilia-Romagna region from whence he hails»^[7].

Osteria Francescana: the best restaurant of the world

Born in Modena in 1962, Massimo Bottura has reached the world premiership thanks to big ideas, a lot of work and the influence of 4 main personalities: Lidia Cristoni, her first teacher and the rezdora of a tavern in Campazzo, opened in 1987, where the chef learned the Emilian cuisine; George Cogny, the Frenchman in Emilia who was able to graft the agri-food richness of these lands in the classic transalpine; Alain Ducasse, who brought Bottura with him to Louis XV, teaching him the art of the highest restaurant; and finally Ferran Adrià who in 1999, when Bottura had already opened his Osteria Francescana for four years, taught him the basis of the molecular cuisine and transferred the desire of continuous research. He learned to look at the Italian food tradition with new eyes, reinterpreting old recipes into a modern language.





2

In his book, *Never Trust a Skinny Italian Chef*, he tells the Italian peninsula - with its history, its culture, its territories and treasures - through the table. Thanks to his wife Lara Gilmore, met in 1993 in New York, he started to appreciate the contemporary art merging it in his recipes, looking the white plates as blank canvases - think of the dish inspired from Damien Hirst, the *Beautiful, psychedelic spin-painted veal, not flame grilled!* - and turning his restaurant into an exhibition showing his collection of art pieces. The staff itself is prepared to explain to the clients the artworks that surround them, in order to give a different interpretation of the work of the chef.

All that has brought the Osteria Franciscana to achieve the best awards in the gastronomic sector: the third stars of the *Michelin guide* (2012) and the twice first place of *The World's 50 Best Restaurants* (2016 and 2018), in addition to the highest scores on the Italian *Espresso* and *Gambero Rosso* guides. For this reason, nowadays, the reservation for having a Bottura food experience, that lasts 3 hours and costs about 300 each one (choosing the tasting menu), has to be taken months before.

Bottura for the social

Massimo Bottura is involved also in social causes. In 2015, in occasion of the Expo Milan, he opened Refettorio Ambrosiano housed in a former theatre completely renovated and transformed into a refectory

1. Massimo Bottura (Modena 1962).
2. Osteria Franciscana, Modena.
3. Refettorio Ambrosiano, Milan.



3

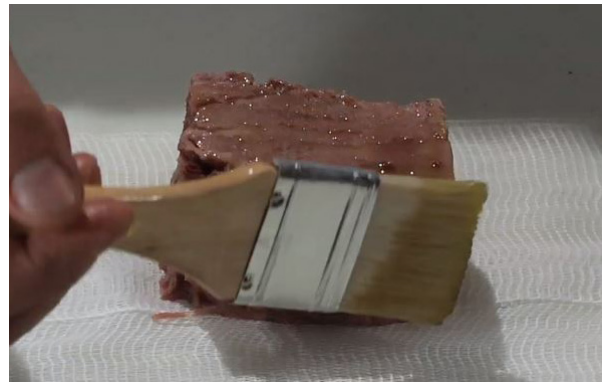
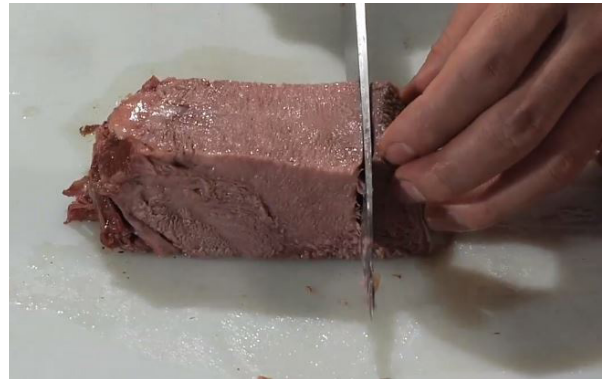
open to solidarity. During the food exposition, Refettorio Ambrosiano hosted 40 of the best Italian and international chefs that created and prepared menus starting from the food surplus collected every day at the Expo in full compliance with current regulations on food safety. The aim was to fight the food waste, transforming ingredients that otherwise would be thrown away into haute cuisine dishes, thanks to talent and creativity. This project has continued also after the Expo. The Ambrosian Caritas, nowadays, is the manager of the refectory and every day can host 90 people providing them hot meals. The most

All the languages of the world,
scenes from Bottura video, 2010
([https://www.youtube.com/
watch?v=R5IB2pljZXg&t=74s](https://www.youtube.com/watch?v=R5IB2pljZXg&t=74s)).



interesting aspect of this initiative is that the outcasts are not treated as such, but they can feel in a beautiful environment quality ideas and dishes because the meal is something that nourishes the body but above all the soul.

A concept clearly expressed in *Food for Soul*, the name of the non-profit organization founded by Bottura and his wife, Lara Gilmore, that represents the evolution of Refettorio Ambrosiano. It's not about charity but a real cultural project. The purpose is to recreate environments that bring a sense of dignity around the table: for this reason, everything is born around places of culture abandoned, to be reborn. «Our projects are contaminated by art, design and beauty to engage our guests in a holistic approach to nourishment: both for the body and for the soul. The recovery of food, spaces and people goes through a cultural project, addressed both to the needy and to the wider communities»^[8] Gaining a global success, *Food for soul*, nowadays, accounts a network of Refettori Francescani all over the world: at the moment they are in Bologna, Milan, Rio de Janeiro, London and Modena but new openings are already planned in Turin, Paris and the United States.



Bottura as a storyteller

What makes great Osteria Francescana is also the way Bottura tells the story of his dishes. His storytelling is



poetry and fascinates every client because most of the times he is personal narrating his own life tales linked with Italian food traditions. He has even made some behind the scenes videos of his dishes, such as *All the tongues of the world*, a homage to Lucio Fontana, in which the shape of one of the sculptures Nature of the spatial artist was taken and reproduced to make the casing of a veal tongue. So when one is going to taste the dishes of Bottura he/she is also going to deepen into his life and the Italian food culture. Here there are some examples:

An eel swimming up the Po river. The chef links a piece of Italian history to an eel. «In 1598 the Este family abandoned Ferrara and transferred the capital to Modena. Moving the court was a journey that lasted weeks and weeks. I imagined that trip. And I made this dish» (Bottura). The eel of Comacchio, the polenta of Veneto, the Mantua bell apple. The court, 520 years ago, dates back to the Po. And so does the eel. Meeting all these elements. Both - the court and the eel - land in the countryside around Modena, where they find the saba, the cooked must. And finally, they arrive in Canalchiaro, one of the canals - now buried - which for centuries have connected the city to the Po»^[9].

Oops! I dropped the lemon tart. The chef tells how an accident can turn into a masterpiece. «One evening,



4

Takahiko [the Japanese cook of Osteria Francescana] dropped a slice of lemon pie. A small silent explosion, material and emotional. Above all for someone like him who has the cult of order and precision. But also an involuntary result of a great fascination with aesthetics and meaning. Hence the idea of the dish»^[10].

Memory of a mortadella sandwich. The chef deconstructs a mortadella sandwich, the beloved snack that his mother used to put in his school bag, using foam, pistachio and a gnocco on the side. «The result, he claims, is a taste that disappears on the palate immediately, but has a “long and persistent” flavor. It took him four years to get the dish right»^[11].

Not boiled boiled. The chef was inspired by the skyline view of New York (USA). The pieces of meat, representing the high skyscrapers of the metropolis, match with the green foamed sauce, depicting the trees. The jelly base, instead, symbolizes the people.

4. Memory of a mortadella sandwich, Massimo Bottura.

5. Not boiled boiled, Massimo Bottura.



04

04. Foodies

The term “foodie” was coined in 1984 by Paul Levy and Ann Barr, when they published their book *The Official Foodie Handbook*. Its definition differs from that of “gourmet”, which today has become a «rude word» (Paul Levy, Ann Barr) intended to indicate a food and wine professional with a snobbish and elitist attitude. Think of the severe gastronomic critic Anton Ego of the animation movie *Ratatouille*!



Portrait of a food lover

The foodies are people who love food for hobby, study it, eat it and are careful to all the culinary news. They do not consider the act of eating as a mere survival instinct but as an exciting multi-sensory experience. They have a more amateurish approach, understood in the sense of lovers of a hobby at 360°: in fact if gourmets simply seek the best food, the foodies want to know as much as possible and give importance to the impression that they receive by looking, touching and feeling the scent of food. They do not give in to excesses and are attentive to the quality of the food they eat, providing it at the organic food stores or at the weekly farmers market. They are interested not only in the preparation and consumption of food but in the whole chain: cultivation, breeding, food industry, feeding, gastronomic tourism, culture and history of food and much more, in short, they are aware and informed consumers.

The kitchen is their habitat: they enjoy cooking by themselves learning from cooking classes, reading recipes on books or blogs and watching TV top chef programs using high-quality kitchenware. They are interested in the culinary tourism: they follow restaurants openings and closings, wine tastings in old wineries, street food events, they make out-of-town trips to find old tavern; traveling, for them, is mainly a reason to discover new food cultures. From *The Global Report on Food Tourism*

1. Before eating, take a photo! Foodies are very active on social networks.
2. A cooking class.



2

came out that the «88,2% of survey respondents consider gastronomy a defining element of the brand image of travel destinations»^[12]. They are also significantly present in the social network world. The “foodtelling” nowadays is a big trend: people

like to share their meal experience through social media, from recording the act of eating to posting pictures of their dishes on Instagram. Think of the large use of the hashtags #food (308.180.334 posts), #foodie (107.632.207), #foodporn (180.464.177)! Moreover, they

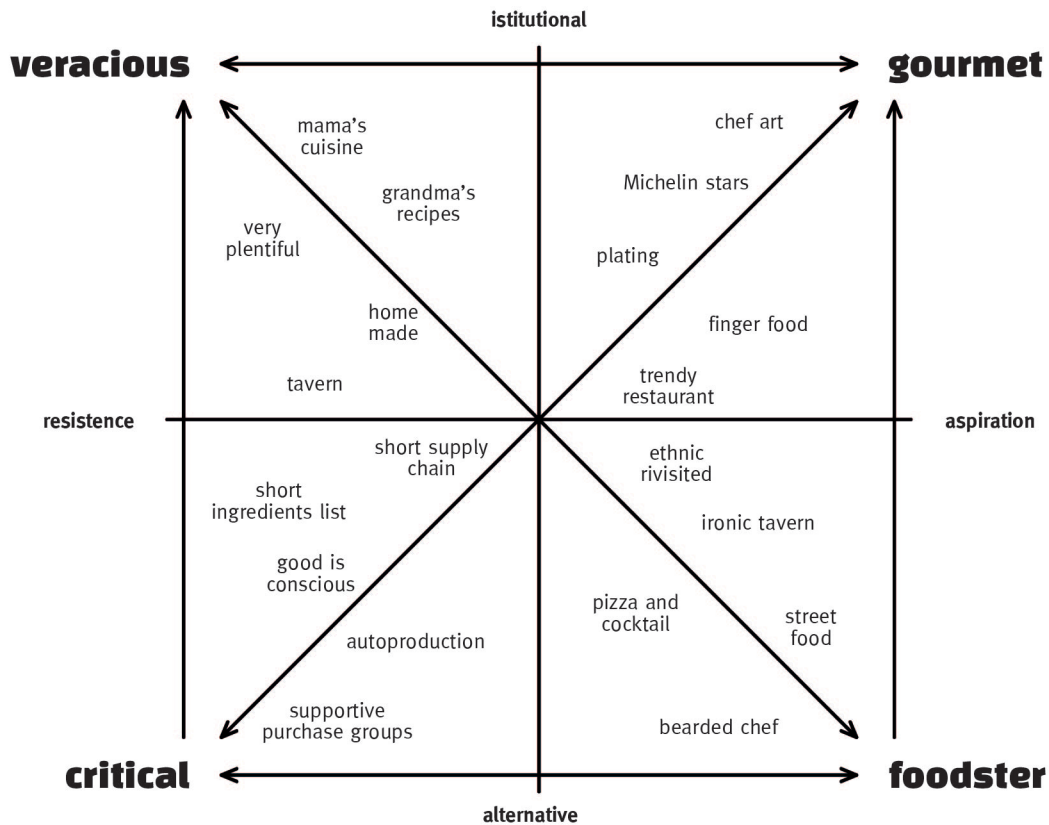
write restaurants reviews of the places where they have eaten to show their rich food trip profile and to help the community of food lovers to choose the best location.

Four shades of foodies

The Italian company of market researches and trends Squadrati^[13] has portrayed 4 profiles of a foodie (including the gourmet):

- *veracious*: consider the Italian culinary tradition as sacred, they are for a frugal esthetics and are not interested in new fashions and trends.
- *gourmet*: believe in a canon of good taste, often imposed by Michelin-starred chefs and prestigious guides, and consider the aesthetics and the plating important elements of a good dish.
- *foodster*: interested in fashions and trends in food, they love the contamination between dishes and kitchens and the ironic reinterpretation of tradition.
- *critical*: for them “good is aware”. They judge the cuisine also on the basis of ethical and ecological principles and are informed about the raw materials and the entire production chain.

«But how many “foodies” are there? In the United States, where the phenomenon started, this segment has 44 million people, 19.5% of the adult American population. They are mostly adults aged between 35 and 44, mostly male (54%), food and cooking enthusiasts and with a greater propensity to buy quality food»^[14].



05

05. Sustainable agriculture

Sustainable agriculture is that which, in addition to producing food and other agricultural products, also considers economic, environmental and social aspects. It is defined:

1. economically advantageous for farmers
2. respectful of the environment
3. socially just, helping to improve the quality of life of both farmers and society as a whole.

Those who deal with sustainable agriculture, therefore privilege those natural processes that allow preserving the “environmental resource”, thus avoiding the use of practices that are harmful to the soil (such as intensive processing) and chemical substances (pesticides, hormones, etc.) and using renewable energy sources.

The Agenda 2030 and the 17 Sustainable Development Goals

The concept of “sustainable development” was first introduced in 1987 with the Brundtland report (also known as Our Common Future), a document published by the World Commission on Environment and Development (WCED). Its definition was: «sustainable development is a development that meets the needs of the present without compromising the ability of future generations to satisfy their own»^[17]. It does not refer to the environment as such, but to people’s well-being and therefore to



1

the responsibility of today’s generations towards future generations. Five years later it was the main topic of the UN Conference on Environment and Development in Rio de Janeiro in 1992. This meeting marked the beginning of a process of change in the millennium, which began with the awareness of climate issues. The result of the assembly generated the Agenda 21, a program of action for sustainable development. The number 21 refers to the XXI century, «as priority themes of this program are the



1. The United Nations logo.
2. The 8 Millennium Development Goals (MDGs) signed in 2000 by the member countries of the UN.

climatic-environmental and socio-economic emergencies that the beginning of the third-millennium places without fail all the humanity»^[18].

The march towards change was continued thanks to the Millennium Development Goals, signed in 2000 by the member countries of the UN. Together they engaged to pursue 8 goals^[19] such as:

1. eradicate extreme poverty and hunger
2. achieve universal primary education
3. promote gender equality and empower women
4. reduce child mortality
5. improve maternal health
6. combat HIV/AIDS, malaria, and other diseases
7. ensure environmental sustainability
8. develop a global partnership for development

This commitment involved the United Nations until 2015, when the goals were “inherited” (and updated) by the Agenda 2030 signed in September 2015 by the governments of the 193 UN member countries. In fact, it represents a plan of action for a total of 169 ‘targets’ or goals summarized in the 17 Sustainable Development Goals (SDGs), defined as such because it meets the needs of the present without compromising the ability of future generations to meet their needs. The current model of development, in fact, has been judged unsustainable not



3

only on the environmental level but also on the economic and social one therefore the 17 SDGs are to be considered interconnected and indivisible. They balance the three dimensions of sustainable development: economic growth, social inclusion, and environmental protection. From 1 January 2016, they are guiding all countries to bring the world on a more sustainable path, without any distinction between developed, emerging and developing countries, even though the problems may obviously be different depending on the level of development achieved. Each country has the task of defining its strategy that will enable it to achieve its goals by 2030, involving all the components of society, from companies to the public sector, from civil society to philanthropic institutions, from universities and research centers to operators of the information and culture.

The strategy for sustainable development classifies the commitments on five thematic areas deriving from the

“5 P model”:

1. People. Eliminate hunger and poverty in all forms and guarantee dignity and equality
2. Planet. Protecting the natural resources and climate of our planet for future generations
3. Prosperity. Guaranteeing prosperous and full lives in harmony with nature
4. Peace. Promote peaceful, just and inclusive societies
5. Partnership. Implement the agenda through solid partnerships

Pope Francis also joined the debate on sustainable development. «We lack an awareness of our common origin, of our mutual belonging, and of a future to be shared with everyone»^[20]. These are his words in the encyclical *Laudato sii* published in 2015 with which he launched a call to all of humanity to protect our

3. The 17 Sustainable Development Goals (SDGs) signed in 2000 by the member countries of the UN.
4. Encyclical *Laudato sii*, Pope Francis, 2015.

common home, our sister Earth, which protests for the evil received «because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her»^[21]. Before him, other pontiffs - gathering the reflections of countless scientists, philosophers, theologians, and social organizations - called on international communities to undertake a search for sustainable and integral development, grateful for the teachings of St. Francis, the saint who praised the fruits of Creation in all its forms and so sang:

«Laudato si', mi' Signore, per sora nostra matre Terra, la quale ne sustenta et governa, et produce diversi fructi con coloriti flori et herba»^[22].

«Praised be you, my Lord, for our Mother Earth, which sustains us and governs and produces different fruits with colorful flowers and grass».

The unsustainable development trend by the United Nations has been monitored over the years by the Global Footprint Network (www.footprintnetwork.org/), an international research organization that provides data about the Ecological Footprint in order to help human economy operate within Earth's ecological limits. It introduced the Earth Overshoot Day that «marks the date when humanity's demand for ecological resources and



PAPA FRANCESCO LAUDATO SI'

TESTO INTEGRALE DELL'ENCICLICA

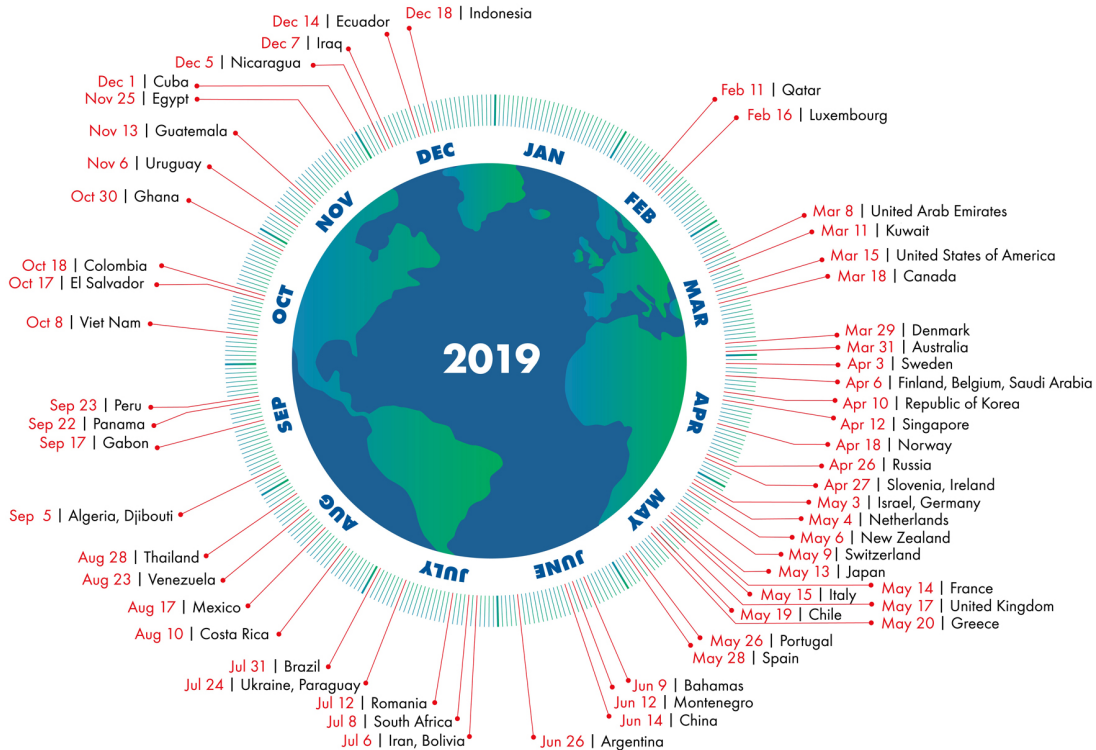


CON GUIDA ALLA LETTURA DI
CRISTINA SIMONELLI
PRESIDENTE COORDINAMENTO TEOLOGHE ITALIANE

PIEMME

Country Overshoot Days 2019

When would Earth Overshoot Day land if the world's population lived like...



Source: Global Footprint Network National Footprint Accounts 2019



services in a given year exceeds what Earth can regenerate in that year. We maintain this deficit by liquidating stocks of ecological resources and accumulating waste, primarily carbon dioxide in the atmosphere [...] To determine the date of Earth Overshoot Day for each year, Global Footprint Network calculates the number of days of

that year that Earth's biocapacity suffices to provide for humanity's Ecological Footprint. The remainder of the year corresponds to global overshoot. Earth Overshoot Day is computed by dividing the planet's biocapacity (the amount of ecological resources Earth is able to generate that year), by humanity's Ecological Footprint (humanity's

demand for that year), and multiplying by 365, the number of days in a year:

$$\frac{\text{Planet's Biocapacity}}{\text{Humanity's Ecological Footprint}} \times 365 =$$

Earth Overshoot Day

On the supply side, a city, state, or nation's biocapacity represents its biologically productive land and sea area, including forest lands, grazing lands, cropland, fishing grounds, and built-up land.

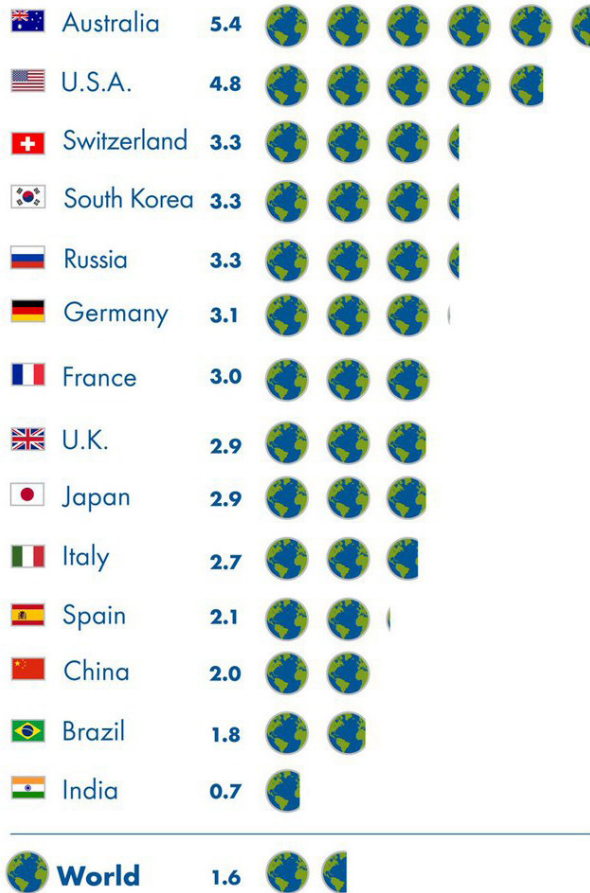
On the demand side, the Ecological Footprint measures a population's demand for plant-based food and fiber products, livestock and fish products, timber and other forest products, space for urban infrastructure, and forest to absorb its carbon dioxide emissions from fossil fuels»^[23].

5. Country Overshoot Day 2019, Global Footprint Network.

6. The ecological footprint of a country.



How many Earths do we need if the world's population lived like...



Source: Global Footprint Network National Footprint Accounts 2016

In 2019 the Earth Overshoot Day fell on July 29th: this means that the entire globe has a deficit of resources towards the earth equal to 43%. This date represents only an average of the several Country Overshoot Days of the analyzed nations: for this reason we can compare them with each other and evaluate which ones have a good behaviour towards the Earth and which ones not. According to the data collected by the Global Footprint Network, in 2019, the country with the best sustainable behaviour is Kyrgyzstan, that finishes its resources on 26th of December. The worst is Qatar, which Overshoot Day fell on 11st of February. For Italy, it's May 15th.

An article of the FASDA^[24] pointed out that, according to the data of WWF, the total biocapacity of the Earth amounts to 12 billion gha (global hectare) ie 1.8 per capita, while the ecological footprint of humanity exceeds 18 billion (2.7 per capita). At present, we need just over 1.7 "Earth Planets".

The Global Footprint Network gives access to its official website (<https://data.footprintnetwork.org/#/?/>) to a database where it is possible to verify the reserve or deficit of biocapacity for each country in the world from 1961 to 2016. The assumed positive (reserve) or negative (deficit) value is calculated by subtracting to the biocapacity per person the ecological footprint per person of the reference country. As each country differs in size and population, the biocapacity per capita varies from state to state. For



ECOLOGICAL
DEFICIT/RESERVE



TOTAL ECOLOGICAL
FOOTPRINT



ECOLOGICAL FOOTPRINT
PER CAPITA

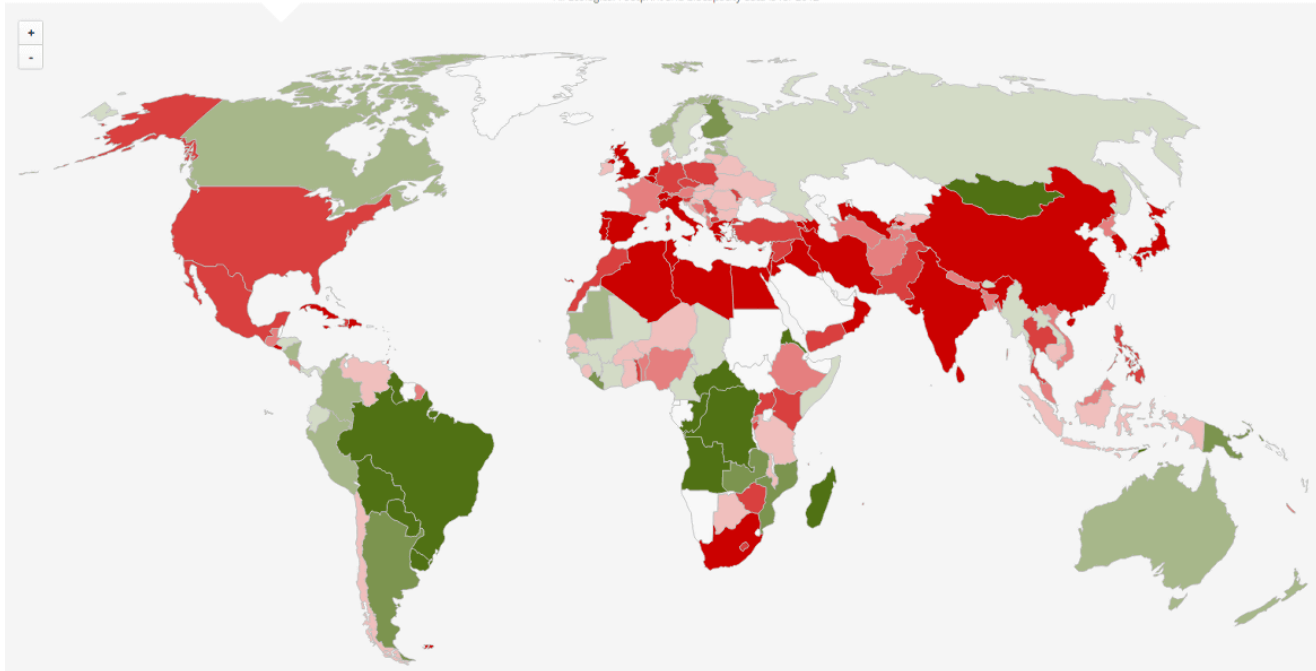


TOTAL BIOCAPACITY



BIOCAPACITY
PER CAPITA

All Ecological Footprint and biocapacity data is for 2012



8

7. How many Earths do we need if the world's population lived like..., Global Footprint Network 2016.

8. The ecological deficit or reserve of the world's countries, Global Footprint Network 2016.

example, in Italy, it amounts to 0.9 gha while in France it is 2.4 gha. Consequently, an Italian citizen will have to request a lower ecological footprint than a French one to remain in the reserve status. Taking instead into consideration the worldwide biocapacity per capita (1.8 gha) it turns out that Italians and French (both needing 4.4 gha of ecological footprint) consume two and a half times more than they could.

9. Personal Overshoot Day calculator, Global Footprint Network. How many Earths would we need if the world's population lived like you?
10. The virtual shopping cart, WWF 2009. In the picture the final environmental receipt with the personal annual water and carbon footprint.
11. A scene from the short film "Where is Water?" by Steve Cutts, UNESCO WWAP. It shows how many liters of water do we need to have ordinary things in everyday life.

Furthermore, the Global Footprint Network allows all of us to find out when it is our personal Overshoot Day and therefore how many planets we need if everyone lived like us. Just use the ecological footprint calculator tool at www.footprintcalculator.org/.

But how is it possible to be able to finish all the resources in so little time? Actually, we must think that fertile land is not only necessary for food, but also for clothing that uses cotton, for furniture that uses timber, for buildings that occupy soil, for medicines that use medicinal plants, for the means of transport that emit carbon dioxide. «We must remember that 60% of the ecological footprint of humanity is determined by the absorption of carbon dioxide [...] we produce 36 billion tons of it every year, while the system of forests and oceans is able to absorb 20, an annual negative balance of 16 billion tons that accumulates in the atmosphere and increases the earth's temperature with serious consequences on the climate»^[25]. In 2009 WWF, in collaboration with the University of Tuscia, the II University of Naples and Mutti SpA, launched the virtual shopping cart (www.improntawwf.it/carrelloENG/index.php), a tool capable to provide a picture of the environmental effects of our behavior and our food choices. Nowadays all foods on the market allow us to evaluate their energy value, and it is less easy to evaluate and compare the environmental weight of different foods such as fish, meat, milk and derivatives, legumes, fruit,



9



10



and vegetables. This online calculator allows us to have an assessment of the impact of food - with its environmental receipts - using two indicators representative of water consumption and greenhouse gas emissions: the water and carbon footprint.

The water footprint of a product is the total volume of fresh water used to produce the product itself, calculated throughout the production chain. It is based on the principle that, in addition to the water directly consumed to obtain a product (raw material), it is also necessary to calculate the volume of water needed to make this product available for consumption - called "invisible" water - from the procurement of raw materials to their transformation, packaging, transport. «In our global economy, each

consumer on average 'eats' as much as 5 000 litres of water every day (ranging from 1 500 to 10 000 litres per day, depending where you live and what you eat). [...] 8000 are needed for a pair of cotton jeans, i.e.»^[26]. The water footprint is the sum of three components - the blue, green and grey footprint - and is thus defined by the Water Footprint Network^[27]:

1. Green water footprint is water from precipitation that is stored in the root zone of the soil and evaporated, transpired or incorporated by plants.
2. Blue water footprint is water that has been sourced from surface or groundwater resources and is either evaporated, incorporated into a product or taken from one body of water and returned to another, or returned



12. The food miles, by Sharpenson Ltd/ science Photo Library. It represents the environmental and financial cost of transporting food.

13. Global results of the Food Sustainability Index 2017, BCFN. France ranked 1st.

12

at a different time.

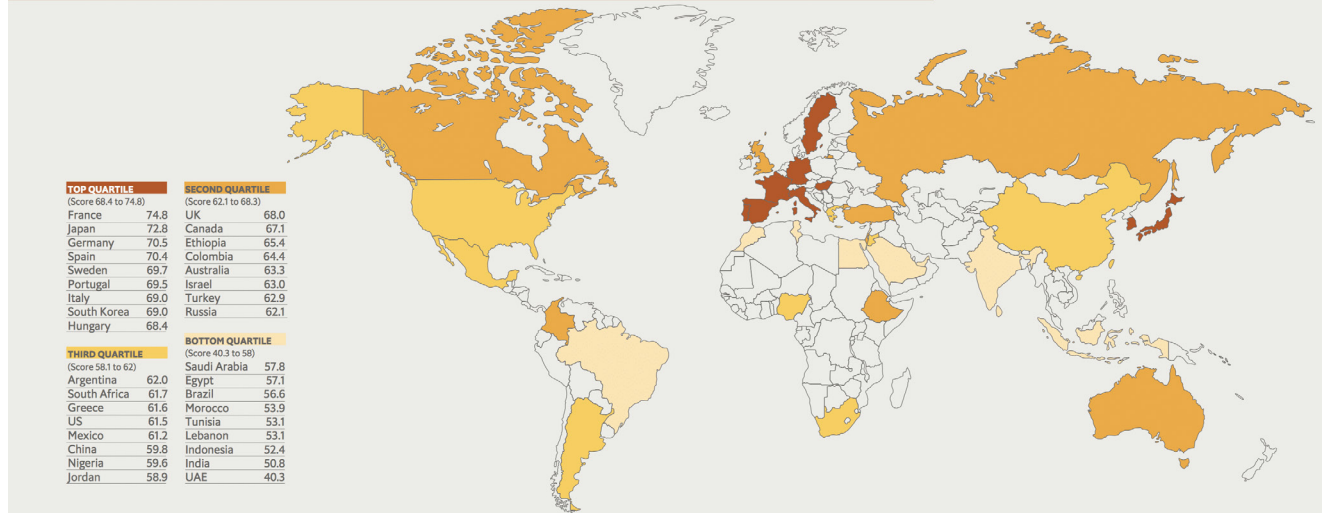
3. Grey water footprint is the amount of fresh water required to assimilate pollutants to meet specific water quality standards.

The carbon footprint is an indicator that measures the amount of greenhouse gas produced by our activities, with reference to carbon dioxide (CO₂) calculated over the entire life cycle of the system being analyzed. The carbon footprint of food is an estimate of all emissions

caused by production (such as agriculture or breeding) and from distribution to the consumer up to the disposal of packaging. Let's take the example of a tomato: the production in the greenhouse of 1 kg of tomatoes releases 3.5 kg of CO_{2eq}, while the same quantity produced in the field less than 0.05 kg, a good 70 times lower!

The carbon footprint is linked to the concept - proposed for the first time by professor Tim Lang in the 1990s - of food miles. They consider the distance that our food travels from the place of production to the table and attribute

GLOBAL RESULTS

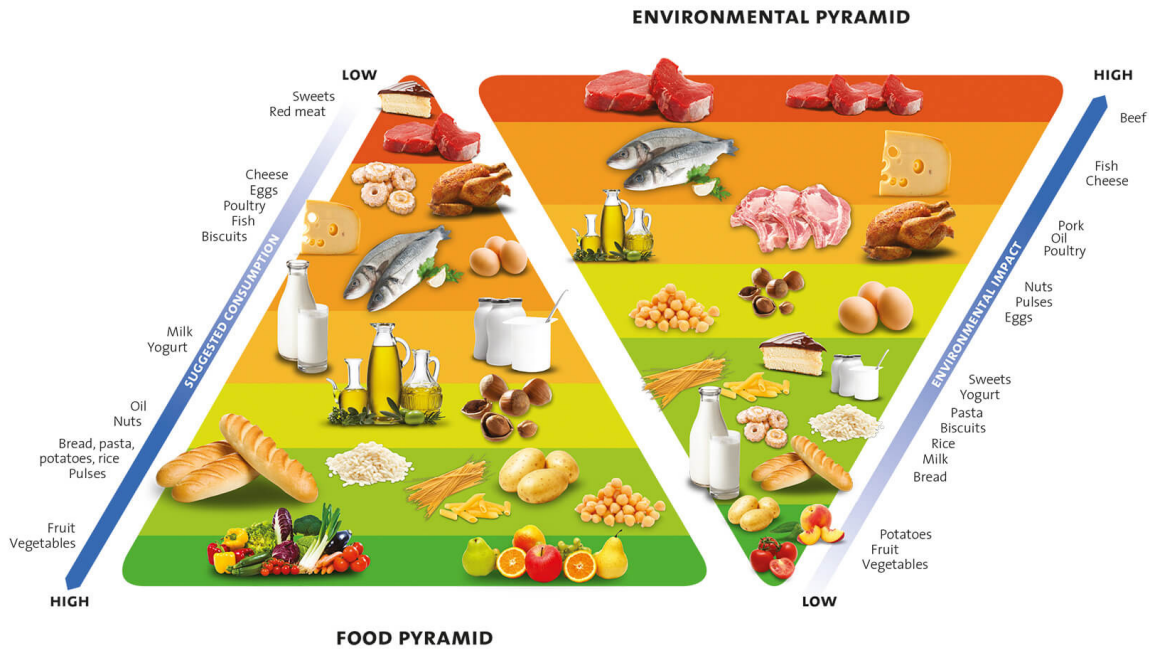


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an environmental cost to the transport of a product. «A study carried out in the State of Iowa showed how on average the fresh vegetables and fruits that are marketed in that state and that come from conventional circuits have traveled for about 2414 km [...] The same study has shown how the consumption of fuel in the conventional commercial system is between 4 and 17 times higher than that of a system based on the regional product market»^[28]. The Barilla Center for Food and Nutrition (BCFN) questioned how much food affects our ecological footprint. According to one of his studies, food accounts for about 26% of the human ecological footprint. From 2016, the BCFN publishes an annual report called the Food Sustainability Index (available at www.barillacfn.com/it/food_sustainability_index/). It assesses the sustainability of food systems in 67 countries by considering three key aspects: sustainable agriculture, nutritional challenges and loss, and food waste. In the 2017 ranking of the FSI, France ranked 1st in the group of 35 countries with high per capita income. But is there anything else we can do? «If the consumption

of low environmental impact foods was preferred around the world, balanced calorie diets were followed and food waste reduced by 50%, the human ecological footprint would decrease by 16%, delaying the Overshoot Day by 42 days»^[29].

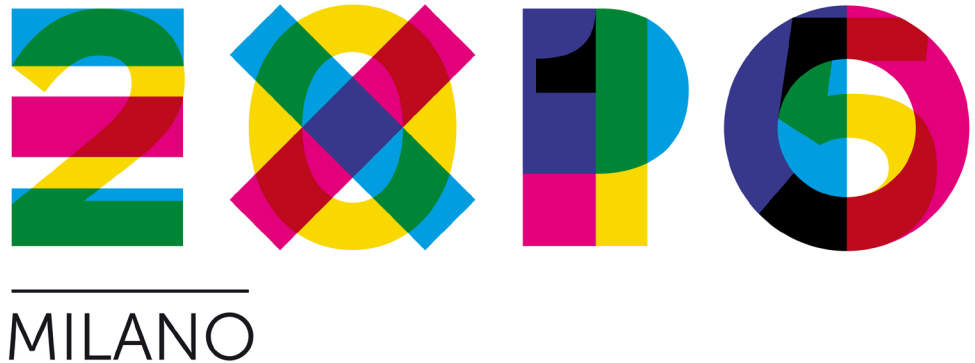
Furthermore, the BCFN Foundation has developed the model of the double food and environmental pyramid. It demonstrates a very close relationship between two aspects of each food: the nutritional value and the environmental impact generated in the production and consumption phases. Foods with a lower environmental impact are also recommended by nutritionists for our health, just as foods with a high environmental footprint are to be consumed in moderation due to health effects. At the top of the pyramid is the beef meat. Let's try to explain why. A beef steak comes from a bovine that lived for a few years on a farm, fed on cereals and fodder that were grown in fields sown, irrigated, fertilized and protected from the use of pesticides, in turn artificially produced by chemical companies who have consumed



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energy and released pollutants for the environment. For these reasons, livestock represents the second cause of climate change. The UNESCO WWAP short film called *Where is Water?* - produced and animated by Steve Cutts (www.youtube.com/watch?v=b1f-G6v3voA) - shows us how much the water footprint of a 300-gram beef steak from breeding to slaughtering. It reaches a value of 5000 liters of water. This means that if we had 5 steaks for family dinner we would consume the equivalent of water from an Olympic pool!

14. Model of the Double food and environmental pyramid, BCFN.



15

The Italian sustainable commitment: the Expo 2015 revolution

Expo 2015 held in Milan marked a turning point for Italy, placing it at the center of the debate on food sustainability. The exhibition, with the theme Feeding the Planet, Energy for Life, gathered countries from all over the world to bring them closer to the major problems linked to food: «the production and consumption of food, their impact on the climate, on the environment and societies through the economy, resource management, energy, policies. Together with food education, innovation, protection of biodiversity, the commitment to a sustainable future has been among the profound values of the event»^[30].

At the end of the great exhibition, the Milan Charter was delivered to the UN, a declaration that aims to remind every citizen of the obligations towards future generations and to provide a valuable contribution to the Sustainable Development Goals adopted by the United Nations. From the official document^[31], signed by 1.5 million people, the following points emerge:

- lack of access to healthy, sufficient and nutritious food, clean water and energy considered as a violation of human dignity
- recognition of the responsibility of the present generation towards the protection of the right to food for future generations;
- need to manage the planet's resources in a fair,

rational and efficient manner

- fundamental agricultural activity not only for the production of foodstuffs but also for its contribution to designing the landscape, protecting the environment and the territory and conserving biodiversity.
- commitment to the fight against the sexual disparity in agricultural production, against hunger, against food waste and the reduction of terrestrial and marine biodiversity.

15. Expo 2015 logo, design by Andrea Pappa.

CartadiMilano

“Salvaguardare il futuro del pianeta e il diritto delle generazioni future del mondo intero a vivere esistenze prospere e appaganti è la grande sfida per lo sviluppo del 21° secolo. Comprendere i legami fra sostenibilità ambientale ed equità è essenziale se vogliamo espandere le libertà umane per le generazioni attuali e future.”

Human Development Report 2011

16. The introduction of the Milan Charter.

17. Food waste.

«Approximately 1.3 billion tons of food is lost or wasted every year. That is about **one-third** of all the food produced for human consumption in the world»^[35]

FAO, 2018

To sum up, people asked governments, institutions and international organizations to commit to adopt measures to guarantee the right to food and food sovereignty that is «the right of peoples to nutritive and culturally adequate, accessible foods, produced in a sustainable and ecological way, and also the right to decide their own food and production system»^[32].

A first signal of action towards the fight against waste in Italy was felt with the Gadda Law of 2016. «It has been heralded as “one of the most beautiful and practical legacies” of the Expo Milano 2015 by Agriculture Minister Maurizio Martina»^[33]. The Italian law focuses on incentives and bureaucratic simplification and allows overcoming the difficulties that many donors encounter: «Now businesses [...] won't face sanctions for giving away food past its sell-by date, and will pay less waste tax the more they give away. Farmers will be able to give away unsold produce to charities without incurring costs»^[34]. Besides, the law has encouraged the use of the doggy bag which allows diners to take home the food they have not eaten at the restaurant.

But we can do even better. France, again in 2016, approved an anti-waste law by adopting a harsher penalty policy, rather than an incentive one, becoming the first country in the world to prohibit supermarkets from throwing away or destroying unsold food.

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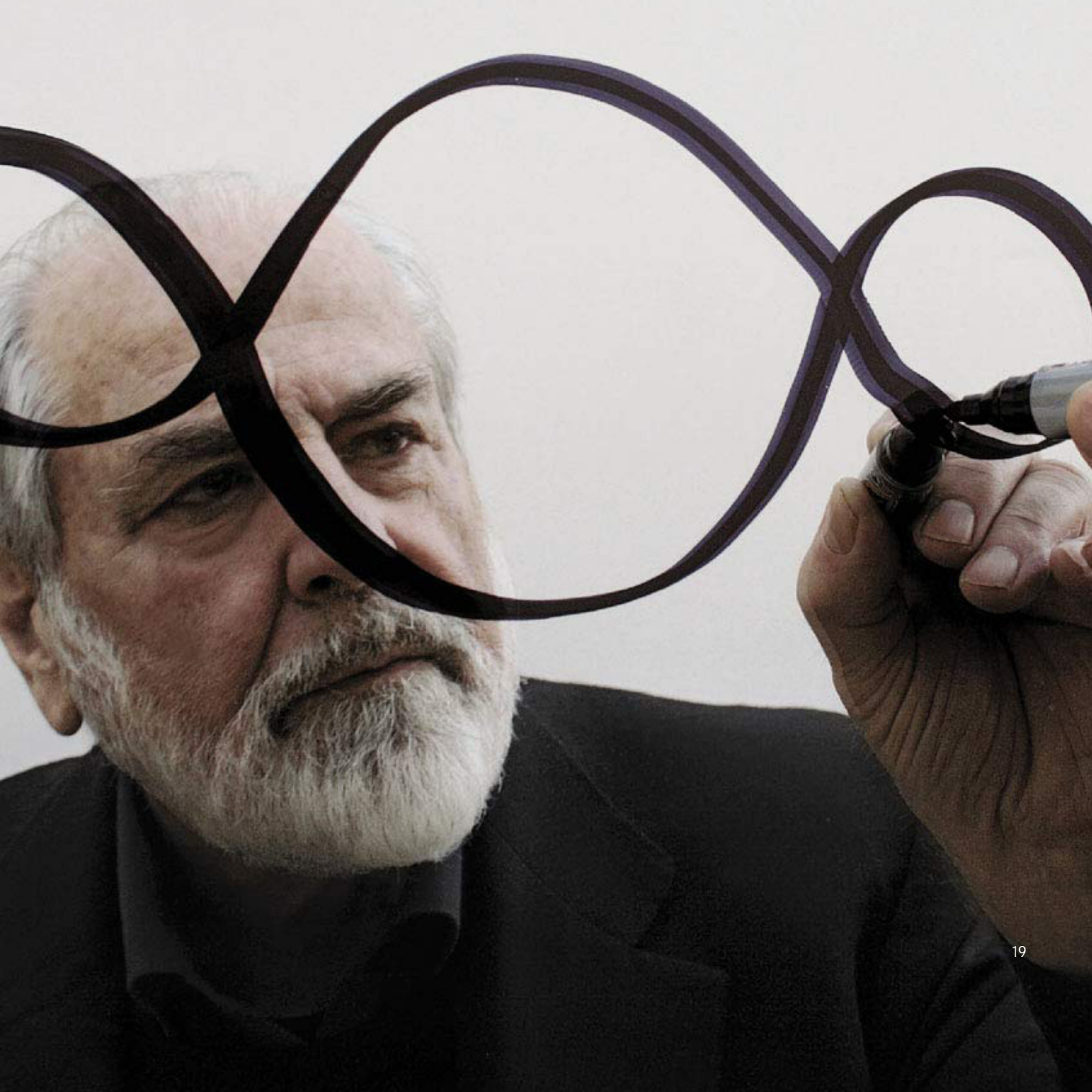
18. Let Eat Bi logo.
19. The drawing of the Third Paradise in the mirror, by Michelangelo Pistoletto.

In the Italian scenario aimed at environmental sustainability, a leading role is also taken by art. Cittadellarte, founded by Michelangelo Pistoletto in 1998, is a non-profit organization whose aim is to place contemporary art in direct interaction with different sectors of society, to positively influence the social and intercultural evolutions and transformations underway. The institution represents a valid example of how art and design take on their own responsibility in the social sphere. It undertakes to translate into reality the concept of Third Paradise, «implying it in every social sector and in every type of organization, starting from the single individual to top institutions like the UN»^[36]. Indeed, Cittadellarte foundation with the Third Paradise adopted the 17 SDGs. But what is the Third Paradise? «It is the fusion between the first and second paradise. The first is the paradise in which humans were fully integrated into nature. The second is the artificial paradise, developed by human intelligence to globalizing proportions through science and technology. [...] The Third Paradise is the third phase of humanity, realized as a balanced connection between artifice and nature. The Third Paradise is the passage to a new level of planetary civilization, essential to ensure the survival of the human race. To this purpose we first of all need to re-form the principles and the ethical behaviours guiding our common life»^[37].



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Conjugation of the Third Paradise in the agriculture field is the project Let Eat Bi, «born from the need to realize concrete projects for a responsible transformation starting from art. [...] Let Eat Bi brings together, promotes and helps organize the resources and the activities (knowledge, actions, projectualities) operating on the Biellese territory whose common denominators are the care of the land and of the social and natural landscape»^[38]. One of the main projects is AbanDonated Lands, launched in 2017, which aims to foster the meeting between the landowners who do not want or can no longer take care of and those citizens who would like to cultivate land but do not have it available. Through the web platform (www.terreabbandonate.com), demand and supply meet to stimulate the creation of good territorial practices.



The sign of the Third Paradise was traced from Pistoletto's foundation also during the Expo 2015. The SuperOrtoPiù project is a clear example of urban agriculture: it is a large hanging urban garden of 750 square meters and built on the roof of one of the buildings of SuperstudioPiù in Milan in the Tortona area. Launched in 2014 during the Design Week and made permanent during Expo 2015, SuperOrtoPiù represents a space where agriculture and culture come together, where a lawn and a vegetable garden make the fruits of the earth in the city but also become venues for debates and meetings on themes of food, design, and sustainability. «The design and architecture must bring the gardens back to the cities - explained the curator of the project, Fortunato D'Amico - for now this installation may seem a provocation but I think it is also a reality, and a need, which is always growing more in the cities [...] a new design policy is needed because the world of living and eating is changing and the urban spaces will have to be adapted»^[39].

The wave of innovation at Expo 2015 has also touched the world of large-scale food distribution. In fact, at the exhibition, Coop launched the Supermarket of the Future, a place where the way of food shopping through technological innovation is revolutionized. Thanks to the interactive screens with Kinect Microsoft motion detection technology, with a simple touch or with the movement of a hand it is possible to display nutritional values, origin of

raw materials, seasonality. «We have given substance to our idea of the future: greater ease of access to product information, available in an even clearer, immediate and transparent manner, thus enabling more informed purchasing choices»^[40]. The success received was such that the Supermarket of the Future was made permanent at the Bicocca Village in Milan.

20-21. The Supermarket of the Future, Coop, Bicocca Village, Milan.



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22. The sign of the Third Paradise hosted in the gardens of Venaria Reale palace, during the Ortofestival event.
23-24-25. SuperOrtoPiù, Tortona District, Milan.



23



24







Agriculture among biodiversity and GMO culture

«With biodiversity for food and agriculture, we mean all plants and animals - wild and domestic - that provide food, feed, fuel, and fiber. And also the myriad of organizations that support food production through eco-systemic services - called associated biodiversity. This includes all the plants, animals and microorganisms (insects, bats, birds, mangroves, corals, marine plants, earthworms, fungi, bacteria) that maintain fertile soils, pollinate plants, purify water and air, and maintain healthy fish and forest resources, and help fight pests and diseases of crops and livestock [...] The key factors of biodiversity loss cited by most countries are: changes in the use and management of land and water, followed by pollution, over-exploitation, climate change, population growth, and urbanization»^[41]. Biodiversity in agriculture has been threatened since the 1950s with industrialization. Agriculture became an activity increasingly disconnected from the local ecosystem, of an intensive nature and with extensive monocultures. Research on new GMO crops started in the 1970s revolutionized food consumption patterns and introduced the first genetically modified products into supermarkets in the early 2000s: biodiversity began to decline in the face of homologation of production and cropping systems. «The promise that GMOs would save the world from hunger has been completely disregarded: since commercialization began (now more than 15 years



Slow Food®

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ago) the number of hungry has only grown, just like the turnovers of the companies that produce them»^[42]. So says Slow Food, the international non-profit association committed to restoring the right value to the food, in respect of those who produce, in harmony with the environment and ecosystems. In the following points he explains why «promotes and defends a culture free from GMOs:

- contamination: cultivating GMOs safely, in Italy, is impossible because we have small farms and we do not have enough natural barriers to protect organic and conventional crops, GM production cannot be confined to the surface of the field where it is grown.
- freedom: with genetically modified seeds the multinational is the owner of the seed: the farmer must

26. Slow Food logo.

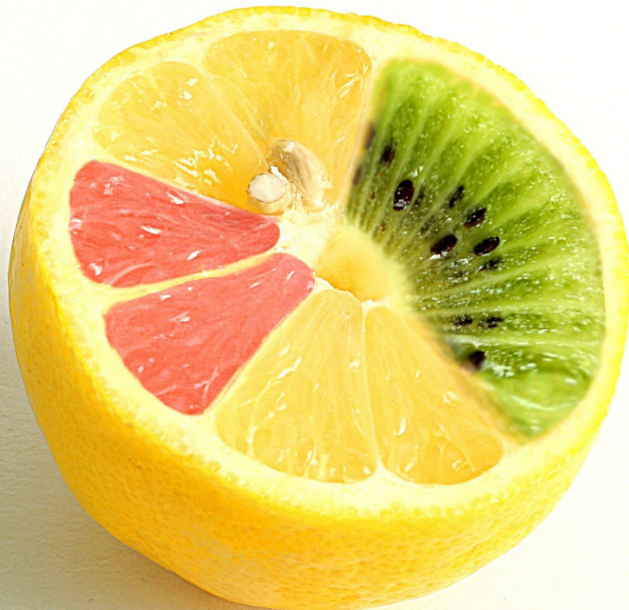
27. A provocative picture of a GMO lemon.
«A genetically modified organism (GMO) is any organism whose genetic material has been altered using genetic engineering techniques»^[44].

call on them with each new sowing and it is forbidden to attempt varietal improvements unless expensive royalties are paid.

- economy and culture: GM products do not have historical or cultural links with a territory; Italy bases most of its agri-food economy on the identity and variety of local products.
- biodiversity: the transgenic crops impoverish

biodiversity because they need large surfaces and an intensive monoculture system, consequently the reduction of flavors and knowledge.

- eco-compatibility: despite the GMOs are more resistant to some parasites and herbicides, some cultivation diseases can be seriously fought only with crop rotation, and resistance to a herbicide leads to a more casual use of the same in the fields.
- precaution: about thirty years from the beginning of the study on genetically modified organisms, the results in the agri-food sector concern only 3 products (corn, rapeseed, and soy). In fact, plants do not tolerate genetic modifications and this science is still rudimentary and partly left to chance: Germany and France have banned some GMO crops
- progress: It is increasingly clear for consumers, governments and researchers, the role of small-scale agriculture in protecting the territories, defending the landscape and combating global warming.
- hunger: The UN speakers on the problem of hunger say that family farming defends the population groups at risk of malnutrition. The development of agricultural productivity on a small scale (which has hardly chosen GMOs) leads to the improvement of the working and living conditions of small family farmers. It is clear that family farming and artisanal productions are the most sensible way to reach the zero hunger goal»^[43].



27

28. A wheat field. Photo by David Becker on Unsplash.

29. A farmer's market in Venice. Photo by Annie Spratt on Unsplash.

According to reports from the FAO (United Nations Food and Agriculture Organization) in Italy «at the end of the last century more than 400 varieties of wheat were cultivated, while currently in the National Register of Varieties of Agricultural Species there are registered about 200, of which the first 10 alone cover 66% of the seed produced and certified. [...] Obviously, the impoverishment of biodiversity that is registered at a national level is now common to the whole planet, just think that of the 10,000 species cultivated over the centuries, today only 150 are cultivated for commercial purposes and only 12% of these provide the 80% of the food on a planetary level»^[45]. «In Italy, three out of four varieties of fruit have disappeared from the table in the last century, also due to the modern distribution systems that favor large quantities and the standardization of supply. [...] In the last century, there were 8,000 varieties of fruit, whereas today comes to just under 2,000. Of these, 1,500 are considered at risk of disappearance»^[46]. A process of reacquisition of lost agricultural species is difficult to implement and sometimes impossible given the irreversible disappearance of some of them: therefore it is now more correct to speak of species conservation today. «Whoever wants to use old local varieties today is obliged to call on very different subjects: nurseries, farms, "field" neighbors and in some cases to research institute operating within regional safeguard programs of local varieties and breeds, but which are not



**«of the 10,000
species cultivated
over the centuries,
today only 150
are cultivated for
commercial purposes
and only 12% of
these provide the
80% of the food on a
planetary level»**



always available to collaborate with individual farmers or enthusiasts. There is also a widespread network of seeds savers that belong to the Rural Seeds Network (www.semirurali.net/) with which it is possible to get in touch to promote the protection of biodiversity in a very concrete way»^[47].

Therefore, prevails the need to return to a local agriculture and to educate to a critical consumption of the food against the standardization and homologation of the agri-food products imposed by the large scale distribution. Recently, advances have been made by the systems developed where new models of production and consumption of local products have spread, which favor the short supply chain, making the distance between producer and consumer smaller. We are moving towards

a “reterritorialization” of production and consumption. Today’s alternative food networks include:

- Farmers’ markets, which promote sustainable, seasonal and local consumption products, without excessive waste;
- Solidarity Purchase Groups (SPG, in Italian GAS, “Gruppo di acquisto Solidale”), direct purchases from producers based on agreements between groups of citizens and the producers themselves;
- Community Supported Agriculture (CSA), preventive purchase agreements by an urban consumer community of a predetermined part of a farmer’s annual production;
- Urban agriculture, which brings environmental and energy benefits, integration and social inclusion.



30

«According to FAO, urban agriculture is a “way out of food poverty” because it allows safe access to food, especially fresh vegetables, and fruits, even to the poorest or those on low incomes. In Italy, the green areas destined for the construction of public gardens, in the capital cities, have now reached an extension of almost 2 million square meters. [...] In the Stability Law of 2018, the “green bonus” has been included, which provides tax deductions of 36% for the expenses incurred for “greening” works: among the possible applications of the green bonus is also the creation of urban gardens for the production of food plants in the condominium spaces»^[48].

30. An urban garden in Milan.

31. Carlo Petrini, president of Slow Food.

«So, shopping in a local market, choosing artisanal products, reading labels better, eating less meat and preferring native varieties is not something “foodster” or extremist people, on the contrary it is the only right way to stay in the world, **“good for the planet and good for our health”**»^[49]

Carlo Petrini



Another consideration is suggested by Lucia Piani - researcher and teacher at the Department of Human Sciences of the University of Udine - who, in her document *Modelli di consumo alimentare tra globale e locale*^[50] (Models of food consumption between global and local), reflects on how the geography of the territory may influence the process of standardization of agricultural production. She explains that typical agricultural productions have been preserved, for the most part, where mechanized agricultural production was not convenient. In fact, to produce a lot using mechanical means and chemical products, the soil needs to be flat. Therefore, agricultural progress has affected the typicality more in the lowland areas while in the most disadvantaged areas from the environmental point of view local productions have been preserved. The custodians of agricultural biodiversity, those who maintained local knowledge and production, were mostly women and men of the mountains and hills in the developed countries.

This leads us to consider heroic agriculture as a type of production that is highly favorable to safeguarding agricultural biodiversity. It is thus defined because the fruits of the crops are born and grow using ancient techniques, far from the paradigms of modernity and above all in hostile environments: mountain agriculture, sea agriculture, inland areas at risk of abandonment,

landslides and fires, taken care of by those who cultivate the earth like two centuries ago. Just think of the crops in the terraces overlooking the sea. The greatest wealth of heroic agriculture is the rediscovery of agricultural varieties that have evolved with the environment and that have matured over the centuries incredible characteristics of resistance (for example to a disease) so that their study opens up new horizons.

But there is also a more modern heroic agriculture born in recent decades that does not refer to secular techniques but rather to innovative engineering methods of cultivation: it is agriculture in the desert, where extreme heat, combined with water and moisture scarcity in the air make the growth of plants complicated. Nevertheless, it is a form of agriculture that is growing, thanks also to the considerable international investments collected. In the article 10 ways to cultivate in the desert of the Expo 2015 magazine^[51] 10 are illustrated examples. Here are some:

- The Sahara Forest Project in Qatar. Cultivation plants can be built near the coast combining the technology of greenhouse water with that of thermodynamic solar; the proximity to the sea makes it possible to guarantee the constant presence of water that is sent to a desalination plant via a solar energy pump. [...] The plant has already given its first crop of cucumbers.



32

- Green points in Saudi Arabia. In a series of satellite images, NASA has documented the evolution of agricultural activity in the Saudi desert from 1987 to present, showing the emergence of huge green dots. Each area is a field of about one km in diameter, sprayed with water thanks to rotating on a central pivot systems that pump underground water. It is a reserve

that cannot be reconstituted, having formed before the last ice age, about 20,000 years ago, and the rain (in the Saudi desert about 100/200 mm of water per year) normally does not reach the underground aquifers. Geologists estimate the period during which pumping will be economically viable in 50 years.



33. Green points in the desert of Saudi Arabia.

Well, in light of these facts, what we can do is to rethink our production system, and consume in a more critical and sustainable way, avoiding buying products that we don't really need, using smarter mobility systems, avoiding waste, making a waste collection more and more accurate.

Simply put, we should seriously start taking care of the Earth, which is not ours, it is only on loan.

06

06. Storytelling in restaurants

Sometimes what makes a restaurant better than others is the ability to narrate a story as well as serving good food: making storytelling at the dining table allows cooks to leave a good memory in the minds of their guests and to better explain their intuitions and their work. There are several ways to tell a story in the culinary sector and here are showed some existing examples taking two different approaches: the analogical and the digital.

Analogical: "Piatto del Buon Ricordo"

During the early 60s and the economic boom, Italy saw the birth of culinary tourism. This context made possible the brilliant idea of the advertising man Dino Villani to bring together some restaurants united in the values of the regional cuisine that offered a memory of the hospitality and the specialty of their kitchen: the "Piatto del Buon Ricordo" (*Plate of Good Memory*), a souvenir of flavors and particularly pleasant moments. So, in 1964 the *Unione Ristoranti del Buon Ricordo* (<https://buonricordo.com/>) was born in Milan accounting initially just 12 restaurants. Each of them had its own "Piatto del Buon Ricordo", hand-made and with its bright colors depicting local scenes and recalling the joyful spirit of good food and the sense of genuine hospitality of the restaurant visited. The guests could directly eat on those plates and then bring them home hanging on the wall of their house kitchen. Nowadays, the restaurants of good memory are more than

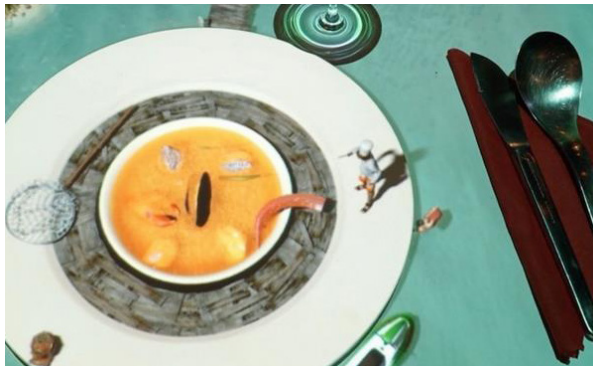
100, scattered in Italy and in foreign countries like Japan, China, Luxemburg and Austria.



1. Piatto del Buon Ricordo.
- 2-3. Le Petit Chef, Skullmapping. The small chef cooks directly on the dinner table in front of the guests.
4. SubliMotion video mapping diner experience, Ibiza.



2



3

Digital: video mapping dinner tables

Filip Sterckx and Antoon Verbeek over at SkullMapping have brought the video mapping into the restaurants' tables. Using the technologies of the late Panasonic projectors, they have designed funny videos about a mini-chef preparing the dishes that the clients are going to eat. In the author's own words: «For this project, we experimented with projection onto a dinner table. By making use of a combination of 3D animation and motion capture, a miniature chef turns your dish into a projected grill. Bon appétit!»^[15]. It's a brilliant way of making foodtelling with the aim of entertaining the customers during the waiting time in a funny approach.

SubliMotion, opened at the Hard Rock hotel in Ibiza (Spain), is the most expensive restaurants in the world asking more than \$2,000 a person. The guests - only 12 admitted each evening - can experience an immersive multisensory 20-course meal prepared by master chef Paco Roncero thanks to the fusion of projection mapping technology. The clients will be transported, thanks to images, projections, music, lights and perfumes games in a different environment for each dish served. «One minute you are in a room in Versailles, and a little later in a field of hay, in summer, under the sun. Blink your eyes for a moment and you will find yourself surrounded by fluttering butterflies»^[16].





07

07. Concept design

The thesis has the aim to create a track (focusing on the MI.TO area between Milan and Turin, between Lombardy and Piedmont) in which to imagine possible paths and narrations, where the objects through IoT technology will become tools to create new stories and generate unexpected relationships.

Starting from the analysis of the Italic character Lucio Fontana (the source) and his Italic features and relationships with the territory, I selected the touchpoints (what, whom, how, where/when) in which the sparkle can take place and defined the Italic user (the awakened): the foodies. To create the link between the two actors I have chosen Massimo Bottura as a medium. From this premises then, I designed an IoT product that allows Lucio Fontana to let the sleepy Italic discover himself being Italic.

WHAT. Looking to another dimension

I started from Fontana and his desire of looking to another dimension that he expressed with his artworks, from the canvases to the spatial environments and sculptures. To create the sparkle I used a medium between Fontana and the whom, that is Massimo Bottura: the famous Italian chef that has some similarities with the spatial artist. They both looked to the other dimension of the things and both broke the rules in their working field (Fontana destroyed the boundaries between painting and sculpting, Bottura reimaged the Italian cuisine in a modern



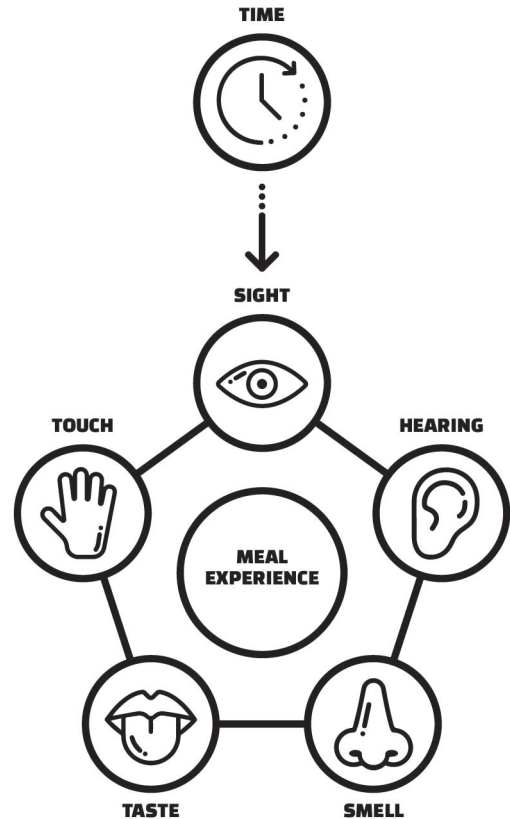
1



1. *Natura*, Lucio Fontana, 1959.
2. All the languages of the world dish (particular), Massimo Bottura.



2



interpretation). Bottura, also, is a contemporary art lover and appreciates Fontana works. In one of his recipe, he represented the sculpture *Natura* of Fontana, reproducing with food the same gesture of the artist. So what I have taken from the link between the two characters is the will of looking to the other dimension of food: what I called the “time” dimension. A dimension that stands beyond the usual five senses that one generally uses experiencing a meal, a dimension that reveals the story behind a dish; so the culture of the recipe, the inspirations, the story of the ingredients, the ecological footprint... Discovering these hidden features of the dish, I let people discover themselves being *Italic*.

WHOM. Foodies

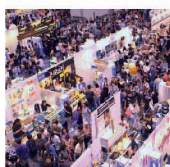
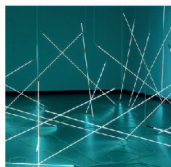
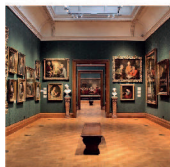
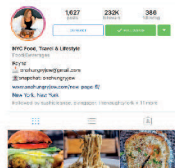
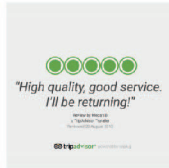
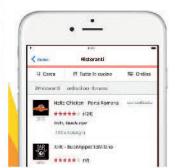
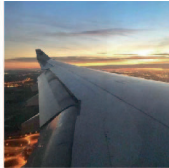
The whom selected are the foodies, people that are particularly interested in food. They do not consider eating just as a necessary act but as an exciting experience. The kitchen is their habitat: they enjoy cooking by themselves learning from cooking classes, reading recipe books or blogs and watching TV top chef programs. They bother a lot about the quality of the food they eat, providing it from organic food shops or weekly farmers market. They are interested in the culinary tourism: they follow restaurants openings and closings, wine tastings in old wineries, street food events, they make out-of-town trip to find old tavern; traveling, for them, is mainly a reason to the discover new food cultures. They are also really present in the social network world making “foodtelling”, from writing restaurants reviews to posting pictures of their dishes.

The reference foodie is Yuping, a 36 years married woman without children living in Taiwan. She is a gastronomic journalist and for this reason, she often travels to discover new food trends and taste new top restaurants. She has a high-level education and a middle-high income. She lived two years in Italy during her PhD in Enogastronomic Science and Cultures and so she has a hidden Italic soul to be awakened.



YUPING, 36 yrs
gastronomic journalist
married without children
lives in Taiwan

LIVING



INTERESTS

COMMUNICATION

FOOD



3

HOW. Foodtelling

The Foodtelling represents the storytelling related to the food world, a practice with which the foodies - or foodteller - show their food experience, in terms of making or eating, revealing some stories behind it.

In my project, to tell the story behind the dish I applied three main technologies to the project: microsensors, to detect the eating actions of the guests and the moment in which the meal is finished; electronic ink, to create the platform in which to tell the story as the meal goes on; QR code, to redirect the clients to the webpage allowing them to explore more about the dish.

3. Massimo Bottura in a scene of Netflix's *Chef's Table* showing an open cheese shape, one of the sources of his delicious dishes.

WHERE/WHEN. Osteria Francescana

The sparkle will take place in Bottura's restaurant named Osteria Francescana located in Modena. After the dish arrives at the dinner table and the guest starts to eat, the plate detects his/her movements and starts to tell the story behind the dish "forkful by forkful". Later, the plate can recognize when the food inside is finished and so show a QR code that can redirect the guest to the web page to, eventually, deepen on the dish eaten (from watching recipe videos to reading the ingredients table).

4. Interior of Osteria Francescana, Modena.



08

08. e-PLATE design



e-PLATE is an interactive dish that brings the experience of eating into another dimension.



Through the e-ink display, e-PLATE tells the diners the story of the food they are eating. The narration initially becomes poetic, narrative and "italic", where the story and the anecdotes behind the recipe are revealed in the words of the chef. When the meal is over, the dish shows information about the conscious, sustainable and social sphere. Therefore, it indicates the km traveled by food to reach the plate, the ecological footprint (water and carbon), and nutritional values. Finally, a QR code appears in the center of the plate and, scanning it with a smartphone, the diner can review all the information and learn more about the food he has just eaten.

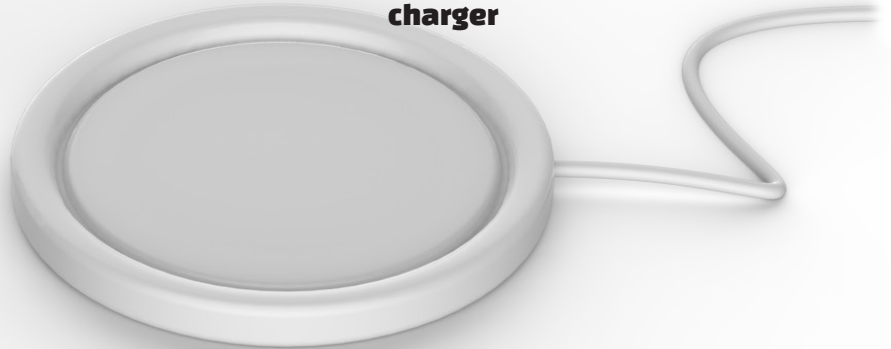
e-PLATE FAMILY





spice holder

PIR sensor



**wireless
charger**

STORY-BOARD

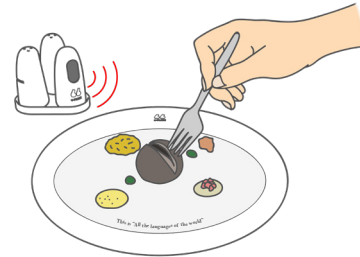
The dish arrives at your table

You begin to eat by bringing your fork close to the plate and suddenly some writing appears on the edge: they describe its story

Poetic
Narrative
Italic



1

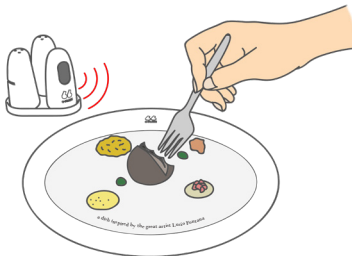


2

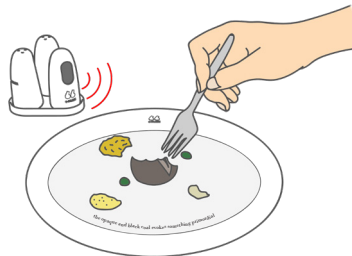
So again, every time you take a bite of food the PIR sensor perceives it and other writings appear

Thus continuing, the dish itself tells his story ...

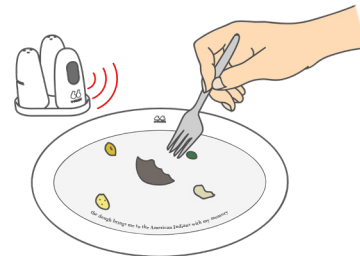
... until all the food is finished



3



4



5

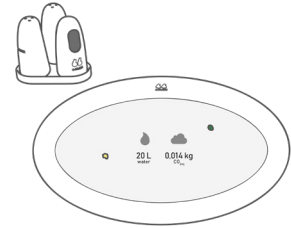
**Aware
Sustainable
Social**

At the end of the meal, and once the story is over, the dish reveals its values regarding sustainability and nutrition: starting from the food miles ...



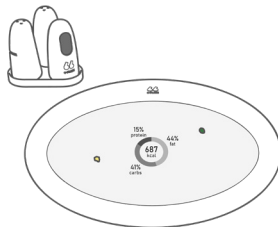
6

... to the ecological footprint - water and carbon - due to food processing ...



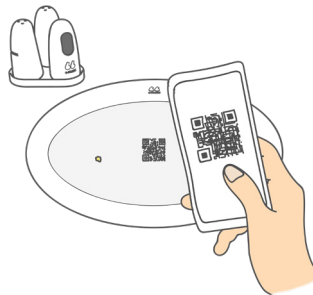
7

... up to the nutritional values taken during the meal.



8

Finally, a QR code appears in the middle of the plate and scanning it with a smartphone ...



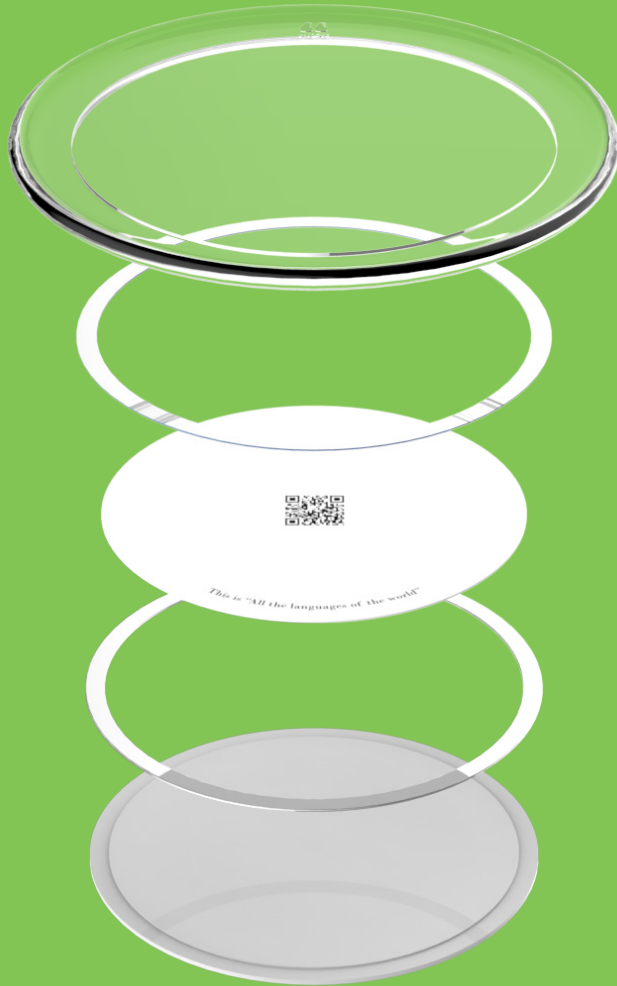
9

... takes you to a web page where you can re-read and deepen all the info just revealed. "Good, clean and fair"



10

MATERIALS



upper plate
GLASS

connection
MAGNET

display
E-INK

connection
MAGNET

bottom plate
ABS

TECHNOLOGIES

PIR SENSOR

A passive infrared sensor (PIR sensor) will detect the movement of the hand forkful by forkful.

E-INK PAPER

The e-ink technique involves the use of very small spheres inside the screen, electrically charged. Through electric fields, the spheres can be oriented to obtain the color change in the various points of the screen. This technology allows the creation of a thin, lightweight, and highly autonomous device. A charge can last one month.

QR CODE

It is used to store information intended to be read via a smartphone.



SCRATCHPROOF



WATERPROOF IPX7



WIRELESS CHARGE

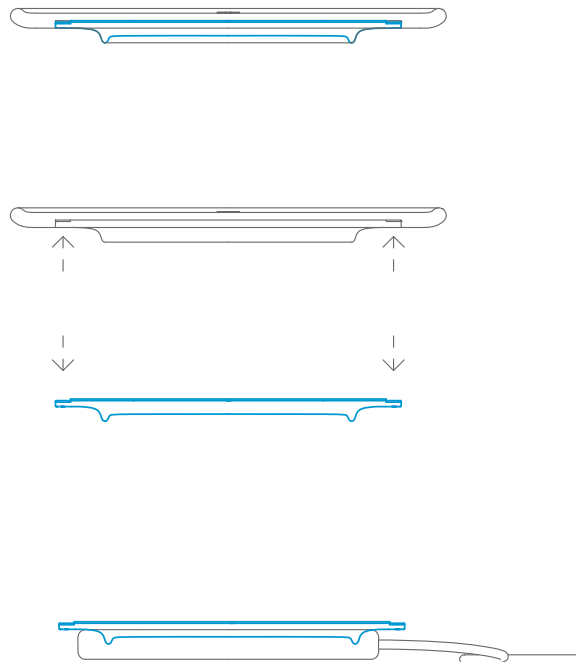
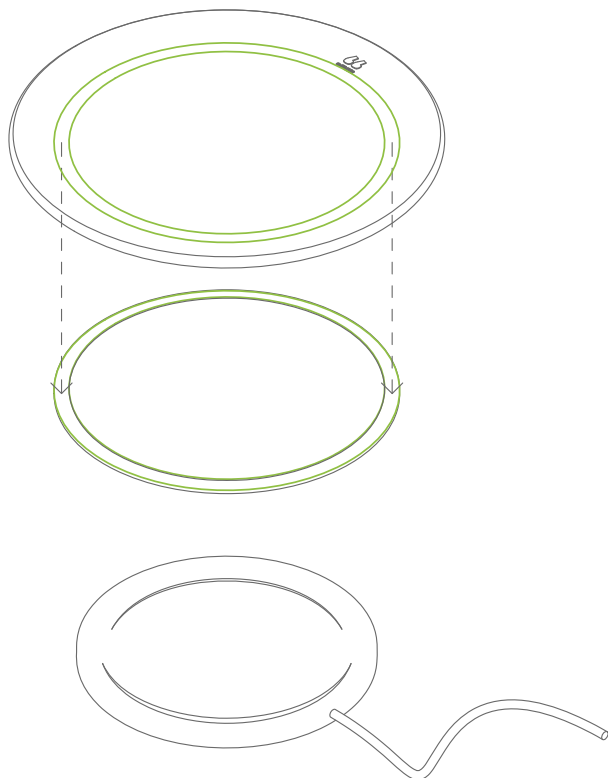
ASSEMBLY

The upper plate and the lower plate are connected to each other with two circular magnets.

This allows the dish to be divided after use so that the upper part, made of glass, can be washed in the dishwasher while the lower part, with electronic components, can be washed manually (if necessary) and attached to the charging station.

 magnets

 bottom plate



BEHIND THE DISH

After the diner finishes to eat a QR code appears. Scanning it he/she can explore the other dimension of food. So all the hidden informations behind the dish, from its story to its technical informations.





WELCOME ITALICS!

Lucio Fontana

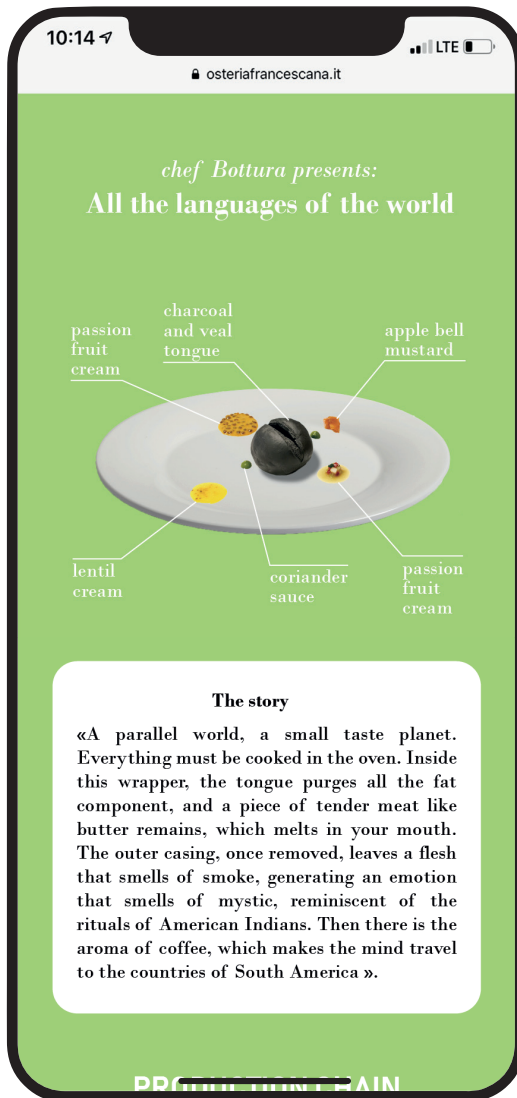
You joined the Italic community going deeper in the other dimension of food as Fontana did in art.

sponsorship

Italica Net and Schola Italica are the main sponsors to gather the Italic community. You can watch their website touching the logos.

welcome

Going on you can discover more about the dish you've just eaten.



DISH INTRODUCTION

name of the dish

ingredients

picture

story of the dish

Here is narrated the story that lies behind the dish already displayed over the e-PLATE.



PRODUCTION CHAIN

name of the ingredient

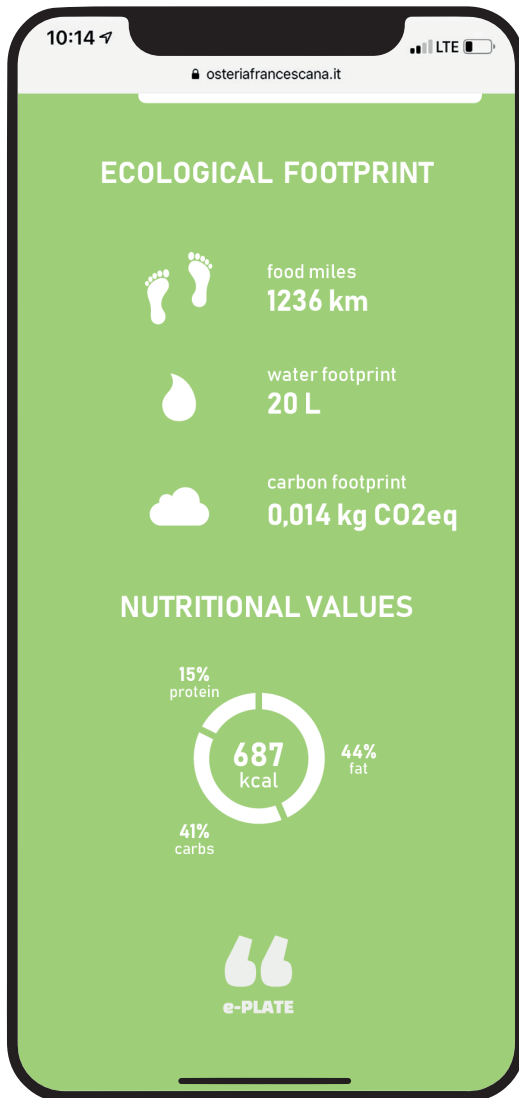
name of the supplier

supplier description

Here are collected informations about the suppliers for each ingredient of the recipe

supplier sustainable committment

How sustainable is the supplier? Which SDGs is pursuing? And how?



ECOLOGICAL FOOTPRINT & NUTRITIONAL VALUES

food miles

how many kilometers has food traveled to get to the plate?

water footprint

how many liters of water were used to produce food on the plate?

carbon footprint

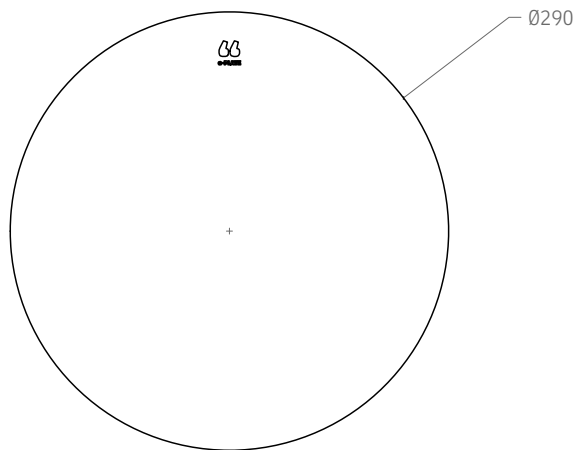
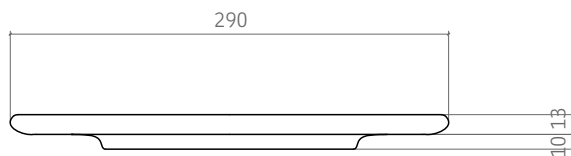
How much carbon dioxide has been emitted to produce food on the plate?

nutrient chart

total calories taken and percentage division of nutritional values (proteins, carbs, fats)

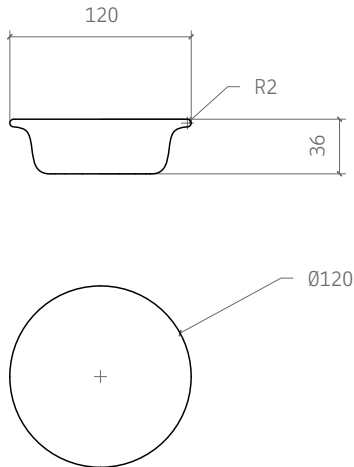
TECHNICAL DRAWINGS

flat plate

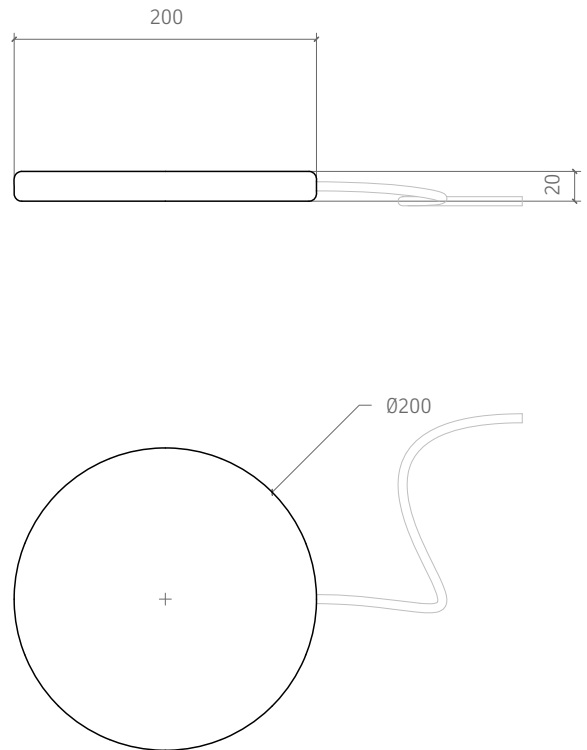


1:5 scale

soup plate

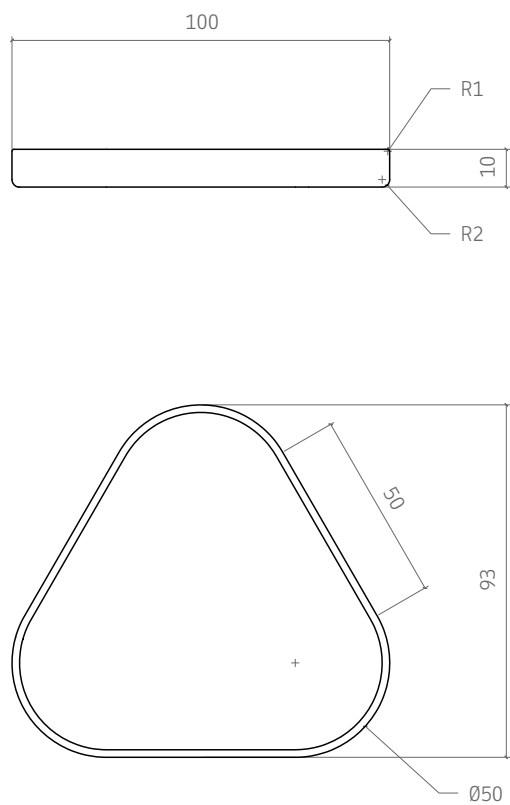


wireless charger

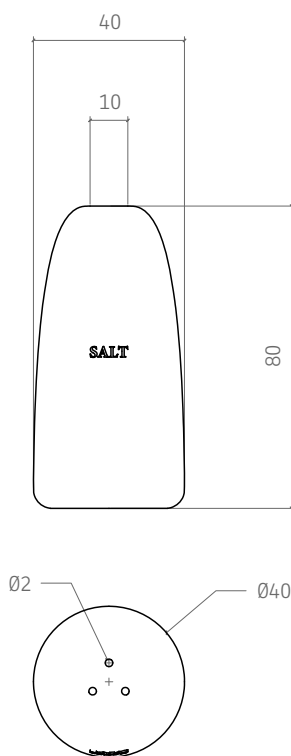


1:5 scale

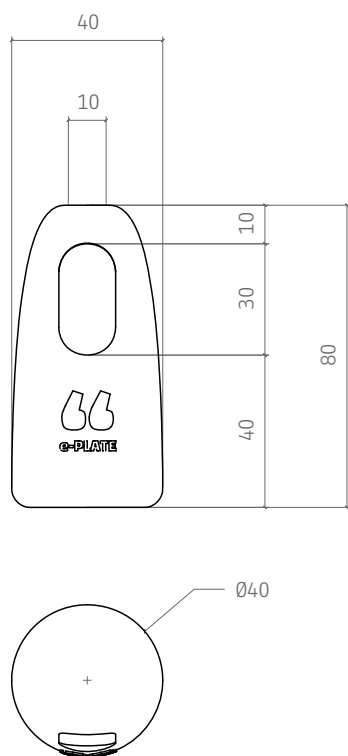
spice holder



salt holder

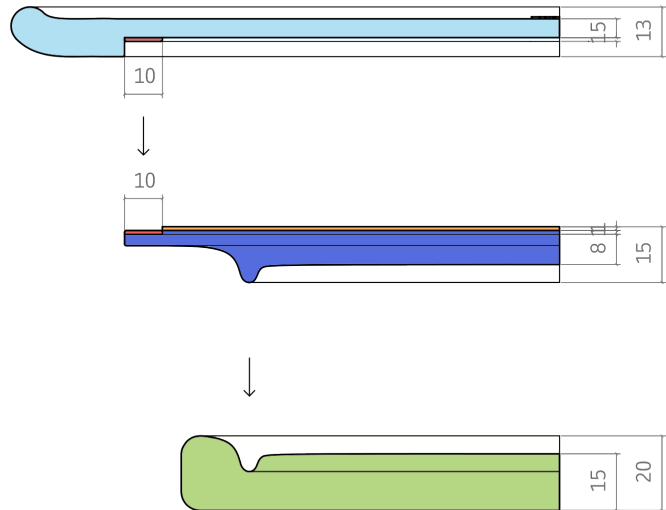
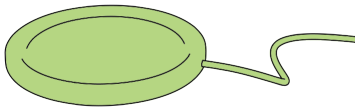
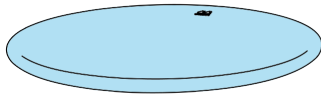
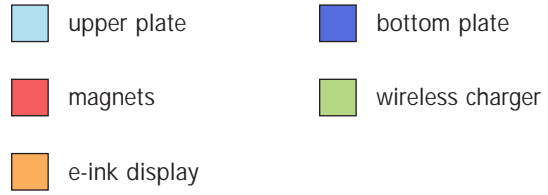


PIR sensor



1:2 scale

e-PLATE section

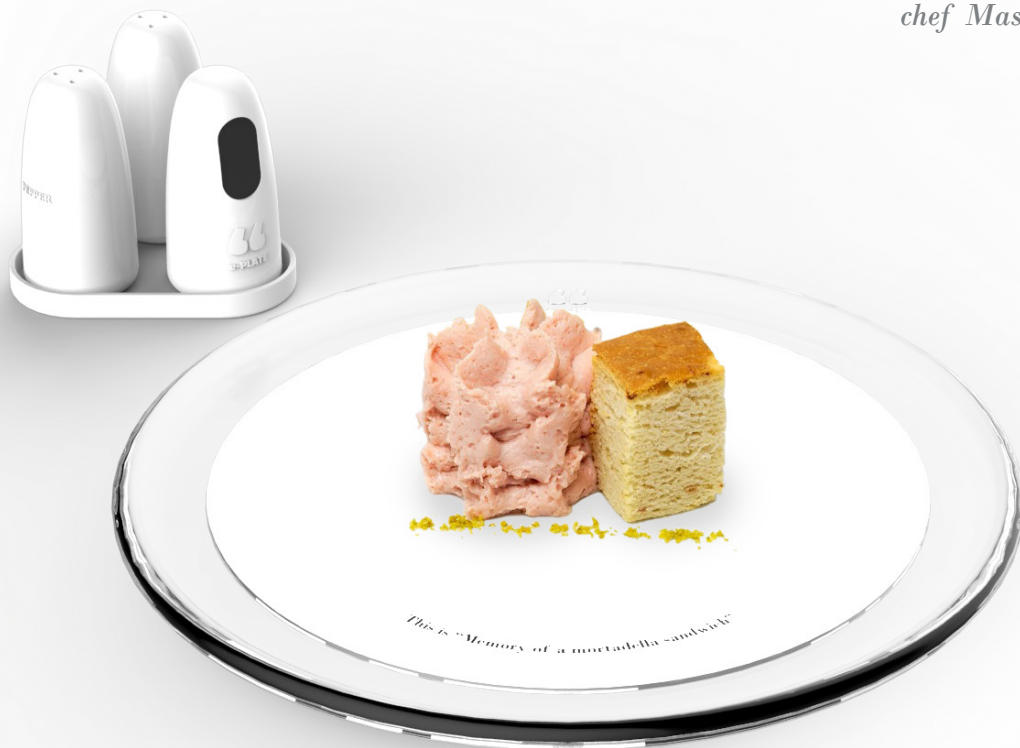


1:2 scale

The project can be extended to the entire menu of Bottura's Osteria Francesca and not only. In the future, all the chefs will be able to tell their story with the e-PLATE. Here are some examples:

Memory of a mortadella sandwich

chef Massimo Bottura



The crunchy part of lasagne

chef Massimo Bottura



DishPlay case study

DishPlay represents the first smart dish with which you can talk directly with the kitchen of a restaurant.

This is a particular plate in which a touch screen connected to the network is inserted through which the diner will be able to place orders and receive detailed information on the dishes on the menu, communicating, at the same time, any preferences and intolerances to the kitchen.

The idea of Display is by Andrea Frizzarin, an entrepreneur in the catering sector who wanted to offer an intelligent dish that could help diners choose the menu. A project that also took shape thanks to the architect Giovanna Girardi and the marble worker Andrea Pongiluppi.

A prototype of this smart dish was presented at Expo 2015 in Milan.





The DishPlay software will help professional Chefs and Restaurant Managers to interact with their customers by illustrating the updated dining room menu, showing the work of preparation in real-time, providing real times of delivery of the dish, revealing the recipe through a story by the professional.

Thanks to NFC technology the dish will always be connected to the network with the dedicated software, allowing the customer, for example, to pay comfortably seated from his table or by calling a waiter with a simple click on the multifunction screen. Hygiene and cleaning will be possible thanks to the product's impermeability and resistance to high temperatures.

The inductive charging without cable allows the dish to be always charged and in temperature for the dishes.

real-time display

NFC connection

wireless inductive charging

waterproof

09

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