

'UvA in the spotlight interview' with University Professor Louise Fresco

Introduction

Food plays an increasingly important role in 21st century Western life with the media awash with celebrity cooks, restaurants serving cuisine from all four corners of the earth, and the exponential growth in choice on the shelves of supermarkets, be that the standard high street concerns or the growing number of chains offering organic produce. However, the shadow side of our food industry has recently garnered front-page headlines.

Food chain safety

The horse meat scandal that enveloped Europe highlighted how little the average consumer knows about what he or she is eating. Questions and fears surrounding Genetically Modified Organisms (GMOs) have also captured the public imagination with the recent so-called 'Monsanto Protection Act', which many saw as giving GMO giant Monsanto legal immunity and a monopoly position, leading to social media campaigns and public protests. While some scientists warn of the potential dangers of GM foods, such as autism and cancer, others advocate rational scientific research into its advantages.

So, how safe is our food and how can we feed a population set to reach 9 billion by 2050 in a sustainable way?

Prof. Louise Fresco

Professor Louis Fresco was appointed University Professor at the University of Amsterdam (UvA) in 2006. As a University Professor specialising in the foundations of sustainable development from an international perspective, her role is to bridge the gap between science and society, dealing with topics such as agriculture, food, ecology, climate and health.

Fresco has conducted extensive fieldwork in countries ranging from Papa New Guinea to the Congo and was director of research at the Agriculture department of the UN's Food and Agriculture Organisation (FAO). She also advises companies ranging from Unilever to Rabobank.

UvA in the spotlight interview

In this interview, she discusses the history of food, the need for sustainable utilisation of global resources and addresses the truths and myths surrounding controversial topics such as GMOs and intensive farming.

Professor Louise Fresco Interview

'Hamburgers in paradise'

You have mentioned in your newest book 'Hamburgers in Paradise' that many people are oblivious to where their food comes from. This is also mentioned in the influential documentary 'Food Inc.' Why is this?

Food links the consumer to the producer and everything in between. It is really essential, not just to individual survival, but also to how societies survive. All institutions and all religions from the dawn of mankind have been concerned with regulating food and managing its scarcity. In the past, up to 200 years ago, most people produced all or part of their own food. Urbanisation, and hence the dependency on others to produce one's own food, is quite a recent phenomenon in human society. Urbanisation was made possible by the fact that farmers started to produce a surplus. If you only produce enough for yourself, you cannot have a city. Cities emerged a couple of thousand years ago, but the phenomenon that we have large sectors of the population who are not producers anymore has really only come about in the last 200 years and often only during the last 50 years. Current generations have grown up in cities, urban environments and suburbs where there is no visual or direct link with where the food comes from. So, they do not know anything else than food being something that is bought in supermarkets or on the markets. As a result the process of food production is completely invisible, even to the extent that approximately 40% of British kids believe that milk comes from a factory.

I think that the reason people are oblivious to or harbour a lot of myths about food has to do with the invisibility of the food chain, which is a very recent historical phenomenon. All the current movements concerned with local food, urban agriculture, local markets and biological agriculture are ways of coming to terms with the fact that our food is invisible. There is one other interesting corollary here and that is because food is invisible, food is a source of fear far more than it should be. The invisibility confirms a sense of a lack of control. Hence, if there is some hiccup in the food chain, such as salmonella, horse meat or avian influenza, people think food is unsafe. However, our food has never been safer than now, but there is this sense of impotence if something happens.

In your book 'Hamburgers in Paradise', you state that you hope it will inspire readers with certain facts. Could you name a few facts everyone should know?

Most people are not aware that agriculture is not a European invention. It comes from the Middle East. Europe was actually quite slow in following. We inherit from previous generations and knowing what you eat is also about knowing where your food comes from historically. Secondly, there are lots of myths about different types of food. For example, there is a lot of confusion about meat. I try to show that meat is essential in some ways. It has been essential in our history and evolution as a human species and it is still essential to certain groups of the population. For example, small children, pregnant women and the elderly must

eat some meat. A vegetarian meal is not a solution to everything. Another interesting fact that most people are not aware of is that if you want to be a vegetarian, you should not drink milk, eat cheese or butter, because cows only give milk if they have calves, and half of these calves are male. So, by definition every lactating cow produces 50% male calves, which have to be slaughtered. Drinking milk therefore indirectly sustains the meat industry.

At the same time, most people also do not know that we can quite easily substitute significant quantities animal proteins in meat and fish by vegetable proteins without consumers noticing a lot. This technology is already available.

Another thing is that many people think hamburgers are morally bad. That is actually a running gag in my book. I try to show how the perception and the response of the hamburger industry to societal pressures (environment, health) have changed. Hamburgers are becoming fashionable again. It is not true that hamburgers lead directly to cutting down rainforests.

A controversial opinion of yours is that intensive poultry production is better from an environmental viewpoint. Could you explain this?

In many ways, we would like things that are good for animals to also be good for the environment, but it is not always the case. Sustainability is always about a trade-off between different objectives. There are very few win-win situations. In the case of poultry, for example, an animal that walks around freely looks 'happier' to us, even if it does not necessarily feel happier, because free roaming animals sometimes are more stressed. They pick at each other, for example. Furthermore, if a bird walks around it consumes more energy. It also loses body heat if it walks around outside. It grows more slowly. The more slowly it grows, the more feed it needs and hence the more inefficient the feed ratio is. So, from an environmental point of view, the emission of greenhouse gases and the feed and water requirements for free roaming animals are more demanding than for animals which are kept in pens or stables.

How does this weigh up to the ethical and health issues?

Indeed, free roaming animals are at more at risk of infections from wild birds, for example. Obviously, governments have to set standards in terms of what is tolerable or intolerable for animals. We do not want livestock to suffer. I think it should be made clear to the consumer what he or she is buying. The consumer chooses then whether animal welfare or health is more important than the environment. At present, that is not clear from the labels of products in supermarkets.

The documentary 'Food Inc.' showed the shocking economic toll on farmers who are obliged to work for, and often in debt to, large corporations/monopolies, what is your view on this development?

Regretfully, farmers have always been treated poorly, throughout history. I do think it is true that today we are seeing a 'consolidation' and a 'vertical integration' in the food chain. As a result of fluctuating and increasing resource prices, supermarkets and food processing industries want to take control of the entire food supply chain, including the production and even including some of

the input industries, such as the fertilizer industry. In that process, farmers, who are small compared to the big conglomerates, have very little negotiating power, because they are hundreds of thousands of individuals against a handful of very big companies. You see the farmers getting squeezed. The margins are getting smaller and smaller.

That is the background to horse meat scandal. Fraud in the food chain results from the downward price margins.

We need to insure that we do away with some of the anonymity in the food chain. This requires more loyalty and longer-term contracts between suppliers at various stages in the food chain and the farmers and supermarkets. If you go for the cheapest price on the Internet and you do not know whether the supplier is in Latvia, Poland or Italy, then there is no reason for anybody to behave well. The solution is, first of all, that farmers get organised. The Netherlands has been a very successful country agriculturally, far beyond its size, because farmers have organised themselves in cooperatives for a century or more.

Another seemingly controversial opinion is that you say that fast food can make good sense in certain situations. Why?

Some of the images that people have about hamburgers and fast food are just not up to date anymore, because the industry has been at pains, for example, to use recycled packaging materials, reduce fat content and calorie content. In the 1980's and 90's. the Big Mac was a calorie bomb, but not so much now. I think that certain types of fast food, especially as there are more vegetarian and vegetable options, can make perfect sense. It is not that unhealthy for a mother and her children to go eat a hamburger once in a while, as long as there's no advertising especially focused at small children. The point of the hamburger is that it's not unhealthy per se. It becomes unhealthy, like any other food, if you eat it too frequently. The famous standard Dutch *Broodje Kaas* (cheese sandwich) can become unhealthy if you only eat that. It is another fallacy that I try to address in my book: there is no food which is inherently unhealthy, unless, for example, it is contaminated or grown as a result of slavery or animal torture. It is not the individual food item that counts, but the food pattern, the diet itself.

One critique you have made is that biological and organic produce is actually less sustainable and produces fewer yields while using more land. Could you explain this phenomenon?

In general, the organic option is not necessarily the best option and can be quite a bad option, for two reasons. It produces lower yields and requires more land. This is so because organic agriculture does not allow synthetic fertilization, animal manure or crop rotations.

The manure comes from animals, which means grazing land and more land is therefore used. Rotation with leguminous crops also requires additional land. There are no documented health benefits of organic food.

It is not healthier to eat an organic apple compared to a conventional apple (assuming that neither of them is contaminated).

There seem to be conflicting arguments on this topic. The International Federation of Organic Agriculture Movements (IFOAM), for example, states this is a fallacy and that organic agriculture yields are only slightly lower in developed countries and much higher in tropical countries with the highest biodiversity. They also say it does less damage to surrounding wild areas and forbids destroying primary ecosystem to extend cultivation areas.

What is the truth?

I had have to see the evidence before I would believe that, because especially in tropical countries not using fertilizer is very damaging, because tropical soils degrade so quickly because of the higher temperature. Usually, these statements do not take into account the total area of land needed including land needed for manure. We need total, multi-annual land use data here.

There is no doubt in my mind that we pesticides and fertilizers have been used too much in the past and still are overdosed. However, in a country like the Netherlands where this is intensely monitored, the chemical load from a hectare of agricultural land has decreased dramatically. We need far fewer chemicals today than we did 25 years ago to reach the same yield levels.

This is another important message from my book. We are on a learning curve. Things are not static. We have to learn to deal with technology and new concerns with climate and health. Sustainability is about a continuous learning process.

A journalist recently stated that he felt you didn't reflect enough on your own position and interests in your work for global concerns such as Rabobank and Unilever. What would be your response to this?

I have two responses to this. I have spent all my life, apart from the last five or six years, in public service, so it's not as if I have sold my soul to the industrial world. The second thing is that governments are not going to make the big changes by themselves. If you do not get the big companies to produce sustainably, or in the case of a bank to finance sustainable development, nothing is going to happen. Unilever ranks consistently as number one in all sustainability indexes. They are the first company to actually set targets for reducing consumption of water and resources and that now serves as a model for the industry. So, I am very glad to be involved there, because I think change also has to come from the private sector. Governments cannot produce food. They can only set standards and laws. I find the private sector to be generally far more advanced and innovative in their thinking on sustainability than most governments.

Erik Kaptein recently responded to an article of yours in 'De Limburger' stating modern agriculture is not just a success story, specifically referring to our dependence on petroleum/fossil fuels and the inherent danger if these fuels become scarce and more expensive, also noting there are 20,000 transport kilometres for every plate of food? Vandana Shiva is also critical of the dominance of oil. What would be your response?

I think the fact that we learnt to harness fossil fuels in the 19th century was a dramatic and important step to replace human labour. Otherwise, you and I would still have to do things manually or with horsepower. It has liberated us to do many other things. It has meant we can work in any sector, not just agriculture.

The interesting thing about fossil fuels is that if you compare it with the Club of Rome's report in 1972, which first talked of the scarcity of resources, 40 years on we have more than doubled world population and still have more proven fossil fuel reserves than in 1972. With the event of shale gas, we see the situation changing again, with more relatively cheap energy. Every expert projects flat energy costs and not increasing costs. So, in the short term, this allows us to liberate more energy for food production. This does not take away from the fact that we must increase energy efficiency.

I am in favour of looking again at the CO₂ issue and emission rights, so that we force companies to use their energy far more sustainably. In a couple of centuries time, we may also have completely different sources of energy.

We are now far better at combining functions, so our greenhouses, for example, use heat that can be used to heat individual homes. In such combinations, our energy efficiency ratios are going up quite radically.

The other issue deals with the food kilometres you mentioned. It is true that in a globalised system we obtain our food from many areas. This is not a new phenomenon in the sense that the Netherlands, for example, has been a food importer for centuries. We cannot ever feed ourselves (and I am not just talking about tropical crops, coffee and chocolate). Our basic needs in terms of bread and meat cannot be produced here sufficiently for the entire population. So, we will always be dependent on transportation and food miles.

We should grow food where it can best be grown in terms of the potential of the land, not only where it is closest. It is really destructive to grow food under conditions that are not optimal. If you grow food where it can best be grown biophysically, that means you will always have to move food around the world.

There is no way most countries can be self-sufficient and the big urban centres can never be self-sufficient. Amsterdam could never feed itself, but neither could Shanghai with 22 million inhabitants. It will always need trade. The question is not if we should do away with trade, but how can we best optimise trade and make it as energy and resource efficient as possible

So, you do not share worries about the dominance of oil and how destructive that can be?

This is already the time of the decline of oil, because gas is becoming far more important. But, there are so many new reserves being discovered. That is going to last a very long time, far longer than anybody thought 10 years ago. In a way I do not care about scarcity in the longer run or reserves. What I care about is

efficiency of resources. At the same time it is clear that 'fracking' of shale gas and other fossil fuel extraction can be very destructive and needs to be improved.

The world population is increasing, with an estimated 9 billion people by 2050. You have stated we need modern production techniques to meet demand. Why is a quarter of our food still thrown away and what can be done about it?

Waste definitely needs to be tackled, but there are various reasons why that happens. In poor countries this happens because of poor storage, transportation, rats, insects and poor slaughterhouses. That is a matter of having cold chains, better transportation et cetera. That is a matter of modern technology, which already exists, but it has to be economical.

In rich countries, most food goes to waste because consumers buy too much. Food is cheap, and people do not manage the temperature in their fridges. Waste in the food processing industry has been greatly reduced. Leading supermarkets do not waste more than a few percent nowadays. It is the responsibility of the industry to help educate the consumer. The date labels ('best consumed before') on products are very confusing, because certain products can still be used. If you have a packet of rice, for example, you can still eat it after the sell-by-date. However, from a food safety point of view there are other products (e.g. milk) that must not be kept beyond the date.

I have already mentioned Vandana Shiva, who came to the UvA in 2011, who has been campaigning to stop farmer suicides in India, which she feels are brought about by dependency on non-renewable seed owned by global industries, such as Monsanto, who buy up all seed companies and exponentially raise seed prices, forcing farmers into huge debt. The only way out is to move to urban slums or commit suicide. What is your opinion on this development?

This is a conglomerate of problems. I know Vandana Shiva quite well and her stance on these issues. First of all, when you look at dependency on seed, you should not forget that most farmers in most countries have already been using hybrid seeds, which are not genetically modified, but also cannot be re-used. Hybrid seeds have been around for nearly a century. This has been acceptable because of the benefits of greater yields. The seed prices are just a small percentage of the total production costs. It is not just the price of seeds that is the problem. If you look at cotton and genetically modified cotton in India, it is mainly grown by tens of thousands of small farmers. The tragic suicide cases have little to do with genetic modification or seed prices, but are caused by poverty and lack of prospects of farmers.

The other issue is, of course, the big companies themselves. There have been some unfortunate court cases and Monsanto has not acted very responsibly by suing farmers. But in most countries, there is an agreement with the private sector to keep some of the intellectual property rights of food crops in the public domain. This happened, for example, with genetically modified golden rice. So, I think we can come to an agreement on the use of genetically modified crops on a

case-by-case basis. Farmers will always be dependent on the market, because they want to sell their surplus. So, as long as you have government regulation in place, which indeed is not in place in all countries, and an agreement between the private and public sectors, the price of seed itself will not be the main problem for farmers.

The so-called ‘Monsanto Protection Act’ was recently passed and has been all over social media. The International Business Journal stated ‘the message it sends is that corporations can get around consumer safety protections’. To what extent is this a worrying development?

I cannot really comment on the details of this particular case, but I think the opposite should happen and is happening in many countries. Companies cannot get away with everything anymore. On the contrary, you only need to have one little film of child labour in a factory or, for example, these Bangladeshi girls being burnt alive. That is very bad for any industry. The Internet helps very much in achieving transparency. There cannot be dual standards. Companies must adhere to laws and regulations which should be the same everywhere and there should be no way they can get away with illegal activities or receive special protection. This is why there was outrage about tax evasion by certain companies. It's a good thing we have that out in the open.

You do not think there is a danger of governments being dominated by the companies they are supposed to be regulating?

How would that work?

For example, a number of former Monsanto employees have become high-ranking politicians in America?

Maybe this can happen in the US, but I do not see very many cases here in Europe. It is perhaps not a bad idea to have some exchange between government and the private sector, but you cannot pass a law on your own here that would protect a company. That would be impossible in a European or Dutch context. That is not to say that there are no informal networks. As long as companies feel they cannot get away with things and public opinion does not allow it, we will be fine. This is where sustainability and social justice have made a big difference.

You recently published an editorial in ‘Science’ criticising the European distrust of genetically modified crops, stating they can contribute to sustainable production. Could you explain your standpoint?

I was not criticising the procedure as such, because we have a very effective European Food Safety Agency, but the whole point is there's no political courage to abide by the rules the EU has set itself. Some of the genetic modification is declining in Europe. What I am worried about is that by taking such a stance in Europe, we are not only missing the boat in terms of research, but we do not have the expertise in Europe to actually judge what is a good or bad idea. We cannot generalise about genetic modification. It is like saying we are against all cars, because all cars are potentially dangerous.

This is a development that's so important to the rest of the world, especially in developing countries. In China, for example, all genetic modification work is public sector work.

There is a lot demonisation of genetically modified foods in the press

Yes, unfortunately, and generalising does not help.

I spoke to a friend on the phone today, before interviewing you, who has a child of four and he said he did not know if genetically modified food has the same nutritional value or if he should give his child this food.

That should be documented on a case-by-case basis. The thing we are mainly talking about now is genetically modified feed. If you feed a cow genetically modified corn or soy, the cow and its milk do not become genetically modified. If I had a child of four, I would also want the best for him or her. The point is people now think that genetic modification is dangerous, but it is not intrinsically dangerous. Hundreds of millions of Americans are consuming genetically modified food without any indication of an additional risk. As long as the food safety regulations are adhered to, consumers should not worry.

Dr Don Huber from Purdue University in the US has warned of link between GM foods and the 600% increase in autism since 2002, noting behavioural, physiological and neurological changes in rats forced to eat GM food that are typical of autism. What is your opinion?

Autism is a very complex disorder that is diagnosed more now. From what I now, there is a very strong genetic component. That needs a lot more study. And rat studies are still very different. In my genetic modification article, I talk about this French scientist Séralini, who fed rats with genetically modified foods. It turned out these rats developed all kinds of cancers because they were selected to develop cancers. I think we need to monitor this very carefully, but this is the whole reason I want to maintain the expertise in Europe.

To what extent are we not sure of the long-term effects or potential damage of genetically modified foods in a similar way to how scientists are not sure of the long-term effects of Ritalin, which also is being given to millions of people?

By definition you cannot know the long-term effects in advance. I'm very much in favour of being extremely careful and doing lots of testing. But when you have done all the testing and looked at the science, then allow it, keep on monitoring it and withdraw it if necessary. There are lots of cases outside genetic modification where we made a mistake and had to withdraw something. That is not to say we should experiment on human populations, but it's strange that something which is very close to a natural process, and you and I consist of genetic modification through evolution, is stopped because of some undetermined fear. We have had irrational fears in every century. I am not in favour of pushing genetically modified foods down everybody's throats. I am in favour of allowing us to work with all types of technology and learn about it. There are specific applications where I see no other solution. My favourite example is cassava, because you cannot do normal breeding with cassava. It is a food crop for 500 million people

who are now at risk because of a virus disease. All African scientists want it so why do we Europeans say 'No, you cannot do it'.