

Labels

Food Revolution 5.0 – Design for Tomorrow's Society

19 May until 29 October 2017

Introduction

Food is an omnipresent topic in our society today, in all its many facets from resource to consumption. We can consider food in a way as nothing more than raw material shaped into a certain form; in other words, it is “designed”. “Food design” was in fact one of the earliest design tasks of them all. Food is a key factor in major issues affecting our society, such as climate change and the greenhouse effect, limited natural resources and water scarcity, poverty and hunger, overproduction and waste, hygiene and health, nature and technology, land grabbing and urban planning, trade agreements and protectionism, participation and decision-making power. In the course of the 20th century, industrialization played a significant role in the development of our diets and in how we deal with food. In industrialized countries, consumers are usually far removed from the production of what they eat. Food is today mass produced in what are usually globalized production and distribution processes with a complex division of labor. Rather than growing our own food to cover our need for sustenance, food has become a commodity that is traded and sold. On their way from basic product to the dining table, foods go through a striking variety of different stations. Today, food dominates the public space. A contest between culture and commerce is being waged with more and more vehemence in food production and gastronomy. Consumers are constantly being wooed with new food concepts. The downside of this overabundance is manifested in a dramatic increase in food waste. According to the Food and Agriculture Organization of the United Nations, some 1.3 billion tons of food is thrown away each year. This profligacy can be found along the entire food chain. Food waste is associated with greenhouse gas emissions and the unnecessary use of resources. And wasting food is also an ethical problem. Nearly one billion people worldwide still suffer from hunger.

The exhibition's main thesis is that the world needs a global food revolution, one that would connect forward-looking technologies with the old artisanal techniques and cultural knowledge of the past in order to do justice to the unique demands of food production. Above all, we need a food democracy on a more global basis. We are ultimately all called upon to take part in this revolution. Because we are what we eat, and without food we cannot exist. In the exhibition Food Revolution 5.0, around thirty designers present pioneering ideas, visions and designs for this urgent process of change. Some of their statements can be regarded as best practice proposals for the here and now. Other designers present more speculative projects showcasing possible future scenarios, asking the question: “What if ...?”.

Farm

Industrial farming is responsible for one third of civilization-related greenhouse gas emissions and a good 70 percent of fresh water consumption. Its focus on monocultures furthermore contributes to declining biodiversity. Biodiversity in turn is the fundamental basis for sustainable agriculture and makes systems more resilient. According to the World Agriculture Report (International Assessment of Agricultural Knowledge, Science and Technology for Development), three quarters of the biodiversity that still existed in 1990 is in the meantime lost. 75 percent of all the world's foods come today from only twelve plants and five animal species. Factory farming of livestock and the creation of high-performance breeds through genetic manipulation only exacerbate our ecological problems. The increasing consumption of animal meat takes a heavy toll on the environment in terms of resource and land use, while driving up greenhouse gas emissions and causing widespread nitrate pollution of the soil and water. Overfishing in the oceans likewise threatens the equilibrium of our ecosystem. The depletion of many marine species has wide-ranging adverse effects on the biological productivity of the world's oceans, contributing in this way to changes in the earth's material cycles. The World Agriculture Report comes to the conclusion that the one-sided production practices in industrial agriculture exploit the natural resources of the planet

Earth to an extent that is indefensible. Despite overproduction, industrial farming is unable to satisfy the basic needs of billions of people for adequate and balanced nutrition, while at the same time promoting unhealthy overeating. In recognition of this failure, there is a drive today to promote a “new” model of agriculture, one that is actually a time-honored tradition: small-scale, labor-intensive farming focusing on diversity as a guarantee for an environmentally, socially and economically sustainable food supply, with resilient cultivation practices and local distribution systems.

Market

Today's global food market is marked by a strong concentration of power, a lack of transparency, an unfair distribution of resources, and frequent scandals. A handful of multinational corporations drives increasing industrialization along the entire value chain, from field to shelf, and determines worldwide what comes onto the market, into supermarkets, and from there onto our plates. Price pressure exerted by food companies and supermarket chains along the global supply chain is one of the main reasons for poor working conditions and poverty in the countries of production. In food commerce, huge amounts of money change hands. At the latest since the financial crisis of 2008, excessive speculation in agricultural commodities has become a profitable business. So-called “land grabbing” (purchasing and selling off fertile ground in developing countries) further aggravates the situation. Agricultural protectionism on the part of the rich industrialized nations, which unload their agricultural surplus as highly subsidized exports, puts pressure on prices on the world market. Conversely, it hinders the development of local production structures in poorer countries that would not only provide people with a sufficient income but would also ensure them an adequate food supply, not to mention enabling them to play an active role in society. The ongoing rural exodus all over the world worsens the problem of hunger in the slums and suburbs of megacities. The people living in these areas must today spend almost 70 percent of their disposable income on food. When food prices rise due to speculation in agricultural commodities on the stock exchange, this leads more and more frequently to food riots in the cities of Asia, Africa and Latin- and South America. Historically, the food trade has always been seen as a symbol of globalized capitalism. The supermarket in turn embodies the prime aesthetic principle of the victorious capitalist world: a showcase for the constant availability of food.

Kitchen

The kitchen is a mirror of cultural, social and economic influences, and of developments in society. It forms the vital interface between food supply and consumption. We not only prepare our food in the kitchen but have also come to see it as a showcase for changing ways of life, taste trends and social status. On TV shows and in magazine apps and social media foodblogs, food is celebrated today as a prominent part of our lifestyle. There is a growing trend today toward seeing the home kitchen as a stage and a status symbol, a place where the latest technology is showcased. The “high-tech” or “smart” kitchen can be seen as a metaphor for our alienation from our food, which we consume these days mostly in the form of convenience food. Where our food really comes from, how it is produced, and how much labor and resources go into it – all of this remains hidden to us as consumers. And we've also lost touch with the knowledge of how to prepare, preserve and store food properly. Because of this ignorance, one in eight food products that we purchase end up in the household waste. What's more, our globalized and industrialized food system is also extremely susceptible to toxins and pollutants, which can lead to new health risks and diseases. The kitchen as both the real and symbolic locus of human nutrition is therefore uniquely suited for the innovative practices of do-it-yourself or do-it-together, as ways of achieving transparent and sustainable self-sufficiency. The goal here is to sensibly conjoin the latest technologies with our age-old knowledge of food resources and their careful and prudent cultivation, preparation and storage. In new-age kitchens, which ideally operate according to the principles of sustainable energy and waste management, the consumer becomes producer.

Table

Food plays a central role as a social and communicative event. Going far beyond mere sustenance, food can be both a source of pleasure and of suffering, it gives us enjoyment but can also arouse disgust, it reflects both poverty and prosperity, promotes a feeling of community and strengthens interpersonal bonds. Our culinary culture underwent a radical transformation in the course of the 20th century. As society becomes increasingly mobile, the former fixed daily schedule of three meals a day has largely disappeared. Instead of sharing meals, we often consume food on the go, alone, and at any time of the day. Even more than the rituals of eating, though, the question that preoccupies us these days is “How can I make sure to eat right?” This is not so much a matter of lifestyle as of health: We are what we eat! And eating a healthy

diet requires the kind of in-depth knowledge that most people do not have at their disposal. Not only eating the right amount of food is vital but also maintaining a balanced diet. The problem is that even supposedly healthy food is subject to the latest trends, meaning that our concept of what we should be eating is constantly changing. Nutrition is therefore connected with many negative experiences: obesity and hunger, anorexia or other eating disorders, food scares or toxins in our food. Food appeals to our senses. Our sense of taste in particular is influenced and shaped from an early age by our cultural and social upbringing, which determines what we find tasty or by contrast disgusting. Our taste buds have however become dulled through our massive consumption of industrially produced foods. In the future, the availability of food will also once again be a matter for discussion. The majority of people are still living in a proverbial land of milk and honey. But if we don't make some fundamental changes in our food system, supply shortages and higher prices will become a growing problem for all of us. Culinary knowledge should therefore not be written off in our society as a secondary matter but rather be elevated to an integral part of our cultural education.

Artworks

Miho Aikawa – Dinner in NY & Dinner in Tokyo, 2010-2014

*1982, lives and works in New York City, USA & Tokyo, Japan

The computers, the spread of Internet and cell phones in recent years has given people many methods of communication, and dinner has lost its original essence as an occasion to socialize with others. The changes in society, as well as the people who form them have lead to a shift in how we spend our dinner time. We now do almost 50 percent of our eating food consumption while concentrating on something else. | *Dinner in NY & Dinner in Tokyo, 2010-2014*, photo series, 60 × 60 cm, Fine Art-print on Alu-Dibond © Miho Aikawa

Tomofumi recently launched a new hair salon and spends busy days. His wife makes his dinner in a bento box, which he brings to the salon. When there aren't any customers, he has a quick dinner with his co-worker at the salon's office. Age: 33, Time: 5:59 PM, Location: Shibuya-ku, Tokyo, 2014. | **Yoshiko Noji** usually has dinner with her two sons on weekdays since her husband comes back home around midnight from work. Age: 29, Time: 6:29 PM, Location: Nakano-ku, Tokyo, 2011. | **Miki Uekusa**, a nutritionist cooks dinner with the foodstuff from her friends and enjoys the meal with a chinaware made by her father. Age: 29, Time: 8:12 PM, Location: Setagaya-ku, Tokyo, 2011. | **Taichi Inoue** teaches the Japanese art of flower arrangement. He lives by himself in a very traditional-style Japanese apartment. He likes the simple Japanese lifestyle and his dinner is usually a homemade Japanese meal. Age: 31, Time: 9:16 PM, Location: Suginami-ku, Tokyo, 2012. | **Bobby Blue and Joey Outten** met each other through blind date cooking and they enjoy cooking and eating dinner together. Time: 7:23 PM, Location: Bedford, Brooklyn, New York, 2011. | **Jessie Zinke**, a designer has leftover for dinner on her bed, while watching her favorite TV show. Age: 27, Time: 6:54 PM, Location: Chelsea, New York, 2011. | **Yohan Kim**, an architect, worked overtime with his coworkers. They had pizza and beer on the desk. Age: 28, Time: 7:27 PM, Location: Dumbo, Brooklyn, New York, 2010. | **Queenie Monica Chan** loves to cook simple dinner at home like pasta, and enjoys taking the time to relax. Age: 32, Time: 7:27 PM, Location: East Village, New York, 2012.

Werner Aisslinger – Communal Cooking Landscape, 2017

*1964, lives and works in Berlin, Germany

The installation of a communal-communicative landscape — a hybrid of arena, seating-terraces, and low-level cooking surface — emphasize a symbiosis combining active analogue cooking with the social sustainability inherent to communal preparation, cooking, eating, and conversation. Instead of consuming cookery shows, digital human beings in the *Communal cooking landscape* are placed within an archetypal historical ensemble, the arena, thus becoming protagonist, cook, spectator, and gourmet in one. Participation around a central cooking point represents an analogue utopia for kitchens, whose future supposedly consists of intercommunication between household appliances. | *Communal Cooking Landscape, 2017* Wood color coated Werner Aisslinger and Museum für Kunst und Gewerbe Hamburg

Hanan Alkoush – Sea-Meat Seaweed, 2016

**1985, lives and works in Kuwait*

Eating meat is no longer sustainable or healthy; cattle farming alone produces more CO₂ gas than driving cars. Livestock production is one of the most significant contributors to today's most severe environmental problems. *Dulse* seaweed is an alternative to meat: when it is fried, the algae tastes like bacon. It is considered a superfood, packed with minerals, vitamins and anti-oxidants. The emphasis of the project is to keep the rich culture behind meat production that is ingrained in our society alive, by preserving the theatrics of the trade vocations like farmer, slaughterer or butcher, using an alternative to meat. | *Sea-Meat Seaweed, 2016, Seaweed, silicon; casting, in the designer's possession; Film: Sea-Meat Seaweed, 2016, 05:31 Min. © Hanan Alkoush*

Ionas Amelung – Intro-Filme: Farm, Markt, Küche, Tisch, 2017

**1977, lives and works in Hamburg*

Intro-Films Farm, Markt, Küche, Tisch For the Exhibition "Food Revolution 5.0 – Design for Tomorrow's Society", 2017 © Ellipsefilm Hamburg

Bee Collective – Sky Hive, 2014

*Janicke Kernland, Daniel Meier and Robin vanHontem, *1966, 1963, 1983, live and work in Maastricht, Netherlands*

The seven meter tall bee hive makes beekeeping possible in the city and aims to attract a new generation of beekeepers. The concept is that anybody should be able to tend to the bees at anytime without investing in and or dragging equipment. The fact that the *Sky Hive* is powered by an electric motor, makes it possible to lower the hives to working height and bring them back up. All necessary materials can be stored in the hives itself. A platform, set up on internet, allows easy communication and structures the social process. | *Sky Hive, 2014, model, 3D print; Film: Sky Hive, 2017, ca. 3 min., produced by Daniel van Hauten © Bee Collective*

Bionircraft – Biovessel: An Ecosystem powered by Food Waste, 2016

*Chen Hsiang Chao, *1988, lives and works in Taipei, Taiwan*

The small composting system *Biovessel* is an indoor ecosystem that is inspired by nature and is designed for their own kitchen to deal with food waste. Within a week, the system is able to convert to one kilogram of kitchen waste into fertile breeding ground — due to worms and other microorganisms. Unpleasant smells do not occur. The extracted soil serves the cultivation of salad plants, herbs or flowers. | *Biovessel — an Ecosystem powered by Food Waste, 2016, High Density Polyethylen, corkwood; Blow molding, CNC, Laser cutting, Museum für Kunst und Gewerbe Hamburg; Film: Biovessel — an ecosystem powered by Food Waste, 2016, 03:05 Min., 2016 © Bionircraft*

Burtonnitta – Near Future Algae Symbiosis Suit, 2010

*Michael Burton and Michiko Nitta *1977 and 1978, living and working in London, Great Britain*

The Algae Symbiosis Suit could revolutionize the food supply of humankind. The carbon dioxide in human breath is able to activate algae growth. This algae food will directly return through the mask to the human body. The consumer becomes a semi- photosynthetic species and transforms itself into a plantlike existence, which gets its nutrition through light. | *Near Future Algae Symbiosis Suit, 2010, Tube, gel, wire, in the designer's possession; Film: Far Future New Bodily Organs, 2010, 01:13 Min. © BurtonNitta*

José de la O – Forks of Excess | Maze Cover 2015

**1980, lives and works in Mexico City, Mexico*

Forks of Excess: Size, color, and the usability of our cutlery and dishes can influence consumption patterns that might cause overeating. It has been demonstrated in restaurants that the size of the cutlery has an effect on how much people eat. When people go to a restaurant, the cost and effort involved in the dining experience causes to demand an appropriate benefit (price-performance ratio). Inspired by this research, a set of cutlery was designed to rather increase or decrease food consumption. | *Forks of Excess, 2015, Brass with nickel finish, Museum für Kunst und Gewerbe Hamburg*

Maze Cover: When eating food containing a lot of sugar, fat or salt we tend to eat it as fast as we can. Unfortunately, it takes about 20 minutes for the brain to recognise that one is feeling full. The Maze Cover is an hypothetical accessory, that is inserted on the top of a bowl. It helps slowing down the process of eating. | *Maze Cover, 2015, UV cured acrylic polymer, 3D printing, Museum für Kunst und Gewerbe Hamburg*

Dunne & Raby – Designs for an Overpopulated Planet: Foragers Grass Processor | Foragers Augmented Digestive System, 2009-2010

*Anthony Dunne und Fiona Raby, *1964 and 1963, living and working in New York City, USA & London, Great Britain*
The objects demonstrate a speculative future vision of our nutrition. The **Urban Foragers** responses on the increasingly scarce global resources, and are looking towards alternative forms of nutrition. By a combination of synthetic biology and new kind of digestive systems, is it possible to optimize the food in urban areas. | **Designs for an Overpopulated Planet:** *Foragers Grass Processor und Foragers Augmented Digestive System, 2009-2010*, Fiberglass. In the designer's possession; *Film: Designs for an Overpopulated Planet: Foragers, 02:52 Min.* © Dunne & Raby | *Commissioned by Design Indaba as part of Protofarm 2050 for the ICSID World Design Congress in Singapore, in addition, commissioned by Constance Rubini for the 2010 St. Etienne Design Biennale.*

Fraunhofer-Umsicht – Indoor Farm, 2017

Fraunhofer Institute for Environmental, Safety, and Energy Technology

The indoor Farm offers new opportunities for a sustainable agriculture. The acreage can be up to ten times larger because the plants grow on several levels: A vertical farm. This new cultivation technique is particularly interesting in regions with difficult environmental conditions, like in desert areas or in mountain areas where every square meter should be optimally utilized or in cities. The cultivated vegetables have organic quality; it does not have to be injected as under the artificial conditions vermin hardly have a chance. It is a hydroponic system in which plants are not rooted in soil but in a water-flooded substrate or gutter system. The necessary nutrient supply of the plants can be dosed directly as a solution for the water in the required concentration. | *Indoor Farm, 2017, Lettuce and herbs, light and water, aluminum, plastic* © *Fraunhofer Umsicht 2017*

Paul Gong – Human Hyena, 2014 | The Cow of Tomorrow, 2015

**1988, lives and works in Taipei, Taiwan*

Human Hyena: The project is about imagining transhumanists, coming together to form a group known as *Human Hyenas*, who want to use the emerging technologies of synthetic biology to tackle the increasingly serious problem of food wastage. New bacteria that could live in the human digestive system would allow the body to eat rotten food without being sick. To dull the sense of smell, the designer proposes using *synsepalum dulcificum* — also known as miracle berries. When eaten, these cause sour foods to taste sweet. | *Human Hyena, 2014, 3D printing, cutlery, photography by Andrew Kann, in the designer's possession*

The Cow of Tomorrow: The project describes an extreme future use of animals taking notions of utility and domestication to a logical end. A tiny turbine is implanted in a heavily re-designed dairy cow's artery to harness power through its blood flow. The project is trying to create a new dairy cow, from a time of industrial domestication to an alternative future where the cow is replaced by biotechnology. | *The Cow of Tomorrow, 2015, polyethylene, nickel silver, coil wire; printed booklet; 3D printing, CNC, photography by Lydia Chang, 3D rendering by Paul Gong, in the artist's possession*

Gottlieb Paludan Architects – Greenhouse Pigs: Industrial Farming in a New Perspective, 2017

Kopenhagen, Denmark

The project *Greenhouse Pigs* points in a new direction for industrial pig farming that seeks to minimize negative environmental impact and improve animal welfare. The by-product of one production becomes an important resource for the other production. The model combines pork production with a tomato greenhouse to utilize excess heat, electricity, CO₂ and nutrients from the pigs for the tomato plants. The project includes air purification technology as well as full integration of environmental technologies in pig-farming allowing for the total separation of the farming unit from the open land. This separation of the farming units from the countryside will make it possible to establish farm facilities in indus-

trialized zones where the infrastructure is optimal and energy surplus can easily be utilised. | *Greenhouse Pigs – Industrial Pig Farming in a New Perspective*, 2017; Film: *Greenhouse Pigs – Industrial Pig Farming in a New Perspective*, 2017, © Gottlieb Paludan Architects | This exhibition project is developed by Gottlieb Paludan Architects and Nee Reentz Petersen, Architect MA Ph.D. The project is based on two previous development projects: *Pig City* and »Det Jordløse Landbrug«. *Pig City* was supported by Realdania and was developed by Gottlieb Paludan Architects and Nee Reentz-Petersen for Sørensen Hansen and Alfred Pedersen & Son. The development work also included COWI, Agrotech and other consultants. »Det Jordløse Landbrug« was developed by Nee Reentz-Petersen, as a post doc-project at the Royal Danish Academy of Arts.

Martí Guixé – Digital Food, 2017

**1964, lives and works in Barcelona, Spain*

Digital Food Card: Instruction card and catalogue. Side A of the card contains drawings of the 13 edible objects and icons of their properties. The objects are numbered and include an explanatory drawing of its original form, its interior structure, its deformation through the incorporation of nutrients and an icon which explains its appropriate use. Side B of the card uses pictographs to describe the context, concept and methods of Digital food. Digital food starts with the collection of personal physical and medical data which, once algorithmically organised and processed, determine a type and amount of nutrients, vitamins and proteins needed for a balanced diet. At the same time, a menu provides shapes, flavours and textures that can be personally chosen. A code is generated using these choices, the nutritional information, the data material and the type of printer available. The code is then used to print the edible object, which will then be ready for consumption. The four basic fields used to generate this code are nutritional, dynamic agents, constructive and sensorial. | **Digital Food Objects:** The objects on display are explanatory in nature. 13 objects in their original form, as shown in the menu. The 13 objects sliced open making their interior architecture visible. And the 13 objects affected by the algorithm, indicating that it contains the nutrients, vitamins and proteins needed according to individual needs, based on the collected health and lifestyle information. | *Digital Food, 2017, Poly-Lactic Acid (PLA), 3D print and painted with color pencil; edible objects, made of fiber, different molecules, nutrients, vitamins, Martí Guixé and Museum für Kunst und Gewerbe Hamburg*

Jinhyun Jeon – Stimuli, 5 sensory Dessert Spoons, 2016

**1982, lives and works in Eindhoven, Netherlands*

Stimuli has a comparable role to an appetizer: This series of sensory cutlery focuses on enhancing multisensory food experience. Stimuli creates a path to generate an alternative way of perception, which trains the brain and cognitive abilities to promote mindful eating appreciating the new tastes. | *Stimuli, 5 sensory Dessert Spoons, 2016, Lacquered Ottchil in red, gold, brass, raw; casting, painting brush; 3 sensory Dinner Spoons, 2016/17, lacquered Ottchil, ebony, beech, CNC, sculpt, painting brush; 3 sensory Dessert Spoons, 2016, crystal & lacquered Ottchil; Pâte-de-verre, painting brush, in the designer's possession*

Livin Farms – The Hive, 2015/16

*Katharina Unger and Julia Kaisinger, *1990 and 1987, live and work in Vienna, Austria & Hong Kong, China*

More than half of the world's agricultural land is used for the production of feed and many antibiotics are used for meat, egg and milk production. Insects, on the other hand, can be cultivated in a very small space, on organic waste, and with little water and energy consumption. They combine the best in meat and vegetable protein: similar protein content as beef, amino acid profile like tofu, enriched with many vitamins and minerals. The *Hive* makes it possible to grow alternative proteins, simply from home. | *The Hive, 2015/16, Brushed aluminum, powder-coated steel, food-safe ABS & PP, electronics, mealworms © Livin Farms and Museum für Kunst und Gewerbe Hamburg*

Isabel Mager – Intimacy of Food and War, 2017

**1992, lives and works in Rotterdam, Netherlands*

Key components of this visual assemblage cut together concepts of food industrialisation, standardisation, privatisation, the development of preservatives, livestock and food's dependency on a global supply chain of logistics. The imagery – cut, scaled and rearranged – unfolds layers of fragmentary information into narrative form. Additional graphic elements

within the composition, articulate a notion of grey zones of information and factual distortion perceived between the two components of food and war. | *Intimacy of Food and War, 2017, Collage, print on wallpaper* © Isabel Mager

Studio Makkin & Bey – Free-range Shelter, 2011

*Rianne Makkink und Jurgen Bey, *1964 and 1965, live and work in Rotterdam, Netherlands*

The energy-efficient farm is a free-range protection and farmhouse at the same time. Its architecture model is based on the shape of the roof of farms, so cows can find shelter under the covered pasture. At the same time, this canopy is the modular home and work complex that combines all the activities of a modern farmer. Since recreation and education tasks have been added to the agricultural profession, the hovering farmhouse is a roof, office, educational space and accommodation in one. For a long time the consumer is decoupled from agriculture. Inner city cow and pig stables or vegetable gardens dominated the townscape 150 years ago and were banished from the cities to the countryside. In order to reduce transport distances and regain a link to the origin of the food through sustainable local cultivation, the farm model stimulates the rethinking and integrates the livestock into everyday urban life. | *Free-range Shelter, 2011, architectural model, paper, plastic, in the designer's possession*

Ton Matton – Free Range Kitchen | Fridge on Ice, 2000

**1964, lives and works in Wendorf, Germany & Rotterdam, Netherlands & Linz, Austria*

The **free range kitchen** integrates pre-existing systems such as solar energy while using an autonomous water supply for washing dishes in the form of rainwater that has been purified via an internal treatment system. The integrated water treatment system works with the help of reeds that purify the water and thus make it reusable. Also integrated into the kitchen counter is a compost system for kitchen scraps and a ›hay box‹ that functions as an oven. | The **self-sufficient refrigerator** can be equipped with an ice block, which melts slowly and creates a cooling system that functions without power sources. A layer of insulation ensures that the ice box stays cold for up to one week. It's colder inside the lower part of the cabinet, the perfect temperature for white wine. The slightly warmer upper part prevents butter from getting too hard, for example. The roots of plants growing on top of the refrigerator draw the melt water from the ice upward. | *Free Range Kitchen, 2000, Oak wood, hay, plants, ceramic, sink, kitchen table, in the designer's possession; Fridge on ice, 2000, MDF, ice, reed, in the designer's possession*

Marina Mellado – Neurogastronomy Cutlery | Cognitive Behavioural Therapy Dish | Neuronal Scent Bowls, 2016

**1992, lives and works in London, Great Britain*

Neurogastronomy wants to raise awareness of an eating disorder called *Orthorexia nervosa*. The condition is a paradoxical eating disorder, where people restrict their diet based not on the quantity of food they consume, but on the quality. It leads to malnutrition. The tools are designed to support users in controlling feelings of anxiety and letting them to re-sensitise the body to certain habits. The design objects are: a cutlery set that intensifies flavors through retronasal olfaction; a dish that provides the user with control of the way they want to see their food, it stimulates the ventromedial cortex and opens up conversation between the psychotherapist and the patient facilitating the therapy process; and drinking vessels that activate the sense of smell to assign a short-term evaluation of the drink. | *Neurogastronomy Cutlery, 2016, Casted bronze, silver plated, in the designer's possession; Cognitive Behavioural Therapy Dish, 2016, Ceramic, turned and fired, in the designer's possession; Neuronal Scent Bowls, 2016, Metal, in the designer's possession*

Maurizio Montalti – The Growing Lab Mycelia, since 2013 | System Synthetics, 2011

**1981, lebt und arbeitet in Amsterdam, Niederlande*

The Growing Lab Mycelia: Maurizio Montalti and the design studio *Officina Corpuscoli* are researching how fungal organisms can be used to produce alternatives to plastics. Biologically produced materials can be completely non-harmful. Once disposed of they just become new nutrients for new life. With the right nutrients present, mycelium will grow in a range of different organic materials, such as straw or other forms of agricultural waste. | *The Growing Lab Mycelia, seit 2013, Plates, vessels, vases, agricultural biomass, selected fungal strains (mycelium); organic growth, cultivation, moulding, in the designer's possession*

The Designer was teaming up with the *Kluyver Centre for Genomics of Industrial Fermentation* to work on an alternative to fossil fuels. He aimed to build a transparent bioreactor that would allow the public to see how one fungus breaks down plastic and the other fungus makes bio-ethanol out of it. The outcome of this research is a self-designed, tailor-made glass apparatus. **System Synthetics** represents an exploration into the possibility of collaborating with microorganisms to decompose harmful waste. | *System Synthetics, 2011, Glass installation, water pump, liquids, in the designer's possession*

Pei-Ying Lin – Minimal Nano Diet, 2012-2013

**1986, lives and works in Taiwan & London, Great Britain*

The *Minimal Nano Diet* is a speculative cure that cleans the body and frees the burden of digestion and metabolism. The diet is to be made possible by transparent nano-food, which contains the necessary nutrients for the human body. The *Minimal Nano Diet* Guide documents the methods of investigation of the essential nutrients under a microscope and reveals the ›recipes‹ of these nano dishes. | *Minimal Nano Diet, 2012-2013, Mixed media, microscope, 5 bottles containing different biodegradable materials, petri dishes, kettle; Book: Minimal Nano Diet Guide. © Pei-Ying Lin; in the designer's possession*

Klaus Pichler – One Third, 2010-2012

**1977, lives and works in Vienna, Austria*

The photographic series *One Third* describes the relationship between individual food waste and globalized food production. Rotten food products, arranged into lavish still-life images, symbolize the squandering of food. *One Third* goes beyond the expiration date in order to make the dimensions of global food waste visible. | *One Third, 2010-2012, photo series, 60 × 75 cm, Fine Art Print on Alu-Dibond © Klaus Pichler*

Eggs: Cage free eggs, Class A, place of production: Kolontar, Hungary, transport distance: 196 km, mode of transport: Freight vehicle, mode of production: Factory production, production time: all-season, carbon footprint (production & transport) per kg: 5,82 kg, water requirement (production & transport) per kg: 3061 l, Price: 1,39 Euro/kg. | **Strawberries:** Strawberries ›Elsanta‹, place of production: San Giovanni Lupatoto, Verona, Italy, transport distance: 741 km, mode of transport: Freight vehicle, cultivation: Foil green house, harvest time: June — October, carbon footprint (production & transport) per kg: 0,35 kg, water requirement (production & transport) per kg: 348 l, price: 7,96 Euro/kg. | **Chocolate Cookies:** Choco Duo, place of production: Polch, Germany, transport distance: 868 km, mode of transport: Freight vehicle, mode of production: Factory production, production time: all-season, carbon footprint (transport) per kg: 1,07 kg, water requirement per kg: unknown, price: 5,65 Euro/kg. | **Rice:** Long grain rice, peeled, place of production: Okinawa, Japan, transport distance: 9300 km, mode of transport: Ship, freight vehicle, mode of production: Outdoor plantation, production time: all-season, carbon footprint (production & transport) per kg: 0,92 kg, Water requirement (production & transport) per kg: 1675 l, price: 2, 49 Euro/kg. | **Chicken:** Chicken, place of production: Behamberg, Austria, transport distance: 183 km, mode of transport: Freight vehicle, mode of production: Outdoor pasture, production time: all-season, carbon footprint (production & transport) per kg: 3,54 kg, Water requirement (production & transport) per kg: 1551 l, price: 3,69 Euro/kg.

Chloé Rutzerveld – Edible Growth, 2014/In Vitro Me, 2013

**1992, lives and works in Eindhoven, Netherlands*

Edible Growth is an example of a future food product that forms a bridge between new technologies and authentic practices of growing and breeding food. Multiple layers containing an edible breeding ground, seeds, spores and yeast are printed according to a personalized 3D file after which natural processes like photosynthesis and fermentation will start. Within five days the plants and fungi mature while the yeast ferments. *Edible Growth* is an example of high-tech but fully natural, healthy and sustainable food. | *Edible Growth, 2014, Prototypes: Dough, clay, paint, plastic, in the designer's possession; Film: Edible Growth, 2014, 01:38 Min. © Chloé Rutzerveld*

In a world where meat becomes scarce, how far are meat consumers willing to go to continue eating meat? **In Vitro Me** is a personal bioreactor-jewel which nestles down on your chest and cultivates human muscle tissue. A direct connection

between the body and the bioreactor enables the exchange of heat, nutrients, oxygen and waste substances to create personal meat for consumption. | *In Vitro Me*, 2013, *Prototype: Plastic, metal, clay, paint, photography by Chloé Rutzerveld, in the designer's possession*

Johanna Schmeer – Bioplastic Fantastic – Between Products and Organisms, 2014

**1986, lives and works in Berlin, Germany*

Bioplastic Fantastic investigates new types of products and interactions, which might emerge from these material innovations in the fields of bio- and nanotechnology. It speculates about the future design and uses products made from enzyme-enhanced bioplastics. The concept is based on a recent scientific breakthrough in the synthesis of functioning ›biological‹ cells made from polymers and enzymes. Halfway between products and organisms, seven ›biological devices‹ produce all food and energy needed for humans to survive simply by being exposed through photosynthesis. They produce water, vitamins, fibre, sugar, fat, protein and minerals through biological processes, allowing for a more self-sufficient lifestyle. | *Bioplastic Fantastic – Between Products and Organisms, 2014, Bioresin, Silicon, in the designer's possession; Film: Bioplastic Fantastic – Between Products and Organisms, 2014, 4 Min. © Johanna Schmeer*

Carolyn Schulze – Falscher Hase or Bug's Bunny, 2014 | Culinary Hacking, 2016 | Lab of Fermentation, 2016

**1987, lives and works in Leipzig, Germany*

Falscher Hase or Bug's Bunny: Most Europeans associate insects with uncleanness, or even find it disgusting to eat them. How might this prejudice be laid to rest? Perhaps by transforming insect meat into a familiar form that we Europeans find less suspicious: the solution is meat loaf. The meat loaf would be made out of mealworm paste using a 3D printer and would give us a positive experience with the borderline product of insect meat. We might just end up reflecting on our learned culinary habits and, at best, decide it's time to change them. | *Falscher Hase or Bug's Bunny, 2014/15, DIY-3D-printer, 7 parts of a morphological study, porcelain plate, knife, fork, rabbit made out of mealworm paste, jar, freeze-dried mealworms, 3D-print, in the designer's possession; Film: Falscher Hase or Bug's Bunny, 2014/15, 04:27 Min. © Carolyn Schulze*

Culinary Hacking: *Bacterial cellulose, beeswax, honey, kombucha, tempeh spores, natto spores, leaven, flour, lime wood, laboratory glass, zipper bags, zipper, yarn, nickel-plated steel, stainless steel, polyamide, photographic paper, offset paper, transparent paper; fermentation, laser cut, sewn, milled, sand-blasting technique; 3D-print, in the designer's possession*

Film: Lab of Fermentation: The Culture Bag is a fermentation starter kit that introduces users to cross-cultural fermentation methods. The consumer can experience micro-processes and their importance to us, while being encouraged to experiment with food. Fermentation is a type of food preparation that is based on the action of micro-organisms that transform organic substances into acids, gases, or alcohol. Even the bag itself, made of bacterial cellulose, is the result of fermenting organisms: when brewing Kombucha lemonade out of tea and sugar, micro-cultures form a cellulose layer on the surface of the water that can be used to produce a kind of vegan leather. | *Film: Lab of Fermentation, 2016, 02:57 Min. © Carolyn Schulze*

Andrea Staudacher – SCHWEIN1738, 2017

**1988, lives and works in Bern, Switzerland*

As meat eaters, we know that an animal has to die for our culinary enjoyment. But what kind of knowledge do we actually have? The designer sets out to discover whether she could find an answer to this question through subjective sensory experience. She slaughtered a pig with her own hands. The result is the artifact *SCHWEIN1738*. The farmer knew the pig very well. He was there when the pig was born, watched it grow up, knew what food it was fed, transported it to the slaughterhouse (a 30-minute drive) and was present when the animal was slaughtered. Very few of the meat products we consume come from such a transparent processing chain. What's more, we are removing ourselves further and further from what our food originally looked like. This in turn helps us to block out the process of industrialized killing. Money in return for life! The visitors are invited to move and rearrange the objects and post photos in social networks on

SCHWEIN1738. | SCHWEIN1738 2017, Pig ready for slaughter in silicon and acrylic glass; 60 pieces of pork; casting in silicon, in the designer's possession, Andrea Staudacher and Museum für Kunst und Gewerbe Hamburg; Audio recording, ca. 15 Min. © Andrea Staudacher

George Steinmetz – Feeding 9 Billion, 2013

*1957, lives and works in Glen Ridge, New Jersey, USA

By the year 2050 it is estimated that the world population will increase from 7 to 9 billion people, and with the rapidly increasing wealth in China and Latin America we will have to double the global food supply. The photo series looks at the way industrialized agriculture will meet this growing demand. The photographer went to Brazil where forest is rapidly being converted to farmland, to the United States and Japan where a mature food industry is seeking ways to increase efficiency, and to China where industrialization is both increasing demand for food and removing farmland from food production. | *Feeding 9 Billion, 2013, photo series, 60 × 90 cm, Fine Art Print on Alu-Dibond.* © George Steinmetz

Vulgamore Family Farm, south of Scott City, Kansas. The Vulgamores have been farming this area for five generations, and have one of the largest farms in the country. | **Brookover Ranch** feed yard, just across the Arkansas River from Garden City, Kansas, with adjacent center-pivot crop circles used to fatten their cattle. | Mexican laborers picking Honeydew melons on land leased from **River Garden Farms** in California, USA. Crops here are rotated regularly to minimize pests and plant diseases. | **Grain loading facilities of Caramuru's**, warehouse in the port of Santos, the largest commercial port in Brazil. Soy beans being moved as more arrive in pile behind onto stockpile that feeds into the underground conveyor belts that deliver grain to ships for export. | **Frigorifico Itabom** in Brazil, processes 18,000 chickens per hour, 144,000 per day, or 640 million per year, and all are consumed in the São Paulo area, except for feet, cartilage, and wing tips, which are exported. They have approximately 2,000 employees. | Largest egg farm in Latin America, **Granja Mantiqueira** in Brazil, produces 2.7 million eggs a day from 4 million hens. They start laying eggs at 110 days and have about 95 weeks of productivity before being shipped to the slaughterhouse. 26 hens share a small cage, and are given unlimited supply of food and water. | Pig slaughter house of **Nutribras** in Sorriso, Brazil. They raise and process all of their own pork, with an average of yield of 1.300 pigs per day. Largest cattle slaughter facility in Latin America, Brazil, with a double-feed single line that can kill and process 240 cattle per hour, turning them into various beef products ranging from steaks, to hamburgers for fast food restaurants, to ground hoofs and bones for animal food.

Austin Stewart – Second Livestock, 2014

*1977, lives and works in Ames, Iowa, USA

The thought experiment visualizes a matrix for the chicken-world. In our reality, the hens live in tight stables and cannot move there freely. *Second Livestock* gives the animals a little bit of freedom-virtual freedom. The virtual reality glasses are suggesting the chicken an active lifestyle on a farm and a life in freedom together with conspecifics. | *Second Livestock, 2014, Stuffed chicken with VR Headset, wood, acrylic; Film: Second Livestock, 2014-2016, 7 Min., Adobe Photoshop, Cinema4D, Adobe Illustrator, Adobe After Effects, Adobe Premiere* © Austin Stewart

Studio Jihyun David – Save Food from the Fridge: Regale, 2010/Obtschale, 2011

Jihyun Ryou und David Artuffo, both *1980, live and work in Turin, Italy & Amsterdam, Netherlands & Seoul, Southkorea
Save Food from the Fridge is a series of objects that introduce traditional knowledge of food preservation to keep aliments outside the fridge when not needed. | *Save Food from the Fridge (shelves), 2010, Wood, glass, metal, in the designer's possession; Save Food from the Fridge (fruitbowl), 2011, Ceramic, in the designer's possession*

Technical University Hamburg-Harburg – Algenfarm: An urban agricultural system, 2016/17

Institute for Environmental Engineering and Energy Industry

The greatest challenge of the urbanization process is to achieve an efficient use of resources adapted to current lifestyles and social needs, while at the same time having a high resilience to changing climate and environmental conditions. Innovative agricultural systems have to be developed for this purpose. Through the use of specific cultivation systems, the production of micro-algae in urban areas can be integrated and synergies with energy supply and emission reduction systems as well as urban development functions can be developed. For example, micro-algae cultivation allows the direct

coupled use of CO₂ from combustion processes, the direct local utilization of the nutrients phosphate and nitrogen from municipal sewage as well as the co-use of supply and disposal streams and logistics. The farm shows a model system with the micro-algae independent of the surface can be cultivated.

Marije Vogelzang – Volumes, 2017

**1978, lives and works in Dordrecht, Netherlands*

Volumes is a research and development project of a series of objects that are placed directly on the plate between the food. *Volumes* is an attempt to influence our eating behaviour and our eating culture. We have the tendency to overeat and are visually misled by large plates and wide glasses. By adding *Volumes* to your plate, your brain will register more food than there actually is. | *Volumes, 2017, stone, earthenware, ceramics, silicone, Marije Vogelzang and Museum für Kunst und Gewerbe Hamburg*

Henk Wildschut – Food, 2012

**1967, lives and works in Amsterdam, Netherlands*

Few subjects generate as much discussion as the subject of food. Such discussion is increasingly marked by suspicion and pessimism about how our food is produced. The photo series shows that how our food is produced is a far cry from the romantic notion of life in the countryside, even when it comes to organic food that is so popular nowadays. With consumers demanding good and safe food and less use of antibiotics, the production process becomes ever more technical and clinical. | *Food, photo series, 60 × 80 cm Fine Art Print on Alu-Dibond © Henk Wildschut*

Group Housing, Varketing in Lottum, April 2012. Varketing is a collaborative project involving five entrepreneurs looking to maximize innovation and profit. Keeping different animals together throughout the entire production process has helped prevent the spread of disease. | **Nursery**, Maatschap Stroo in Slootsdorp, July 2012. Peter Stroo runs a poultry farm of around 160,000 chickens. | **Waiting Room**, Verbeek Hatchery Holland in Zeewolde, July 2012. The crates on the dolly hold about 2000 chicks. These chicks have just left the incubator where they spent a total of three weeks. From here, the chicks will be shipped to the layer chicken farms. | **Sorting**, Ekro in Apeldoorn, July 2012. A calf's liver weighs on average 4.5 kilos and is cooled within 24 hours after removal from the carcass down to one degree Celsius. The racks speed up the cooling process and prevent damage to the delicate organ tissue. | **Homogenization**, Royal FrieslandCampina in Maasdam, March 2013. Because consumers dislike the layer of fat that naturally rises to the surface, dairy companies homogenize milk. | **Prototype**, Meyn in Amsterdam, May 2012. Consumers around the world like their chicken legs a particular size and shape. Meyn has produced special machines for the mass-producers who churn out these different chicken legs. | **Archives**, Animal Health Service (GD) in Deventer, May 2012. Farmers can apply to GD to have their livestock checked for infections, or for advice about prevailing cattle diseases. | **DATA**, Ministry of Economic Affairs, Agriculture and Innovation (EL&I). Regulation Department in Assen, July 2012. The Ministry of Economic Affairs data centre processes over 21 million records of cattle, sheep, goats and pigs each year. Poultry is not registered, due to the rapid turnover.

Xiaofeng Dai – Beyond the News: Revealing Different Comments, 2017

**1990, lives and works in Eindhoven, Netherlands*

The trustworthiness of the food quality is more and more questioned, e.g. the press and other media outlets report about scandals and added unhealthy ingredients to food as surveillants. But on the other hand, they also publish advertorials, actually advertisements in disguise, in which for instance, food is portrayed as being healthy or even can be used as a medicine. The project tracks published live-feeds on the most currently populated and debated online articles; it connects different echo chambers and puts competing views next to each other. Comments can reveal consumer's experience and facts that would normally not be published in food promotion and advertorial news. | *Beyond the News – Revealing Different Comments, 2017, Media installation, Back-end programming, Christian Groschupp © Xiaofeng Dai and Museum für Kunst und Gewerbe Hamburg*

Louisa Zahareas – Screen Mutations, 2015

**1987, lives and works in Eindhoven, Netherlands*

Screen Mutations *Screen Mutations* explores the growing role of digital devices in our daily lives. More specifically, the project asks what is the role of video chat communication applications, such as *Skype* and *facetime* in blurring the line between the physical and digital world? The designer imagines a speculative future by designing a set of props — cups, teapots, utensils — that look distorted and two-dimensional off-screen, while on-screen they look ›normal‹ due to optical illusions achieved by modifying the perspective. | *Screen Mutations, 2015, Cast porcelain & nylon plastic, 3D printing; teapot, moka pot, cup, bowl, cutlery* © Louisa Zahareas and Design Academy Eindhoven

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Opening times: Tue–Sun 10 am–6 pm, Thu 10 am–9 pm | Admission: €12/€8; Thu from 5 pm: €8; under-18s free
