CHAPTER 1

History of eating habits, food cultures and traditions in Western Europe

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Introduction

There are four key questions that come up in this article: Why do we cook? Why do we eat what we eat? What has changed after the caveman? Who influenced what we eat today? The first two I answer on a page, then it will be exciting…

The invention of cooking extends the biological niche of humans; this has raised the nutritive value of wild plant because nutrients can be digested better. Cooked meat delivered more energy (Carmody et al., 2011). Meats, such as beef, pork, and chicken, can contain harmful bacteria and parasites. If eaten raw, these bacteria and parasites could have severe health impact. Thus, cooking meat properly, harmful organisms are killed during the process.

Scientists from the Senckenberg Center for Human Evolution and Paleoenvironment in Tübingen have studied the Neanderthals' diet. Based on the isotope composition in the collagen from the prehistoric humans' bones, they could show that, while the Neanderthals' diet consisted primarily of large plant eaters such at mammoths and rhinoceroses, it also included vegetarian food (Wißing et al., 2016). They assume that Neanderthals diet in Western Europe was 80% meat, 20% vegetables. Indeed, there seem to be large differences in the eating habits with their conspecifics from southern Europe: The shotgun-sequencing of ancient DNA from five specimens of Neanderthal calcified dental plaque shows differences in Neanderthal ecology. At Spy cave, Belgium,

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Neanderthal diet was heavily meat based and included woolly rhinoceros and wild sheep (mouflon), characteristic of a steppe environment. In contrast, no meat was detected in the diet of Neanderthals from El Sidrón cave, Spain, but dietary components of mushrooms, pine nuts, and moss reflected forest gathering (Weyrich et al., 2017).

Here we see that—what man eats, how he prepares it, how he eats it, what he doesn't eat depends on his living environment and his culture. Despite dramatic differences between the typical regional foods, nutritional requirements are usually covered. There cannot be a best form of nutrition for all (Wikipedia.org, n.d.-a), not even an archaic so called Paleolithic diet.

It starts with the cavemen

Recent genomic data have revealed multiple interactions between Neanderthals and modern humans. Anatomically modern humans and Neanderthals were both living in Europe for up to 5400 years (Higham et al., 2014). Around 40,000 years ago, during the replacement period, human population increased by one order of magnitude, suggesting that numerical supremacy alone may have been a critical factor in facilitating this replacement (Mellars and French, 2011). Although this process of displacement has existed for many centuries, an increase in a few generations can be seen.

Reasons for the sudden fast growth of the population are uncertain. A change in the hunting procedure or the adaption of social structure in growing groups of *Homo sapiens* may have played a role. The climate change and the environmental conditions could have helped; we could imagine that distribution of knowledge on new medical plants can reinforce this trend.

First medical herbs have been found in the Shanidar cave in a 60,000 year old Neanderthal tomb: Yarrow, Cornflower, Bachelor's Button, St. Barnaby's Thistle, Ragwort or Groundsel, Grape Hyacinth, Joint Pine or Woody Horsetail and Hollyhock were represented in the pollen samples, all of which have long-known curative powers (Solecki, 1975). Because of a lack of findings, we do not know much about the precise point of time at which *Homo sapiens* has developed deeper knowledge of medical conditions, treatments and products. Newer findings concerning Ötzi, Europe's oldest known natural human mummy, found on the Hauslabjoch, have shown signs of a much more refined medical knowledge: he had several specialized tattoos created by making multiple parallel or intersecting linear incisions with a scalpel, filling the incisions with a mixture of herbs, and lighting the herbs, which also had the effect of cauterizing the incisions. Most of these tattoos were made on the skin over joints that were affected by arthrosis (lumbar spine, knee, and ankle). He might have used these tattoos as a form of localized therapy for muscle and joint pain. An analysis of the content of the Ice Man's rectum revealed *Trichuris trichiura eggs* which cause abdominal pain and cyclic anemia. Among the objects found with the mummy were the woody fruit of *Piptoporus betulinus*,

a bracket fungus. The toxic oils in the fungus were probably the only remedy available in Europe before introduction of the considerably more toxic chenopod oil from the Americas (Capasso, 1998).

Numerous findings cover that in the Mesolithic period, fish and seafood had a big share in the diet of mankind in coastal regions (Pickard and Bonsall, 2007). Huge mounds of shellfish, known as middens, are common on coast all over Europe. For example, Sligo in Ireland is a place meaning "shells," a reference to these mounds. The hunters of the North Sea and Baltic coasts were skilled fisher who built dugout, hunted seals with harpoons, and caught fish with traps and nets.

The Neolithic Revolution

In Western Europe, the Neolithic Revolution came delayed with the Linear Pottery culture flourishing approximately 5500–4500 BC. Childe named this transition from the hunter-gatherer to the agrarian way-of life with its far-reaching effects of this change in all aspects of life. Humans made their first successful attempts to domesticate animals and started retaining them in herds. Men became sedentary, settled down in permanent village communities. There is much speculation to the causes of the changeover and how it unfolded. Reichholf comes to a surprising conclusion: in the beginning, living in settlements didn't come about from need or hunger, but was based on raucous festivity and the discovery of alcohol.

He explains that excess, not need, turned humans into resourceful civilized beings and served as the catalyst for change, both with respect to the development of humans as well as their shift from a hunter-gathering way of life to agriculture.

Reichholfs calculations for energy balance are convincing. Three kilograms of grain per person per day would have been required to compensate a protein-rich meat diet. This means that a family would have needed around 5 tons of grain per year.

Then why did man began planting crops in the first place? Reichholfs answer is as surprising as it is convincing: because of alcohol. At first, the yield of wild grain was insufficient to replace meat, but now it was possible to produce alcohol through fermentation. This had served several functions. As an intoxicant at festivities, alcohol strengthened the community. At the same time, enzymes produced during the fermentation process break down plant substances that are difficult to digest. Thus, more nutrients became available. Indeed, the first verifiable record of grain cultivation did not involve wheat but rather barley, which is still used to make beer today. Until much later beer mash turned into sourdough for baking bread. Alcohol tolerance is still highest today in the cultures where bread is a nutritional staple (Reichholf, 2008).

From now on humans produced foodstuffs themselves, and not only nature. Human societies were founded in a new direction that quickly led from the first settlements to urban communities. Small, loosely affiliated tribes developed into ethnic groups and

larger communities. Substantial population growth previously would have posed a threat to the nomadic groups because the number of people had to balance with the supply of game. Now it offered advantages, because the number of harvester productivity rouse (if the cultivation area can be increased), and from this food surplus specialism, division of labor and not at least ownership emerged: people and ownership combined to form power. The new lifestyle proved far superior to the old one. The migration and resettlement of peasants created imitators, spread, and achieved dominance.

In the cooking pots of the so called "proto farmers" domestic cattle and sheep are now mixed with red deer and mussels (Craig et al., 2011). Grain farming varied from region to region, but two forms of ancient husked wheat are generally included: einkorn and above all emmer. Further spelt, barley and millet were cultivated, some as summer, some as winter crops. Besides this, there are a few findings of peas and lentils. Seeds picked from wild plants like linseed and poppy seeds were valued for their oil content.

Berries, fruits, herbs and vegetables mostly added flavor to the food or had medical purposes. Farmers used blackberries, raspberries, strawberries, dewberries, elderberries, hawthorn, rosehips, cornelian cherries, sour cherries, pears, plums, sloes, wild grapes and the very popular crabapples. They cultivated local medical plants like orach, bistort, sorrel, stinging nettle, wild garlic, and imported plants from the Mediterranean region like parsley, dill, lemon balm, mistletoe, verbena, juniper berries, marjoram, caraway and mugwort.

Except for dogs, all farm animals originated in their domestic form from the Near East. Any cross-breeding of sheep, goats, pigs or cattle with game animals was willingly avoided. As paleogenetic studies have shown, the native European aurochs were never tamed. All local bovine breeds can be traced back to a small herd of around 80 animals some 10,500 years ago.

Soon a continuous trading network was extended all over Central Europe from the Paris basin to the Black See, shown by the linear band ware, ceramic pots of a very particular way of production and decoration that appear throughout the transport route.

Bovine Milk became an additional agricultural livestock keeping for food and labor. Lactose tolerance, the tolerability of unfermented milk after weaning, was growing among dairying farmers around 7500 years in association with the dissemination of the Liner Pottery culture (Itan et al., 2009). The earliest evidence for cheese making came in northern Europe from the sixth millennium BC. The presence of abundant milk fat in ceramic vessels perforated with holes, indicates the vessels being used to separate fat-rich milk curds from the lactose-containing whey (Salque et al., 2013).

Salt was a luxury good traded over long distances. As flavor enhancer and preservative, it creates might and riches for the ruling elite of the region. The only available natural sweetener was honey. Honey has been used for both nutritional and medical purposes. The belief that honey is a nutrient, a drug and an ointment has been carried into our days (Bogdanov et al., 2008). Honey inhibits the growth of microorganisms and fungi.

Its antibacterial effect mostly against gram-positive bacteria is well documented. Both bacteriostatic and bactericidal effects have been reported for many pathogenic strains. Further, it was reported that honey has also been shown to inhibit *Rubella* virus in vitro, three species of the *Leishmania* parasite, and *Echinococcus*. The antimicrobial effect of honey is due to different substances and depends on the botanical origin of honey (Bogdanov et al., 2008).

From Bronze Age to the Roman Empire

Later, when one started mining copper and alloying with tin to bronze, again different groups migrated through Europe from the Iberian Peninsula up to Bohemia in search of new metallogenic rich areas. The bronze technology was a trailblazer for extensive cultural exchanges. These new commercial relationships can be traced through golden and ceramic drinking vessels of various styles to consume alcoholic beverages from berries and fruits.

Over time, less productive grains became rarer, while rye, spelt, millet and oats spread. Pulses became more and more important as foodstuff and animal feed, in mountain areas. The spread of fava or horse bean steps with domestication of horses from around 2500 BC. Horsemeat was eaten regional in varying degrees. Horses were never only bred for human consummation, because pork and beef are significantly better feed utilizer. In Ireland and Britain they seem always to have been taboo as a foodstuff (Wikipedia.org, n.d.-b). In the rest of Europe horses were more often used for ritual sacrifice, traveling or as warhorse. But people have always eaten horsemeat at least until the Christianization. This is shown by two anecdotes: In 732, Pope Gregory III instructed Saint Boniface to suppress the pagan practice of eating horses, calling it a "filthy and abominable custom" (Hillgarth, 1986). The Christianization of Iceland in AD 1000 was achieved only when the Church promised that Icelanders could continue to eat horsemeat (Jones, 1965).

Shortly after horses came domestic chicken and geese to Western Europe. Hunting for meat became less important and took a more ritual and social meaning.

Men collected astronomical data over a very long period and used them for agricultural planning. The astronomical knowledge and abilities of the people of the European Bronze Age included close observation of the yearly course of the Sun, and the angle between its rising and setting points at summer and winter solstice. Earthworks like Goseck circle in Saxony-Anhalt from 4900 BC and megalithic astronomical complexes such as Stonehenge from 2600 BC were used to mark the solstice. The sky disc found in Nebra/Saxony from around 2000 BC represents the sun, moon, stars, including the seven Pleiades, used to determine the dates for sowing and harvest. Although annual variations in climate persisted, the knowledge and the diversification of varieties minimized the risk of crop failure.

The population growth was partly made possible by the introduction of new crops, including improved varieties of barley and wheat, and farming of peas, beans, flax and other crops.

Farming techniques improved, and the introduction of the iron-tipped plowshare made the cultivation of heavy clay soils possible.

With the advent of iron, a cultural division took place between Celts in the south and Germanic tribes in the north. Alpine Celtic settlements were founded around copper mining. Primary source of food was cattle, pigs and grain. Salt mining flourished and Celtic salt pork was even exported to Rome in barrels. Trade with rare metals such as pewter increased economic and cultural contacts. A burial mound in Hochdorf/Baden-Württemberg, dated to 525 BC, shows a Celtic prince buried with a massive cauldron and vessels for drinking and eating the powerful social and political elements of feasting and fine eating.

At the end of the Iron Age, overpopulation and failed crops brought greatest changes. The Celts were pressed west by expansive, migrating Germanic tribes while Romans advanced over the Rhine and the Danube.

With Roman army came their floodways. Roman commanders had to stock a year's worth of food. Figs, rice, olives and chickpeas were imported, but for grain, meat and wine, local production was essential. It was inevitable that the Germanic would sooner or later become familiar with and involved in the Roman ways and habits (Heinzelmann, 2016).

The extended Roman influence over the continent also lead to growing contact between Britain and the Roman world.

After 43, all of Wales and England south of the line of Hadrian's Wall became part of the Roman Empire. In Scotland and Ireland, the Iron Age life and traditions continued with only occasional Roman incursions into Scotland and trade with Ireland (Richards, 2012).

When the military administration was replaced by a free and private economy, the introduction of agriculture in Mediterranean-style induced an agrarian revolution. The density of population grows and a cross-cultural mix of Celtic, Celtic-Germanic, Germanic, Italic, and Gallic developed. The villae rusticae often placed between fields, grasslands, pastures and woods. They had buildings like barns, storage buildings, stables, and workshops for glass production, pottery and forge. Rye came from the Germanic east, naked wheat from the Gallic west to join the local varieties who kept longer and better in a moderate, humid climate since they are covered by husks.

Roman farmers were adept at developing new varieties suited to different climatic conditions. Orchards thrived, and vegetable production became more efficient under their care. They induced new plants like amaranth, chard, turnip, purslane, garlic, dill, coriander, savory, thyme, celery, apricots, almonds, peaches, quinces, walnuts, chestnuts, medlars and wine grapes (Heinzelmann, 2014).

Wine was an intrinsic part of Roman Lifestyle. Wine or vinegar was mixed with water, often refined with various spices such as laurel, pepper, honey or sea salt, more for reasons of taste than to lower the alcohol content. Roman banquets often included three courses, mostly with meat from pork, but also with hare, boar, venison, all kind of birds, fish, famed snails, mussels and oysters. Roman settler introduced rennet to produce storable cheese and crossed large Roman bulls with smaller German cattle breeds. The production of milk, supplies by beef and hides increased significantly. Agricultural productivity boomed. In larger settlements trading took place on fixed days in covered markets with all kind of specialists operating from workshops in near surroundings.

The heritage of the Roman Empire

Around 260 the Allmans forced them back behind the Rhine and the Danube, but their culinary habits did not disappear with them. The rich heritage in Romans' called Lesser Germania in southwest Germany, northwest of Switzerland and Alsace is today called Alemannic food. Northwest of the Rhine, Romans stayed two centuries longer. Trier was the largest city north of the Alps and Cologne became deeply ingrained with a southern food culture and way-of-life.

In the northern Part of Europe, Roman culture was obviously less influential. Direct contact with Romans were unlike for men in small settlements, but some exchange could take place through German legionnaires serving in the Roman army as well as through trade.

During the milder periods of the early centuries AC, the marshes and islands along the coast were settled, people and animals (cattle and sheep) lived together in large houses. In the inland regions, they used cattle sheets and pit houses for stockpile. Pigs were often kept in oak forests, chicken, ducks and geese provided eggs and meet.

Barley was the popular grain, followed by oats and rye, millet and wheat. Cultivated beans and onions and more and more bread became part of the diet. In the north, quark was made by letting sour milk curdle and separating the liquid from the solids with a ceramic sieve. Butter, made in wooden barrels, was at least used for medical and cosmetic reasons. Because of the low population, clean drinking water was abundant, beer, mead and cider were consumed, whereas grape wine almost remained an imported luxury. When the Roman Empire's influence in Central Europe came to an end in the 5th century, everybody seemed to be on the move, pushing south and west due to devastating pandemics and climate chance.

With the settler came their food preferences, such as the Slavic habit for rye and buckwheat. When the Franks drove the Roman troupes out, the owners of large estates went with them, but many of ordinary people like worker and laborers, stayed behind and maintained the Roman agricultural system in Lesser Germania throughout a while. Germanic settlements slowly absorbed the remaining Roman population.

But four centuries of Roman life-style, agricultural and culinary developments augmented the regional differences. Larger cities like Cologne, Trier, Mainz and Augsburg survived the crisis. At the end of the migration of the Germanic peoples, people started to re-cultivate more land now with animal husbandry of equal importance to grain cropping.

Christian food rules and medical traditions

At this time, another important influence in the European food tradition was gaining in strength: Christianity. Based on the general virtues of thrift, modesty and honesty, Church provided to be quite pragmatic in adapting pagan traditions to comply with the new religion, in others it prescribed abstinence from them. After a series of serve famines in 6th-century Rome, the pope declared gluttons as one of the Deadly Sins. Christian church furthered social stratification. After the coronation from Charlemagne by the pope in the year 800, he established the Franks as the new European leaders with a counterbalancing element of standardized administration and unifying system of laws, to ensure an agricultural surplus for saving the political stability in his empire, dependeding on local leaders' loyalty. He issued the *Capituale de villis vel curtis imperii*, an inventory of detailed directives for the management of the royal estates and prescribed the more effective three-field-system under which summer and winter grain were rotated with root crops and fallow periods. He had written down rules for the production of wine and included the single use of wooden barrels to store it. The Capitulare has listed around 70 herbs and vegetables as being cultivated in the imperial gardens and made hunting as a permanent royal privilege.

In the 9th and early 10th century, nomadic Hungarian horseman, Arab tribes and Vikings gave additional cultural impulses.

The Northmanni played an important role as distributors, explorers and colonists, they maintained trade routes that reached all over Europe and into northern Africa and the Black Sea and brought along exotic foodstuffs and spices. We know from the Abbaye de Corby, a monastery in northern France, from the use of imported garum (a kind of fish sauce) along with other imported goods such as olive oil, pepper, cumin, cloves, cinnamon, spikenard, costus, dates, figs, almonds, pistachios, olives, chickpeas and rice in this time (Levillain, 1902).

Ibrahim ibn Ya'qub, a 10th-century merchant from Arab Spain, has described the "very big city" of Mainz where he was amazed to find in the utmost west of the Occident spices that only grow at the very end of the Orient, like pepper, ginger, cloves, spikenard, costus and galangal. There were two possible routes between Asia and Europe: one on the Mediterranean, from France or Spain through Alexandria or Antioch, the other across Central Europe, to Constantinople or the areas on the lower Volga. This shows that these goods did not require reintroduction as Crusaders' souvenirs to European kitchens.

For the Viking settlement of Haithabu we have an example of urban food sources in the north: Foodstuffs cultivated or gathered from the immediate surroundings include barley, rye, oat, wheat, millet, fava beans and flax as well as plums, peaches and eight varieties of wild berries, cherries, beechnuts and hazelnuts with only wine and walnuts imported from a significant distance (Behme, 1997).

Barreled up wine was transported from the Upper Rhine as fare as Stockholm. In Northern Countries, the preference was for beer or ale and less frequently mead. All grain was used for the production of beer. With hobs slowly replacing gruit, beer became longer storageable.

We know from the detailed Plan of St. Gall monastery garden drown up on Reichenau island (early 9th century) what cooks of the time might have had at their disposal (UCLA Digital Library, 2012). They grew onions, garlic, celery, leeks, coriander, dill, opium and field poppies, radishes, chard, lettuce, chervil, parsley, shallots, savory, parsnips or carrots, cabbage and nigella in the hortus. The herbularius was reserved for medical plants: spearmint, cumin, lovage, fennel, sage, rue, iris, pennyroyal, lilies, roses, savory, beans, costmary, fenugreek, rosemary and mint.

The orchard included apples, pears, plums, pine nuts, sorb, medlar, laurel, chestnuts, figs, quinces, peaches, hazelnuts, almonds, mulberries and walnuts. It also served as a graveyard.

Many of these plants were also available from castle gardens in the lower Rhine area in the 11th and 12th century, so a varied supply of fruit, vegetables and medical plants could be on offer at least in privileged places. Cultivated sweet fruits were regarded as a great luxury and reserved for the rich and powerful elite. Meat, especially the roasted choice cuts was another aristocratic privilege. Bones found at the castle show a regular diet of meat from pigs, cattle, sheep, goats, domestic or wild geese, ducks, chicken, hare, wild rabbit deer and boar (Ekkehard, 2013).

The simple rural population had eaten cereals. Meat and milk products were smaller supplements. Grain came in many different forms, from the thin, dark gruel eaten by the poor to fine white bread for the rich. The diversity of bread can still be found in today's Germany, although presently the social classification is almost reversed. The undemanding rye had a quick expansion and at the late Middle Ages it was the most important of Germany's grain crops, even on more fertile soils. All crops, were in all probability a mix of different varieties, the genetic diversity was a kind of insurance policy against pests and diseases.

Regional distribution was limited and the surplus from good harvest quickly turned into a shortage in bad years. Severe drought and famine lasted over a few years and have been so frequent that everyone went at least through one in this time (Behme, 1997).

Now hunting was part of the territorial claims. By the 13th century even the aristocracy consumed less than 5% of their meat as game. The distinction between higher and lower game was induced. The higher game was reserved for the king and aristocrats of

elevated standing with red and fellow deer, boar, bear, elk, ibex, chamois, capercaille and pheasant. The lower game for gentry included roe deer, hare, partridge, fox, badger, marten and duck.

The connotation of milk products, eggs and meat with the vices of gluttony and lechery resulted in a complex pattern of eating. The 40 days from Ash Wednesday to Easter Sunday (not counting Sundays), the three rogation days before Ascension Day and the four Ember days (or even weeks), as well as the 4 weeks in Advent before Christmas, altogether about one third of the year, were fast days. Fridays and Saturdays and the evenings preceding all mayor saints' days were lean days. On fast days, all parts of warm-blooded animals, milk, dairy products and eggs were prohibited and only one meal could be taken. On lean days, the rules were less strict and mostly concerned the exclusion of meat (Heinzelmann, 2014).

These rules brought people to inventive solutions such as the arguments that made the beaver into a fish, citing its amphibious behavior and the scales on its tail. However, in contrast of the Mediterranean regions with its opulence of fruits, vegetables, fish and olive oil, such a diet was more difficult to realize the further north you lived. In the water-rich regions most villages had their own water mills and because of dammed up lakes also freshwater fish supplies. From the 11th century monasteries and lieges stocked their own fishponds and bought in salted herrings and stock fish in response to the regional shortcomings. Without cooling systems, fresh marine fish could only be transported up to 150 km inland. This led to an important market for salted herring and stock fish. In particular, the common crap was very well suited to the new created habitat. It grows faster than the native bream, tolerating lower oxygen levels and was able to survive for a few days out of water if kept cool and damp during transport. It is still traditionally served on Good Friday and New Year's Eve. Prices for local wild fish rose and they became a luxury good. In the 15th century fish in town was three to five times more expensive than beef.

Before and after fasting periods people solemnized. Easter eggs were ritually blessed together with the first lamb; the excesses of Carnival before the Lent are still part of today's life, especially along the Rhine. In many cases pagan rituals were adopted into Christian traditions, such as the Carnival parade in Cologne, this originated in Roman Saturnalia and Celtic rituals or the winter solstice and Christmas.

Beside the Christian food rules, medical traditions were also important for medieval meals. Ingredients, spices and preparations came from the pharmacy into the kitchen since culinary recipes developed out of medical prescriptions: the German word for both is still "Rezept." The classical medical knowledge was preserved through the Benedictine order and their monasteries required at least a separate room and special orderly. This was the beginning of the monastic hospitals.

The medieval medicine was improved with the Lorscher Arzneibuch, a pharmaceutical and medical handbook written in the monastery of Lorsch around 800.

The book included many medical recipes based on the works of Pliny the Elder and recommended that medical treatment should be accessible for everyone. Physicians were required to adapt on patient's economic opportunities and to use local drugs and herbs.

In Salerno a teaching hospital and later a medical school for the monks of Monte Cassino was founded. In the 11th century, Constantine, a spice merchant from North Africa, translated medical texts from Greek and Arabic into Latin. At this time the Arabs were established in southern Spain and Sicily. They introduced many innovations to the apothecaries and kitchen of Europe. This included food preservation and the art of distilling and the cultivation of sugar cane in the Western Mediterranean region from where it was exported to Northern Europe. All these elements with the close connection between preventative medicine and cooking made their way slowly northwards. Improved medical treatment led to a new understanding of nutrition and finally the recording of culinary recipes.

While rye was preferred in the north and east, the west was dominated by wheat and the southwest specialized in spelt, also harvested green and dried as green spelt. Field crops, fruits and vineyards crept up hillsides. With the Christianization of the Slavic population from about 1100, Slavic influences added another facet in German food: Buckwheat, a fast-growing pseudo-cereal used for making gruel and pancakes rather than bread because of its lack of gluten. The Alsace physician Melchior Sebizius mentioned buckwheat 150 times in his dietary work "De Alimentorium Facultatibus."

Hildegard von Bingen, the 12th-century Benedictine abbess represent with her medical works Physica and Causae et Curue the high point of monastic medicine. In the humoral pathology the four elements earth (cold and dry), air (hot and bodily), fire (hot and dry) and water (cold and wet) matched the four humors phlegmatic, choleric, melancholic and sanguine. These conversely corresponded to the four bodily fluids: black bile, blood, yellow bile and phlegm. Human well-being depended on a balanced body status, characterized as warm and moist. The system focused on countering an imbalance and the belief that an excessive temperament could be tempered through diet. This is still reflected on common ideas of nutrition: chopping or pureeing guaranteed a good blend and digestibility, cooking changed the nature of nourishments and coloring brought an additional option to make something more suitable for a certain occasion or person. This became the basis of familiar culinary wisdom and we now remember the source when we hear Hildegard's advice on lettuce, which was considered as cold and so must be tempered by a vinegar dressing. Hildegard gave many preparations for numerous ingredients, which were copied and further disseminated in following centuries by scribes such as Meister Eberhard who took long passages of the Physica into his own popular cookbook in the 15th century (Weiss-Amer, 1992).

New trade routes

In the 14th Century, trade routes determined social differences and priorities between the north and the south. Patrician families like the Fuggers and Welsers in Augsburg controlled the trade with the south and copied the Italian's nobles' refined food culture. They took over the Italian preference for white bread and olive oil and recognized the enormous potentials of spices. Expensive spices and complex preparations became important to demonstrate elevated status. The business acumen of the Fuggers extended to financing Magellan's circumnavigation of the globe, a highly profitable undertaking because from 1500 the new route to India around the Cape of Good Hope lowered transport costs. Above all pepper became affordable. Almost anybody could now at least occasionally afford some imported spices. Social rank manifested itself in how often one used them. Pepper remained popular far longer in Germany than in Southern Europe. In France it was seen in the 14th century as assigned for dishes with blood and offals. Ginger was much more popular. It was regarded as well balanced, neither too hot nor too cold and together with cinnamon it made the popular everywhere Sauce Cameline. In Germany, local herbs were still widely used while spices like cloves, nutmeg or cinnamon were almost unknown until the end of the 15th century.

In contrast, the northern Hanseatic League was a much more egalitarian affair. Operating on the local level of town and city councils, it was controlled of more and less wealthy merchants. Dishes did not become more refined but quantities grew. The rapidly increasing middle class citizen demonstrated their prosperity by opulent household utensils. Grapen, three-legged cast iron roasting dishes were a common feature in their kitchens and gave the name to the Grapenbraten, a still popular braised beef dish. The dark sourdough rye bread was the basic foodstuff in the north. The Hanse was a trader alliance from the 12th until the 17th century that significantly influenced the social-economic life in Northeurope. At its zenith, it had almost 300 towns and cities from the Zuidersee and Yssel in the west and the Lower Rhine in the south to Krakau and Breslau in the east. It catered to a growing urban population that was no longer self-reliant or supplied by their hinterlands, as well as providing less productive regions. The Hanse era came to an end with the rise of strong nation states, particularly Holland and England.

The invention of the process of gibbing by Willem Beukelszoon, a 14th-century Zealand fisherman, created an export industry for salt herring monopolized by the Dutch. This was the germ cell of the fast growing Dutch fleet. Before the Dutch Revolt, Antwerp had played an important role as a trading center in Northern Europe. After 1591, the Dutch merchants fell out of the spice trade with the Portuguese lead syndicate with Spanish, Italian and South-German merchants. However, at the same time, the Portuguese trade system was unable to increase supply to satisfy growing demand. Breaking through the embargo brought huge profits. As the Dutch Republic entered its

Golden Age in the 17th century, a wealthy middle class had access to a rich variety of traded goods. The Dutch Empire enabled spices, sugar, and exotic fruits were imported. The Dutch East India Company was the first to import coffee on a large scale to Western Europe. Venice had the first coffeehouse around 1645, little later London and The Hague. After introduction to the French court in 1669, it became a new fashion in Germany as well. In Hamburg a coffeehouse opened in 1677. The first exports of Indonesian coffee from Java to the Netherlands occurred in 1711. In Holland and England tea quickly followed coffee, whereas in Germany only in the North, for the East Frisians, tea became part of everyday life. The availability of relatively cheap spices resulted in a Dutch tradition of spiced cookies called speculaas.

England played an important culinary role at the time, shown in the Forme of Cury, an extensive collection of medieval English recipes from the 14th century. The book offers sophisticated recipes, with spicy sweet and sour sauces thickened with bread or quantities of almonds boiled, peeled, dried and ground, and often served in pastry. About 31% of the recipes use sugar (49% including fruit sugar). Butter became an important ingredient in sauces, a trend which continued in later centuries. Thirdly, herbs, which could be grown locally but were rarely used in the Middle Ages, started to replace spices as flavorings.

In the late 17th and early 18th century, after the loss of contact to the Roman church in the protestantic regions, the ruling class and wealthy people chose France as a cultural model. Social graces, fashion and culinary habits assumed the fine French style. In the past, regional culinary differences had been typical for the rural population, whereas the food selection of the upper class was more uniform and international. In the kitchen of the educated bourgeoisie, these two styles merged, with cooks imitating and refining familiar regional dishes according to the rules of the French court cuisine. The French added sweet desserts and meat dishes like fricassee, ragout and cotelettes to the European repertoire complete with linguistic terms. Exotic spices were replaced by fresh herbs, cooking time was reduced, and naturalness replaced most dietic rules of the humoral pathology.

The role of potatoes

Potatoes came to us via the Canary Isles, the first barrels of potatoes were exported from Gran Canaria to Antwerp in November 1567 (Hawkes and Francisco-Ortega, 1993). First in southern Netherlands, Belgium, northern France, Ireland, England and Scotland potatoes were widely planted and accepted as a staple food. In Germany, it took place some decades later. As it proved, the potato was by far the most efficient crop on fallow land, although it was not the best for restoring soil quality. Potatoes sustained the increase of the population until the end of the 18th century in particular. Land became scarce all over Europe, since more or less all viable areas were already under cultivation.

The Industrial Revolution was drawing an ever-increasing percentage of the populace into crowded cities, where people were working 12–16 h days, which left them with little time or energy to prepare food. High yielding, easily prepared potato crops were the obvious solution to England's food problems. Hot potato vendors and merchants selling fish and chips (an invention prior to 1680 from the Spanish Netherlands, todays Belgium) wrapped in paper horns became ubiquitous features of city life. Between 1801 and 1851, England and Wales experienced an unprecedented population explosion, their combined population doubling to almost 18 million.

Before the adoption of the potato, France managed to produce just enough grain to feed itself each year. There were at least 40 outbreaks of serious, nationwide famines between 1500 and 1800. The benefits of the potato, which yielded more food per acre than wheat and allowed farmers to cultivate a greater variety of crops for greater insurance against crop failure, were obvious wherever it was adopted. The potato insinuated itself into the French diet in the form of soups, boiled potatoes and pommes-frites. The uncertainty of food supply during the Revolutionary and Napoleonic Wars, combined with the tendency of above-ground crops to be destroyed by soldiers, encouraged France's allies and enemies to favor the potato. By the end of the Napoleonic Wars in 1815, the potato had become a staple food in the diets of most Europeans.

While the potato had rapidly become an important food across Europe, in Ireland it was frequently the only food. By providing a plentiful, cheap, nutritious food source, the potato helped transform Ireland from an under-populated island in the 1590s to the most densely populated country in Europe 1840 (Phillips and Rix, 1995).

Many Irish only had milk and potatoes at that time. These two combined provide all essential nutrients. By the early 1840s, almost half of the Irish population had become entirely dependent upon the potato, specifically on just two high-yielding varieties. The *Phytophthora infestans* cased a potato disease known as late blight, which was the main culprit in the European potato famines. The worst outbreak was the in Ireland, a period of mass starvation, and emigration between 1845 and 1852 with decreasing of the population by 20%. The Irish had developed in this time a peculiar way of cooking potatoes "with and without the bone or the moon." This method of cooking the potato pertained to par boiling the potato, leaving the core undercooked and was the preferred meal for a laborer with a day's work to do. The partially cooked potato lay in the stomach creating a second digestion period after the initial flowery mass was digested, helping the workers to be less hungry (Wilde, 1954). Traditionally, July was still known as "hungry July" because the old crop had finished and the population waited until August 1st to pick the new crop. The collective memory of the Irish explained why some authors liken the excitement caused when Irish new potatoes go on sale in early summer to the arrival of the New Year's Beaujolais crop in France (Sexton, 1998).

The beginnings of the food industry

While the origins of modern food science lie in the early 19th century, its findings started to make a real impact on food industry in the 1870s. The origin of the food industry is at least partly the need to find new ways and means to feed the armies. Military requirements could push up the costs of food because of the additional demand or creating a shortage due to uncontrolled foraging by the troops. The Production of Liebig's meat extract, Germany's first mass food product started 1864. It was the brainchild of a German engineer combined with Belgian (and later English) capital and linked the immense cattle herds of the South American prairies with European customers. At first, they were sold to the army and hospitals, later private households increasingly gave up boiling meat soups and stock and bought Liebig's instead. In the 1880s the Swiss Julius Maggi and Carl Heinrich Knorr of Württemberg marketed products that were based on ground legumes, dried vegetables, pearled sago and tapioca and at a cheaper price. The French Hippolyte Mège-Mouriès created Margarine in 1869. He was responding to a challenge by Emperor Napoleon III to create a butter substitute for the armed forces and lower classes.

In the late 19th-century and early 20th-century, Germany and Switzerland propagated a back-to-nature lifestyle reform as a reaction to the industrial way of life. Garden suburbs began to appear at the edge of large cities named after the Leipzig physician Daniel Schreber. These allotments were used for food production and recovery. Maximilan Bircher-Brenner, a Swiss-German physician, was one of the strongest opponents of Justus von Liebig and the new food scientists. He opened his sanatorium "Living Power" in Zurich for the wealthy who suffered from the long-term effects of the overeating and attracted businesspeople, writers and artists from all over the world. Treatments included long walks in nearby woods, gymnastics and modest vegetarian meals that favored raw food. With the famous Bircher-Brenner muesli (a Swiss diminutive of Mus, mush) we see a closed circle to the stone-aged groats. It consisted of fresh fruit, above all grated apples with skin and core, soaked oats, ground hazelnuts or almonds, lemon and sweetened condensed milk which the doctor preferred over fresh milk for hygienic reasons, in spite of the processing involved.

During the World Wars of the 20th century difficulties of food supply were countered by official measures, which included rationing. The longtime use of surrogates and substitutes of surrogates changed the eating habits substantially. Kitchen servants with time to make elaborate dishes with many ingredients were replaced with instant foods in cans, or powders that the housewife could quickly mix. Urbanization and industrialization of food production as well as female emancipation have resulted in a highly modern consumer society, sticking to a traditional household role. Principles of organic farming are now widely accepted as an essential element of contemporary food culture. The last half of the 20th century saw an increase in the availability of a greater range of

good quality fresh products and greater willingness to vary diets and select dishes from all over the world. With the new Millennium came a renaissance of the regional cuisines.

> *We have to eat; we like to eat; eating makes us feel good; it is more important than sex. To ensure genetic survival the sex urge need only be satisfied a few times in a lifetime; the hunger urge must be satisfied every day…Food is also an occasion for sharing, for distributing and giving, for the expression of altruism, whether from parents to children, children to in-laws, or anyone to visitors and strangers…Thus food becomes not just a symbol of, but the reality of, love and security*
>
> ***(Fox, n.d.).***

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