

Anthropocene Kitchen

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At the beginning of the third millennium, three unconnected news opened up an entirely new perspective on the human condition and at the same time on the image humankind has of itself as a species. The first decisive news was derived from the data of global demographics: The 21st century marks the first time that a majority of people lives in cities. Urbanization seizes the former agrarian societies and is becoming universal, its global momentum follows that which industrial countries experienced in the 19th and 20th centuries.¹

The second groundbreaking news was the result of the anthropological research conducted by a group headed by Richard W. Wrangham, according to which the use of fire for cooking and the consumption of cooked meals took the evolution of humankind out of the hominid development stage. The effect of cooking on our physical and social constitution primarily made this animal into what we call the human.² According to the theory, as a universal cultural technique cooking is not only a cultural, but also an anthropological matter.

The third news suggests a reformulation of the era in which we live: Given the numerous indications that “in the coming millennia the climate on the planet will significantly diverge from its natural development” and that this divergence can be attributed to human activity, the geologist Paul Crutzen proposed that the current geological era be no longer classified as Holocene, but rather as Anthropocene.³ In 2008, the Stratigraphic Commission of the venerable Geographical Society adopted this position itself and confirmed the classification ‘Anthropocene’ as the term for a geological period, in which the human species has become the dominant geological factor.

1 | In Germany, for example, the ratio of urban to rural population was reversed between 1870 and 1930: Whereas in 1870 two thirds still lived in the country, in 1930 two thirds of the population were already living in cities. This reversal had considerable consequences for the way people lived and their relationship with the environment. With regard to the momentum of the global urbanization process see WBGU: 2016.

2 | Wrangham et al.: 1999; Wrangham: 2009.

3 | Crutzen: 2002, p. 23; Leinfelder: 2012; Waters et al.: 2016.

The activities conducted by humans that are triggering changes on Planet Earth are as extensive as they are profound, they affect all living beings, all eco-systems, the entire human interaction with nature and ultimately its own habitat. What was nature has become an artefact – and this manifests itself in the Anthropocene on a planetary scale and in an all-embracing meaning.⁴

However, in the process of the transformation of the planet into an artefact it has become so evident that the life-preserving systems are extremely vulnerable that neither experts nor a majority of politicians now seriously question the need for a “rethink”, in particular with regard to energy and climate policy.⁵

Indeed, the directions for action resulting from the data compiled by climatologists, geologists, biologists etc., which at least resulted in political decisions being made, do not go far enough to bring about concrete changes in behavior; they are by their very nature top-down processes, which miss the mark if not underpinned by bottom-up processes. This too is now undeniable and is reflected in what researchers into the Earth’s system call the “bottom-up/top-down estimation of vulnerability”. By this they mean “the collaboration between scientist and experts, who provide information about affected regions, areas, and population groups”. This also embraces an estimation of adaptability, e.g. “the question of how quickly and how greatly policies and human behavioral patterns can in general be changed”⁶.

It is noticeable in the way that scientists put things that their field of action amounts to advising policy makers on scientific matters, and that with regard to the last point in particular, i.e., the possibility of behavioral changes, there is great uncertainty. However, an actual bottom-up approach would have to involve all those who are meant to change their own behavior and in particular those who of their own accord wish to change their behavior.

4 | Anticipating this, US architect, designer and inventor R. Buckminster Fuller (1895–1983) came up with the metaphor of the Spaceship Earth, for the operation of which there was no instruction manual. “Lack of instruction has forced us to find that there are two types of berries – red berries that will kill us, and red berries that will nourish us. And we had to find out ways of telling which-was which red berry before we ate it otherwise we would die. So we were forced, because of a lack of an instruction book, to use our intellect ...” Buckminster Fuller, R. (1969): *Operating Manual for Spaceship*, Carbondale, Ill., pp. 52–53; see Krausse, J. (ed.) (1998): *Bedienungsanleitung für das Raumschiff Erde*, Dresden/Amsterdam, pp. 249–255.

5 | This is documented by the fact that on April 22, 2016 in New York 170 countries signed the Paris Agreement on Climate Change. See *Frankfurter Allgemeine Zeitung* (2016), no. 95, April 23, p. 5 and Sommer, J./Müller, M. (eds.) (2016): *Unter 2 Grad? Was der Weltklimavertrag wirklich bringt*, Stuttgart.

6 | Mastrandrea, M./Schneider, S. (2011): Vorbereitungen für den Klimawandel, in: *Das Raumschiff Erde hat keinen Notausgang*, Berlin, pp. 11–59, here pp. 52.

In other words, it is less about generating acceptance or even about implementing a previously prepared program than about impetuses and invitations to sample and test new possibilities that are less onerous for oneself, for others, and for the environment than those to which we have become accustomed in a largely ready-made existence. It is worthwhile going along with the involvement of individuals in the major transformation process, as ultimately the overall effect we experience as a crisis for the global regeneration system is made up of the thousands of trivialities in our everyday life. Nothing speaks against beginning to rehearse this social contract so needed for a *major transformation*,⁷ with minor divergences from regularity, in the kitchen and at the dining table.

TRACKING DOWN EVERYDAY ACTIONS

To this end, we must first set out to track down everyday actions. Only by studying them first can adaptations to actions be introduced on the basis of intuition and participation.⁸ The approach adopted by the ‘Anthropocene Kitchen’ project in the ‘Image Knowledge Gestaltung’ excellence cluster at Humboldt University in Berlin is the result of the recognition of an apparent gap between academic findings and the imperatives for action by policy makes derived from them on the one hand, and the change in habits on the part of the population at large on the other.⁹ With the term ‘Anthro-

7 | WBGU (2011): *Welt im Wandel – Gesellschaftsvertrag für eine Große Transformation*, main expert opinion, Berlin.

8 | The trail illustrated the intuitive user behavior that is governed by the choice of short routes. Ever since the 1920s, research into the emergence of “desire lines” has been the subject of urban and transport planning (see Throgmorton, J./Eckstein, B. [2000]: *Desire Lines: The Chicago Area Transportation Study and the Paradox of Self in Post-War America. The 3Cities Project*, available online at: <http://www.nottingham.ac.uk/3cities/throgeck.htm> [accessed on May 28, 2016]). As in studies by Frei Otto and his SFB 35 research group in Stuttgart, nowadays computer simulations of the emergence of beaten tracks are being used (see among others Helbing, D. [2013]: *Verkehrsdynamik: neue physikalische Modellierungskonzepte*, Berlin) in an attempt to gain new insights into human behavior. In planning the term “trail” is associated with participation and self-organization processes and as such in literature is repeatedly associated with Christopher Alexander’s work. It serves as a metaphor for informal actions in response to formal structures that do not correspond to the needs of individuals or entire groups. See among others Nichols, L. (2014): Social desire paths: a new theoretical concept to increase the usability of social science research in society, in: *Theory and Society* 43/6, pp. 647–65.

9 | Currently conducting research on the basic ‘Anthropocene Kitchen’ project are Karl W. Grosse (architecture and design), Alexandra Hamann (media design), Jens Kirstein (geology), Joachim Krausse (design theory), Reinhold Leinfelder (geology and geobiology), Julia von Mende (architecture) and Marc Schleunitz (biodiversity,

pocene', a geological measure that embraces millions of years is associated with the kitchen, a place where everyday actions are conducted, in which day by day decisions are made as to what is served.

With foodstuffs from all over the world, the kitchen is the end of the route for global logistics and production chains. Resources are put to use here, the Anthropocene takes shape here in everyday practices. Cuisine and the kitchen are reliant on the availability of certain natural resources in its environment. As such it is dependent on global flows of goods on trade routes that provide an infrastructure – from foodstuffs and cooking utensils to elementary resources such as water and fire – while at the same time exerting a not to be underestimated influence on global changes: e. g., the disposal of waste water and the return of different wares to the natural cycle. Thus the kitchen assumes the role of an important hub in the era of the Anthropocene, it is link between a home and the outside world. At the same time the development of human culture is very closely linked to changes in the kitchen.

TASTE AS A PREREQUISITE FOR BEING ABLE TO MAKE DECISIONS AND TAKE ACTION

This culture also includes tasting and trying food before it is actually consumed. In this prelude to a comprehensive appropriation and assimilation process taste, which always includes smell, is called upon as a sensual decision-making authority to form an initial opinion about edibility, wholesomeness and tastiness of food and drink. The previous knowledge collected over generations and the handing down of empirical know-how on foods that vary tremendously locally and regionally always form the basis of every type of cuisine and every dietetic and culinary culture. However, as the latter do not consist solely of the preserving of proven traditions, but rather over the course of the cultural history of cooking and eating are also prepared to consider new foods and dishes previously unfamiliar (such as potatoes, tomatoes, pizza and so on), the formation of taste is also decisively involved in the acceptance of such innovations. The driving forces for food novelties are shortages, migration but also tourism. In the process of cultural learning the mouth assumes the function of an individual laboratory in which testing is practiced. Curiosity is the driver. However, the willingness to cross the “disgust threshold” when trying unaccustomed items such as eating high-protein insects and larvae, something not usual in our regions, can be learned and is involved in forming the sense of taste. The latter is essential for developing an ability to judge whether something is good for us or not. It is the precondition for spontaneous, but also consid-

evolution, ecology). Until 2015 involved in the base project were Stephan Barthel (geography), Philipp Oswalt (architecture and urbanism) and Anne Schmidt (architecture and urban design).

ered and correct behavior as regards our physical wellbeing. Only then can benevolent and responsible action be performed on a larger scale.

In the course of industrialization these opportunities for taste formation have been lost. In the supermarket foods are often packed so we are unable to smell them, and are quite literally “homogenized”. Processing of milk plays a pioneering role here. “Branding”, “labeling”, certification or sell-by dates relieve us consumers of the decision on whether something is good for us or not. Nutritional styles intended to increase efficiency whether with regard to body shape or weight, work performance, or time saving have come to replace food choices guided by sensual considerations.

Cultural appropriation processes, which to date took up the time of an entire generation have accelerated alarmingly and are increasingly subject to short-lived fads for self-improvement. Thanks to an ever-expanding choice, a mass of information, and mobility our taste is seemingly also going global. That part of our nutrition that can be sensually experienced now occupies an ever dwindling part of the global chain of influences that today constitute our kitchen metabolism and our eating behavior. However, the fact that we are unable to experience the connection between individual everyday actions and global impact represents one of the key problems in the Anthropocene. It is important to first analyze these systemic connections and then to form a picture of them.

EVOLUTION OF INDUSTRIAL, URBAN KITCHEN METABOLISM

One aspect is the realization that the kitchen space has altered from a place of production to one of consumption, and that it is closely networked with the city. After all, while until industrialization the house formed the focal point of actions involved with human nutrition, the use of fossil forms of energy produced new forms of households.¹⁰ The switching over of the fireplace from wood to coal and the introduction of iron stoves and oven about 250 years ago, followed the shifting of water sources from the outside (wells and water pumps on squares, streets and in courtyards) to the interiors of houses. Finally, thanks to a pipe system it moves into the home itself, i.e., into the kitchen, then the toilet and bathroom. The same applies to the waste water system. An innovative kitchen metabolism asserts itself, with whose developments the causative conditions for the Anthropocene are established. The pipe system for water becomes a model for supply household with gas, while electrification of the kitchen and household in the 20th century will also follow an existing pattern.

10 | This transformation is the subject of five films in the series “Küche, Stube usw. Geschichte der Arbeiterwohnung” by Jonas Geist and Joachim Krausse, WDR Cologne, 1978, and the three films “Das Neue Frankfurt 1925–30”, *ibid.*, 1985, as DVD edited by Christian Hiller, Joachim Krausse, Philipp Oswald, Filmverlag absolutMEDIEN, Berlin 2015; see Krausse: 1992, pp. 56–60.

All the pipe systems connect kitchen and household directly to large, industrial, external utility firms. The disposal of waste, water and feces via a canalization system running through towns and cities is the decisive measure against the city epidemics of the 19th century. This is followed by organized rubbish removal and the creation of “urban hygiene”. From now onwards households are connected to an urban supply network. With the emergence of the food industry food preparation moved to a large extent outside of private households. The increasing delocalization and relocation of food processing coincides with limits to the individual means of tracing back your own behavior and ultimately exerting an influence.¹¹ Simultaneously, the urban supply structure with its interfaces penetrates private households and the kitchen.

PARTICIPATION, POPULAR MEDIA AND INTERACTION

But in order to examine our habits and open up intuitive options on the tracks of the everyday, we feel it is necessary to do away with the division between the production and communication of knowledge and to avail ourselves of popular means of communication. One of our approaches for analyzing and visualizing the complex interlocking of local, regional and global factors is to develop a specialist comic-based co-design. This gave rise to the academic specialist comic *Die Anthropozän-Küche*,¹² which describes the current status of the global food situation together with its cultural, social, resource-related and geo-political embedding using drawn individual stories with a view to possible future courses of action and relies on the dialog as the format to connect the everyday behavior of the real protagonists from ten parts of the world with scientific data. Amongst other things, we discover, for example, in the case of the 75-year old Kelema Mutawa from Uganda, that within a generation the provision of food (prosumption, supermarket), the equipment of the kitchen (cooking place located outside the home, gas stove in the house) and the type of preparation (use of various fossil energies) can alter completely. The participatory, intercultural specialist comic project is interdisciplinary in the sense that the scientific research comes in particular from questions directed at the protagonists (What do you eat? Where do you shop? Do you know where your food comes from? How is food integrated into your everyday lives? What social role does it play? What is a simple, favorite dish?), and the storyboards were then developed jointly by scientists, communicators, protagonists and artists and the intercultural nature of the project was also

11 | Barthel, S. et al. (2014): Privater Haushalt und Städtischer Stoffwechsel – Eine Geschichte vor Verdichtung und Auslagerung Berlin 1700–1930, in: *Arch+ 218, Zeitschrift für Architektur und Städtebau*, Aachen/Berlin, pp. 92–104.

12 | Leinfelder et al.: 2016. See also <http://anthropocene-kitchen.com> and Leinfelder/Hamann/Kirstein: 2015.

to be expressed in the various styles of portrayal used for the individual chapters by the artist from the respective countries and regions.

Regaining sensory self-control over your own consumption of resources in the kitchen is another solution explored by the research project. Knowledge and lost knowledge about the human metabolism are visualized by graphic descriptions of the process chains involved. The omnipresent image of resources that are seemingly always available in any quantity should also be corrected in light of newly acquired experiential patterns. In experiments with a lab kitchen that is currently being assembled, among other things, data visualization of the interfaces and the relations of user actions are being analyzed. The goal is to underscore options for action that lead to a sensitive approach to consumer goods.

IDEAL TYPES FOR PATHWAYS TO THE FUTURE

Let us now conclude with another form of path that concerns us in the 'Anthropocene Kitchen', that of the ideal types for pathways to the future. When designing future regional or global worlds and addressing the issue of nutrition there are not one but numerous options. It seems sensible to outline these in potential ideal-type pathways to render the potential more comprehensible. The future design of nutrition could take an alternative path, be it reactive, sufficient, bio-adaptive or high-tech.¹³

A *reactive* solution would be to boost productivity by relying on technology, simultaneously enhancing efficiency and lowering the impact on nature. Greenhouse gas emissions would need to be controlled by separating the carbon dioxide and storing it, and new or now resistant vermin combatted by new pesticides.

The *sufficient* pathway, by contrast, would entail basing nutrition as exclusively as possible on regional, seasonal products, consuming far less meat or opting for vegetarian or vegan food.

In a *bioadaptive* world, nutrition would be produced with as extremely low resource inputs as possible, meaning best of all with complete recycling. Examples could be hydroponics or aquaponics, or eliminating packaging or composting it entirely. Phosphates would be reclaimed from the irrigation and sewage systems. Insects, raised in a very resource-friendly way and their chitin shells could then be used for bioplastic production, could serve as fishmeal for aquacultures, and also play a greater role in human nutrition.

The *high-tech* pathway would lead to fully-processed and modular food composed with a view to optimal health, and might be created using 3D printers. Meat would be artificial and lab-grown. The requisite raw

13 | Leinfelder, R. (2016): Das Haus der Zukunft (Berlin) als Ort der Partizipation, in: Popp, R. (ed.): *Einblicke, Ausblicke, Weitblicke. Aktuelle Perspektiven der Zukunftsforschung*, Berlin/Wien, pp. 74–93.

materials would be produced using genetically-modified and optimized strains in highly efficient high-tech factories, best of all in the places where they would be consumed, meaning in the middle of the large cities in special high-rises, farm-scrappers.

This pathway system is intended to be as visionary as it is visualizing, a framework to practice openness, a zest for experiment and discussion of the unusual in a social process; they are already sketched out rudimentarily in the 'The Anthropocene Kitchen' comic. The actual nutrition futures will no doubt, depending on the regional, cultural and social context, be assembled from wildly different admixtures of these options that, to the extent that their systemic impact does not conflict with our planet's limits or with the goal of sustainable development, will hopefully guarantee a large or even larger regional and global diversity in food in future. It is therefore all the more important that the kitchen as well as the cuisine of the future does justice to the sociological context and to the inevitably reflective character of nutrition.