Harry Kreisler: Welcome to a "Conversation With History." I'm Harry Kreisler of the Institute of International Studies. Our guest today is Michael Pollan who is the Knight Professor of Journalism at UC Berkeley. His new book is In Defense of Food: An Eater's Manifesto. Michael, welcome to Berkeley.

Michael Pollan: Thank you, Harry. Good to be here.

HK: Where were you born and raised?

MP: I was born on Long Island in the town of Hempstead and grew up the first five years in Farmingdale, on the south shore, and then in a town called Woodbury on the north shore.

HK: And looking back, how do you think your parents shaped your thinking about the world?

MP: Oh, in many ways, my parents and my grandparents. I got very serious about gardening as a young boy. I had a grandfather who had been in the produce business and he was a passionate gardener – this is the late sixties – and he was very kind of reactionary and there was not too much we connected on except plants. I put in a garden at our house, too, in imitation of his garden, but I didn't call it a garden. I called it a farm stand, and every time I could get six strawberries together in a Dixie cup I'd sell them to my mother. She was the only customer.

HK: [laughs]

MP: So, I had that – that was one thread. Another was, I had a mom – I have a mom who's a terrific cook and very aware of food. So, that was a factor.

HK: You talk in your writings a lot about what cultures bring to food, and so on. Was there a lot of that in your family? Your background is Jewish and…

MP: Well, there was on – my grandparents still cooked very traditional Jewish food, used duck fat, goose fat or chicken fat to cook with. I remember on one side, stuffed cabbage, big deal, special

holiday food, and blintzes, and a whole range of kind of eastern European Jewish cooking. My mother did not cook that way. She fashioned herself more of a cosmopolitan and she cooked every different ethnic – sometimes she would cook French, Chinese, Italian – she was just kind of into – it was the sixties, it was that moment, you know, the World's Fair. You wanted to cook in every different kind of cuisine and she was very good at all of them. And she doesn't cook that way, I don't cook that way now. So, one of the things that has struck me, writing about food, is how little stability we have in our food culture in this country, that we haven't held on to the immigrant traditions. Certain ethnic groups have more than others, but Jews? I don't think to such a great extent.

HK: I would presume – and we'll talk about this later – it's part of the homogenization that comes with American culture.

MP: Homogenization and demonization in the case of traditional Jewish food. Everybody assumes that's lethal, to cook with all that animal fat, that that was too much meat, too much fat. So, I think that's part of it. It's all mythical but the surgeon general didn't approve of a traditional Jewish diet for many, many years.

HK: What about your schooling here, before college? Were you fascinated by botany, and so on? Not really?

MP: No.

HK: So, this was an avocation, in a way.

MP: Gardening? Oh, yeah, I had no particular – and you know, one of the great mistakes of my education is in college I didn't take the courses that would be really useful, such as botany. I went to public high school and I was always interested in writing, and I worked on a literary magazine, and English was my favorite subject. I took very little science, and I regret how little science, but it was kind of a progressive moment in education where you could basically take what you wanted and make all the mistakes that people tend to do sometimes, when they can take whatever they want. And in college – I went to Bennington College and there, too, it was a pretty free – you could design your own curriculum, and there was a wonderful botanist there, named Ed Flackus [sp?], and I never took a course with him. It's one of my big regrets.

HK: But did you know you wanted to be a writer?

MP: You know, I liked writing, I had the usual adolescent fantasies about writing, but I didn't think it was realistic. I didn't think you could make a living writing. I thought it was like imagining you wanted to be a baseball player. Every little leaguer has a fantasy of being a baseball [player]. That's how I felt about writing. It was not realistic. So, I thought, well, all right, what's the next best thing, if you care about writing? Well, one would be to be a professor of English. Another would be

to be a magazine editor and work around writing, or a book editor. So, I kind of thought I would be on the peripheries of writing, and much to my surprise, I became a writer.

HK: You did graduate work abroad, at Oxford, did I read?

MP: I did – no, it wasn't graduate work, it was undergraduate. I actually transferred when I was at Bennington. I studied with John Gardner, the novelist, and he kind of took me under his wing. He was a very dedicated teacher and he wasn't crazy about Bennington. He said, "You have to blow this popsicle stand and go somewhere serious, and I think you should go to Oxford." He helped me get in and I did a year there and was sorely disappointed, actually. Bennington turned out to have been a better place to learn what I wanted to learn, so I ended up coming back to Bennington after a year at Oxford. I mean, I got a lot out of it. Bennington was a place where you could spend an entire semester on one poem, in a class, and we did that. And Oxford was a place where you would read a third of English literature in a year. So, absolute opposites, whether you go down deep or you go wide, and so it was kind of nice to have a little bit of both, but I was very happy to come back to Bennington, which really took its students seriously, really worked on our writing, in a way kind of flattered the pretensions of students by treating them all as baby literary critics or baby novelists, whether they really deserved that or not. But on the other hand, it built a lot of confidence in its students, and I had teachers who worked very hard on not just grading papers, editing them, and that was very valuable to me.

HK: Let's talk about being a writer and being a science writer. What are the skills involved here, do you think? Can you prepare to become a writer or is it just about writing and learning the hard way?

MP: Well, I would've told you a few years ago that you can't teach people how to write, and now that I do it partly for a living, I've abandoned that position, and not only for reasons of expedience, because I see that students do get better when they're edited by their teachers and when they're guided in their reading by their teachers. Preparation for science writing, per se? I don't know that there is any. I would argue that you could know too much about science to be a successful science writer. In other words, I'm usually – I don't have a deep background in science, and I have learned what I need to learn, article by article, book by book. So, if I'm writing about genetic engineering of crops, I'm learning about genetics for that article. I'm finding someone who can explain it to me. The virtue of that is that I'm not far ahead of my reader. I don't take anything for granted. The jargon is weird to me, too, it's deeply unfamiliar, so I think I can write about it in a way that isn't so daunting. I usually write as an amateur, I don't write as an expert, so that I don't scare readers off, I think, when I do have to get technical. And so, I think that they're virtues – I mean, in one sense science journalism is no different than any other kind of journalism. You find people who know the story, you interview them, you watch as much as you can, and you tell the story. A lot of journalists are intimidated because science seems so much more mystifying than politics but it's no more mystifying than politics.

HK: Two things stand out when I go through your books, and one is research, in the sense that you're going to find a Master's dissertation at Santa Cruz about somebody you're interested in – I believe the dentist…

MP: Yes, Weston Price.

HK: Yeah, Weston Price, who actually was a forerunner to some of the insights, had a lot of foresight about where…

MP: American diet…

HK: Yeah, and **rare** [?] agriculture, and also history. So, being able to do research is important…

MP: Oh, absolutely, and history in particular. I think if there's a failing of American journalism, and there are many, one is a disregard for history, that very often in the origins of a phenomenon you discover the meaning of a phenomenon. And so, it's a perspective I always cover. Sometimes it turns out not to be relevant, but one of the things I like about doing journalism, when I have a new article or book, is I make a list of the books I now get to read. I like reading books and there's always some history on that list. I'm always very interested in digging back to find the history of whatever I'm writing about. And I think a lot of journalists begin by reading clips. They read other articles and they kind of stop there, and I think you miss a lot. So, even if it's a scientific subject, it's really important to understand the history behind it.

HK: And it's interesting because if somebody like myself, who wasn't familiar with a lot of the stuff that you're writing about, goes into it, and then you're suddenly reminded that there's a turning point in history, in the early seventies, when there was a Secretary of Agriculture named Butz, which is sort of in the back of your mind, but is really a pivotal turning point.

MP: Well, that's a great example. We all heard about subsidies, we know that subsidies are kind of part of the problem and a waste of money, and all this kind of stuff, and we kind of think we've had subsidies since Roosevelt, since Henry Wallace was his Agriculture Secretary. But were they the same kind of subsidies? Did they produce the same kind of agriculture? And then you kind of dig back and you realize, oh, we changed everything in the 1970s, we changed our agricultural policies. And there is a real turning point in the history of American agriculture and food, and that is Earl Butz appointed by President Nixon with the explicit mandate of forcing down the price of food because we'd had this bout of food inflation, sort of like what we're having right now, actually. And that was triggered by the famous secret Russian grain deal, which when it was – I mean, I could keep going back but I don't want to go too far back – but during the campaign in 1972, Nixon wanted to make sure to tie up the farm vote because he was running against a prairie populist, George McGovern. And so, what did he do? He sent Kissinger to broker a deal with the Russians who'd had a terrible harvest and needed grain badly, and he sold a lot of grain to them. It was kept secret for a while, so when the news got out it led to a panic, basically, and grain prices went up. When

grain prices go up, so do eggs, chicken, meat, everything, and Americans took to the streets because food got so expensive in 1973. There were protests, there was horsemeat in the butcher shops, there were women boycotting butter, and so Nixon needed to get the price of food down because there's nothing more treacherous to a politician than high food prices. We've known this since the French Revolution. He hired Earl Butz. Earl Butz was very skillful in agricultural economics – just died a couple of months ago – and he kind of redesigned the whole system of crop support in this country in a way that stimulated farmers – we used to hold up prices, basically, we had farm supports, and he moved from that system to subsidizing crops and encouraging farmers to overproduce, produce as much as possible. He was the guy who said, get bigger, get out, plant fence row to fence row, move toward monocultures, just crank out that corn and soy, and redesigned the structure of the subsidies to encourage that. And you can date the obesity epidemic, so many problems of the American food system, to those policies as inadvertent consequences of what was a very popular thing, which was driving down food prices. And he did. Americans only spend nine and a half percent of our income on food today. That's less than anybody in the history of civilization and we have Earl Butz to thank.

HK: You've actually gone into a history that is kind of a turning point, and I think in your analysis what's key is that a number – it's like a structure of power, basically, a configuration in which science, journalism and the political leaders essentially reach a consensus about something that actually may be very harmful for the citizens. And so, what is fascinating here is that in understanding food and agribusiness politics is very important.

MP: No question, and we're not aware of it but food, like everything, is political. It is the biggest industry in the country, it's the most essential thing. We've had the luxury of not having to think about it for the last thirty years, thanks to Earl Butz and having all this cheap food around. But you know, look, if we as a society have to live without gasoline, which is unimaginable, we will figure out how to do it. We did it for millions of years. We've never lived without food. And so, food is really essential and when you have anything that's essential there're enormous political and economic forces that contend about how it will be organized. In the last thirty years we have had this kind of agriculture industrial complex, which by some measures has worked quite well. It's kept the price of food low, it's kept the food industry healthy, it's given us a lot of power overseas, we're big food exporters, but what we're getting in touch with, I think, is that the byproducts of that system, or the unintended consequences and costs of that system, are catching up, everything from obesity and diabetes. Because that was a system that encouraged the consumption of food and specifically encouraged the consumption of cheap corn sweeteners, high fructose corn syrup, hydrogenated oils from soy, processed foods of all kinds, lot of cheap meat. So, there's been a public health impact that's dramatic, and if you want to look at the problem with our healthcare system, yeah, there're problems with inefficiency, bureaucracy, price gouging, bad information, but there's also a tremendous problem with chronic disease. That is what's bankrupting the healthcare system, the fact that half of us suffer from chronic diseases linked to the diet, $250 billion a year in cost tied to that. So, that's one set of problems. The other set, of course, is environmental. The food system contributes more greenhouse gases than anything else, any other industry, and that happens at every

level. It happens at the field, the way we fertilize crops, in the amount of energy that goes to produce that fertilizer, the way we use machinery on the farms, the way we process the food, the amount of animals and the methane we release. It's about a third of greenhouse gases [that] come from the food system, and transporting the food all around the world, not to mention the agricultural pollution. Feed lots are the biggest source of pollution we have. There's a dead zone in the Gulf of Mexico that's the size of Massachusetts today. That, too, comes from this way of growing food. So, it's had benefits – I mean, it's quite an accomplishment that you can go to a restaurant, eat a fast food meal, a big chunk of meat, French fries, large soda, for less than the minimum wage. In the history of humankind that's quite an achievement but it's come at a very high cost, and that cost, I think, is what we're getting in touch with right now.

HK: Now it's interesting that when one reads your books, which, in a way, are both simple but essentially get at the complexity, and one is amazed at the intricate process that has created the reality that we live with. So, let's talk a little about that intricate process and the way science has contributed to it. In your books you look at the history of science, you talk about the breaking up of the three nutrients – the three elements that make up the nutrients in the soil. It goes back to 1840, basically.

MP: Yeah. Well, Justus von Liebig, who is interestingly enough, the guy who came to understand both soil and human nutrition, and in both cases he found the holy trinity of nutrients in the diet, which were…

HK: Nitrogen, phosphorus…

MP: …phosphorus, potassium – that's in the soil – and in the diet you've got fat, carbohydrate and protein. And like a lot of scientists, what you can measure becomes all that you can see, and this is what we could measure. It was understood for a long time that, okay, that's what soil is, as long as you give plants that they'll be fine. Ditto, that's what human nutrition is, as long as you get those three macronutrients you'll be fine. But of course, he missed a lot because he couldn't measure it. And so, just as a great example, this kind of reductionist thinking gave us baby formula, and he invented the first baby formula. There were a lot of orphans who didn't have a source of food and he said, "I know what they need," and he created out of flour and water, and a few other things, that – protein, carbohydrate, this is it – and the babies died. They didn't do well on this formula at well. Why? Well, he didn't know about vitamins. So, go fast forward another eighty years and you discover the vitamins, and then you put those in and you think, now we've got everything, now we're analyzed what a human needs to live. That didn't work either. We didn't have the right kind of fats. There's not just one fat, there's omega 3s, omega 6s, saturated fats. So, the whole history of both soil science and human nutrition, which are very parallel, has been one overlooked nutrient after another. These systems are really complex and we tend to over-simplify them. I'm sure there are nutrients as yet to be discovered that will turn out to be critical for human health, ditto on the soil, that there are soil elements, factors that we can't see yet that we will discover are essential to plant or animal health.

HK: I guess the key to what you're saying is that industrial capitalism, and agro-capitalism essentially takes a discovery and then finds the best way to make the most money…

MP: As soon as possible.

HK: …as soon as possible, going down a road where a lot of what we know…

MP: With incomplete information.

HK: Yeah. Right.

MP: Well, genetically modified crops is another great example. We figured out something about genes and we understand some connection between a gene, a protein and a trait, and so we figured out a couple crops where we could introduce new genes from other crops. To do that – it works but we overlook a whole lot of complexity, which we just dismiss as static. Why is it that when we introduce this gene that ninety percent of the time you get a freak plant? Well, we don't really know, it has something to do with gene expression, it has something to do with junk DNA. Look, it's very important that science be reductive. Reductive science is very powerful, but it's always important to understand that you're missing some of the complexity, and when you apply that reductive science you can get into trouble because you're mistaking what you know for all there is to know. So, there's a lack of humility involved, and yeah, there is a tendency to apply these things long before we know what's working and what's not working.

HK: A key turning point here is the Haber-Basch process, which you've written about. Talk a little about that because it is a major turning point in seeing synthetic fertilizer as the end-all and be-all of everything.

MP: Arguably the Haber-Bosch process, which is basically the fixing of nitrogen, synthetic nitrogen – the limiting factor for plant growth is nitrogen – and it is arguably the most important invention of the 20th century in that it has affected more lives than anything else, and that's including the atomic bomb. Fritz Haber was a brilliant chemist in Germany who won the Nobel Prize for this invention. It happens in 1909. Bosch was someone who commercialized and figured out the technology to apply his insight, and basically it allowed you to take hydrocarbons, diesel fuel or natural gas, and using a very high energy electric catalytic process take nitrogen, which is useless in the air – it's all over, it's eighty percent of the atmosphere but it's not useable by plants or us in this form – and fix it and put it in a form that plants could use and therefore we could use. The great crisis of 1900, akin in a way to the biodiversity crisis today, or the climate change crisis – what everybody saw on the horizon was there's not enough nitrogen to feed everybody, we're going to have mass starvation unless we can figure out how to get nitrogen out of the air. Before then, all the nitrogen that was used in agriculture came from bacteria in the soil fixing it. You planted legumes, peas and beans, and things like that, and that would fix the nitrogen in the soil, or lightning actually

could give you a certain amount of nitrogen, but that was proving to be inadequate, crops were failing. And so, Haber came along and figured out how to do it and it was a huge achievement. The only reason we don't celebrate him more is the fact that he went on to work on poison gas for the Nazis, and he was on the front lines in World War I, and he just kind of is a great Faust character and his knowledge was applied for evil and – so, we've kind of written him out of scientific history to a large extent. But it was a great invention and by some estimates forty percent of the people on earth are here because of that process. However, there's another great example of a powerful technology that's had a lot of negative effects. Synthetic nitrogen, when it oxidizes in the soil, becomes nitrous oxide, which is a very potent greenhouse gas, about three hundred times more powerful in its heat trapping ability than carbon dioxide, even though it's shorter lived. Nitrogen fertilizer became so cheap and is used so profligately that it runs off and runs down the Mississippi River and into the Gulf of Mexico where it has created this dead zone. The nitrogen feeds the algae and they have a big bloom and they consume all the oxygen in the water, and then nothing else can live there, it becomes a dead zone. And over time we have found that using too much synthetic nitrogen ruins the structure of the soil, kills it, and it becomes too salty and basically nothing will grow, and you have the declining yield curve that we've seen all through the green revolution countries because of too much nitrogen in the fertilizer. So, a lot of these technologies are double-edged swords. They're wonderful and powerful, and they're horrible and disastrous.

HK: And one should say here that lurking behind this path of science that we've just described are political leaders, often, and I know that you point out that it was after World War II and we had this super abundance of munitions, so it becomes then very important to find someplace to dump it.

MP: Yeah, the ammonium nitrate, which is the product of the Haber-Bosch process, is also the ingredient in bombs, as Timothy McVeigh reminded us all when he made the bombs in Oklahoma City using fertilizer – fertilizer bombs. We had a huge capacity to produce ammonium nitrate through World War II. There was a plant at Muscle Shoals in Alabama that was the great munitions plant, and it was basically fixing nitrogen and making ammonium nitrate. After the war, we figured out – how would we convert this wartime technology to peacetime use? And they thought about it in the Department of Agriculture and they had some interesting, kind of wacky, ideas. One was, let's spray if from planes over American forests and stimulate the growth of trees. And somebody else said, well, I've got a better idea, let's put it on land and use it to grow more food. And so, we moved into a really – so, on a given date that plant at Muscle Shoals switched from making bombs to making fertilizer. At the same time, we took a lot of the research we were doing for – we were working on chemical weapons and nerve gas, and we converted that technology to pesticide use, and a lot of the pesticides, especially that first generation of pesticides after World War II, were basically mild concentrations of nerve gases because insect nervous systems are simpler versions of our nervous systems and the same stuff works on them at lower doses. So, that's why Vandana Shiva, a great agricultural agitator in India, has said we're still eating the leftovers of World War II in that sense, we're eating the pesticides and we're eating the fertilizers that came out of the war effort.

HK: It's interesting – you know, we just had Niall Ferguson on the program and we talked a lot about the financial crisis, and I hear similarities, basically, in these two crises in the sense that you wind up going forward with a process that an element of it is globalization, producing more, making more money, going down a particular path, and it's not all – there's some idealism here, too, as you pointed out, in the sense that the notion here was to go down this path to feed a lot of people…

MP: Feed more people. Sure.

HK: …just as the housing crisis was opening up the opportunity for housing to people who were only sub-prime candidates.

MP: Yeah, there're a lot of very good intentions. There was a serious goal of feeding the world, there was a lot of hunger. The green revolution is a great example. The green revolution is the application of these technologies to the developing world, hybrid seed, fertilizer, ammonium nitrate fertilizer, and irrigation techniques, and growing in monocultures. We had famine in India and we introduced these technologies. The Rockefeller Foundation, and others – the UN was very involved – and we did get the yields of agricultural commodities way, way up and we fed a lot of people. But it's also, by other measures, over the long term, been a disaster. You have thousands of Indians committing suicide because they've entered this very high capital kind of farming, they can't afford the inputs that they're now dependent on, their soils are not yielding as much because of the effects of the nitrogen fertilizer, and so they drink bottles of pesticide and kill themselves in great numbers.

HK: And what happens, it seems, in both processes is a loss of checks and balances, that what is initially an idea that has potential but we don't continue to monitor the process and as more information comes along think about what the implications are. And here is where journalism kind of fails because what your writings make very clear is, when we look at where we are with regard to the products of agribusiness, we have no language to address the problems because part of what fails here is the communications that have been the way we define what's going on until somebody like you comes along and writes an expose. And you talk about nutritionism as a kind of ideology that purports to be a science which then is the way we deal with this new reality that at some point has become a Frankenstein.

MP: Well, yeah. When you're talking about nutrition, sure. We've adopted the reductive language of nutrition from the scientists. We all talk about saturated fats, high fructose corn syrup. It's fascinating to listen to Americans talk about food today. They sound like a bunch of amateur scientists. They don't talk about foods, they talk about nutrients. It's bizarre when you think about it. I want to go back to your point about journalism. Yeah, journalism could play a more aggressive role in assessing these things but in the end, when you're introducing technologies, you need a public discussion, and you need to think through what are the benefits and what are the risks. And that must be decided publicly, not privately. I think a lot of our problem is that we assume all technologies are innocent until proven guilty, in this country especially. We're technological utopians and we think you're a party pooper if you raise questions about genetically modified crops,

or something like that. There's a lot of money in it, a lot of interesting intellectual property for a lot of people, a lot of potential, and you're a Luddite if you raise any kinds of questions. And then forty, fifty years late we deal with the possible impacts. It's not to say that synthetic fertilizer was something we should not have done, but had we applied more of a kind of precautionary science to it we might have anticipated some of the problems and been able to mitigate them before they got too serious. So, I think it's a society problem. I think journalism plays a role in it but you can ask too much of journalism. Journalism essentially reflects the political culture of a country. One of the reasons we didn't have a debate about genetically modified crops before we introduced them in this country, although they did in other countries, is because both the Republicans and the Democrats supported Monsanto and GMO technology, and when both political parties are on the same side there's no space for journalists to operate. Only in the fringes of the press will you find critique of anything the two parties agree on. The New York Times won't go there, basically, and broadcast networks won't go there, and the Washington Post won't go there, if both parties agree. So, you can ask too much of journalists to solve these problems, and we do, and that's fine. People should ask a lot of journalism and I don't mean to exonerate it, but you've got to look at the whole political system, especially the way we regulate technologies, new technologies, toxins and things like that. On the other point of nutritionism, it's been a fascinating phenomenon to watch. But I use this word "nutritionism" – it's not my term, an Australian sociologist came up with it and I read it somewhere – but it's an ideology about food that's become general, and it's got four basic principles. The first is foods don't matter, nutrients do, that a food is essentially the sum of its nutrient parts and a food, steak, is kind of a vehicle for carrying protein and saturated fat, because that's what matters. That's one premise. The next premise is that you can divide the world into good and bad nutrients. There's always an evil nutrient that we're trying to rid from the food supply, trans fats, high fructose corn syrup now, or saturated fat, and on the other side is a blessed nutrient; if you could just get enough of that you'll be fine, you'll live forever. And that, of course, was fiber for a long time, now it's antioxidants, omega 3 fatty acids. So, that's the second principle. A third principle is if the important thing in food is a nutrient, and nutrients are invisible to normal people like you and I; you need to be a scientist to actually see a nutrient. I mean, have you ever seen a nutrient? I haven't. So, therefore you need experts to tell you how to eat, and indeed, we have experts who tell us how to eat. And the fourth premise of nutritionism is that the whole point of eating is health. That's what it's all about. You're either ruining your health or you're improving your health with every meal. And that's a kind of bizarre view of food. I mean, people eat for a great many other reasons. So, I think we've lost our sense of food, we've lost our sense of eating as a complex social, as well as biological, phenomenon, involving community and identity and pleasure. All these categories have vanished under this regime of nutritionism. So, in this last book – I mean, this is kind of a manifesto against nutritionism and in favor of returning food to the center of our discussion about food and making health a byproduct of a happy relationship to food, rather than the goal of eating.

HK: And that then takes you back to the culture of food that you might have found at your grandparents' table, I think.

MP: Yeah. Well, we have basically – you're right. We've essentially displaced culture as a guide in telling us what to eat and put science in its place, because it seems so much more scientific, so that we think cultural wisdom about food is old wives' tales, if your grandmother thought it was true – I mean, what did she know? We have scientists now who can tell us all about antioxidants. Yet it's very interesting; the grandmothers were right about a lot of things. I was on a call-in show in Australia recently and a woman called and said, "My grandmother used to always say, eat your colors." Now that's a very interesting rule. We now know that the important phytochemicals, plant chemicals, all have a different color, and indeed, eating different colored foods is a guarantee that you are getting the diversity of antioxidants and phytochemicals you need to be healthy. How did that grandmother know that? This was before we knew what an antioxidant was. So, my premise in this book is that culture still has a lot to teach us about food, and indeed, it is still wiser about food than science. I know for a science journalist this sounds like a very negative message about science, and I have enormous respect for nutrition science, and I hope that someday they'll figure it out but they haven't yet. Nutrition science is approximately where surgery was in the year 1650.

HK: [laughs]

MP: It's very promising, very interesting…

HK: We haven't figured out how to cook leaches, yeah.

MP: Exactly. And they'll get it, they'll get it – I think they'll get it – but as of now they know a lot less than they think they do, and we would do well to tune down that whole debate about fats, about carbs that you read in the media, and not put so much stock in the latest nutritional finding, because it will be contradicted by the next nutritional finding, and return to the cultural wisdom about how to eat, which guided people very well for a very long time.

HK: I want to get back to your writing because one of the things that struck me is your discussion about being a gardener and creating your own garden, [which] is a source for you not only of the subjects that have interested you but of the kind of values that drive your perception of the world. And you make a distinction between a gardener and a naturalist. Talk a little about that because I think it's important because you seem to be suggesting that to see things whole you have to be whole yourself, and gardening is a way to get there.

MP: Yeah, I think that's right. Look, a lot of my work grows out of my experience in the garden. My first book, called Second Nature: A Gardener's Education, was really an attempt to use what I was doing and experiencing in the garden as a place to explore our relationship to the natural world. Traditionally in America, if you wanted to explore your relationship to nature you'd go to the wilderness, you'd do the Thoreau thing, the Emerson thing, the Melville thing. You have your confrontation with wild nature and that's essential and authentic, and that's a beautiful discussion, and Americans are really good at it, and it's given us things like the wilderness park, an American cultural invention, the idea of preserving a wild place that for most of history was regarded as

wastelands and ugly landscapes. We learned how to appreciate them, and we've elevated them, and we've saved them. But that whole discussion and that worship of wilderness doesn't help you with many other questions, doesn't help you with the ninety-two percent of the American landscape you can't lock up and throw away the key, and that there are so many places where we need to engage with nature without destroying it, but we can't leave it alone. And the garden, in a way, is the great symbol of that place. It's a place where we mix ourselves up with nature, where we are in this reciprocal relationship with other species affecting us, and we're affecting them, and it's a beautiful place ideally. There is conflict, though, there are weeds, there are bugs. You can't get away from that, but merely sitting back and worshiping it will give you a disastrous garden and no crop to eat. So, I began then, with that very first book, which comes out, I think, in '92, getting interested in that messy place between the human world and the wild, and trying to figure out how to behave in that world in a way that I could get what I wanted while not destroying nature, diminishing nature. And food is one of those messy places, and all my books, as it turns out, have been about those messy places. Architecture is another one; I've written a book about architecture recently. So, I think that the garden is a really important model and that if we would let the garden guide us in our dealings with the natural world – and by that, I mean agriculture, I mean architecture, I mean design – I think we would be better off. And right now we divide the world into the beautiful wild places and everything else that has just kind of fallen. It's virgin or whore for us and the middle landscape hasn't gotten nearly enough attention but that's where the action is.

HK: Do you think then that the failure of agribusiness has been to lose sight of the humanity as it breaks down the elements of what it thinks is…?

MP: Well, not to lose sight of the humanity so much but basically try to push too hard on the culture side of that dialectic and not appreciate that nature can't be bent to our will completely, that to conceive of a farm or a garden as a factory, which essentially is what agribusiness does – you put in there inputs, fertilizer, irrigation water, hybrid seed, pesticide, and you get out those outputs, and nature is just the factory floor. That doesn't work because nature has its own interests. Nature pushes back. Nature is an obstacle to certain things we want to do, so that you need to think more like a gardener than a factory manager, and when you do that you find that there are ways to grow food of incredible quality, beauty and healthfulness, while nature goes about getting what she needs. And that's really the challenge of good farming, is figuring out a non-zero sum way. Most of our farming is like mining, we extract from the earth, we extract nutrients from the soil, we diminish the land the longer we farm it. Well, that's actually – nature's not diminished and yet produces huge amounts of biomass in a forest, in a prairie. So, is there a way we can get what we want from nature and leave nature not just undiminished but actually improved? And the garden shows that yes, that's possible. It's complicated. You have to know a lot, you have to know about ecology, and entomology, and soil science, but we have models. I've been on farms that are doing that right now. So, that's really the challenge, is to bring the wisdom of the gardener to these larger arenas like the farm.

HK: And you say, I think, at one point that a gardener is a citizen, a producer and a consumer, and that strikes me as being interesting because in the end a lot of the problems like with politics, and so you're suggesting that a food movement can bring a new kind of politics that might change this whole system.

MP: Yeah. Well, as we were talking about Earl Butz earlier, so much of the agriculture and food system we have is the result of policy. You know, fast food, as Eric Schlosser brilliantly showed in his book, is not just the result of the free market doing its thing, it's the result of specific policies, sometimes well intentioned, sometimes not. The kind of diet we have is this monoculture diet that's based heavily on corn and soy processed into all these different products; that's the result of a set of agricultural policies. So, it stands to reason that another set of agricultural policies could give you a different kind of diet, different kinds of health outcomes as well. So, that's really the challenge before this food movement, to come up with policy ideas that will stimulate another kind of agriculture, and also rebuild these local food economies which have so many virtues. We used to think of them as nostalgic but I think we're learning that to decentralize the food system is wise and cautious because having a highly centralized food system is also very precarious. Things go wrong. We have now outbreaks of food poisoning that sicken thousands of people because we're all eating from the same bowl in effect, and we need to eat from a few different bowls, we need to decentralize the food system. So, the food movement has many faces to it and there're people who are working on school lunch, and people working on community food security in the inner city, and people working on the farm and changing the farm, and farm to hospital movements. It's a very big, inchoate movement that is just starting to gel and be felt, I think, at the national level. It's kind of where environmentalism was in the '60s, around the time of Earth Day, where there was this incredible sense of the importance of this issue, people in the streets, people very excited about it, yet it was not that well organized. Thirty years later there's – I mean, there're problems but there are cadres of policy makers and lawyers that are ready to, now that we have a new administration, go into the EPA, go into the Interior Department, and they know what to do with those levers of power. We're not quite there with the food movement yet but we'll be there and it won't take thirty years.

HK: How do you answer the contention that the organic movement, the kind of food reform that we're talking about, is something for the affluent and not for the rest?

MP: Well, the criticism is that it's elitist is a serious criticism, and I think that there are ways in which the food movement has been guilty of that. However, you've got to look at – it is true that healthy, fresh, seasonal, nutritious food is more expensive than conventional food and therefore has tended to be enjoyed by the affluent more than others, but you have to look at why that is. One reason is that we, of course, subsidize the other kind of food. The cheap food in the market tends to be industrial food. It doesn't have to be that way. It just happens to be that way because of policy. The other point to keep in mind is that like a great many social movements this one has begun with the affluent. You look at women's suffrage, and look at abolition, you look at the environmental movement, many of these movements begin with elites who have the time and the money to get

involved with them, and over time these movements – their politics spreads to a larger and larger group, and I think you'll see that with the food movement, too. If the food movement is still guilty of the charge of elitism in twenty or thirty years, that'll be devastating but right now, I don't think it is yet. There're large segments of that movement that have focused on the inner city, the community food security movement, the school lunch movement, the kind of work that Alice Waters is doing in the schools here in Berkeley. If you've ever been in a Berkeley public school, you know that's a highly diversified society, it's not affluent. And reaching people at lunchtime, you're reaching everybody, that's not an elitist politics, to be reforming school lunch. So, it's an issue, it's definitely an issue, and the movement needs to do a better job of addressing it, but it is and it's very aware, this movement, because like you, everybody asks us about that. [overlap]

HK: [laughs] You wrote in the New York Times Magazine a memo to the First Farmer, President Elect Obama…

MP: Well, he wasn't President Elect then. It was during the campaign.

HK: Okay, before, although he cited the article, I believe I saw, in an interview in Time. And we've actually just talked a lot about the systemic set of problems that exist, and in a way, the present financial crisis presents an opportunity…

MP: And a challenge.

HK: …and a challenge for action. You laid out an agenda demonstrating the interconnection between the energy problems that he clearly wants to address, the health problems that he clearly wants to address, and what you see as the agribusiness problems which sort of isn't as widely perceived – hopefully it is more widely perceived after your article. What is going to be the handle, and what sorts of things have to be done, that are doable in this present situation where there're just so many crises?

MP: Well, there are but they're linked, and I think that that's important. My point in this article was – I wrote it during the campaign and nobody was talking about food since Iowa. There was a little bit of chatter about food when they were Iowa, never too helpful because everyone in Iowa has to talk about they love subsidies, and they love ethanol, although they said some more interesting things, actually, this year. But since then there was not a lot of talk about food, but my point in this article was whoever is elected president, if they are serious about climate change and addressing that problem, if they are serious about healthcare costs and addressing that problem, they will find themselves dealing with the food issue, because food is the shadow issue over all those other issues, and energy independence, as well. Our food system is heavily reliant on fossil fuel. The genius of industrial agriculture has been to replace human labor in the fields, and in the processing of food, with fossil fuel, with the result that a fifth of our fuel consumption goes to agriculture and the food system. As I said earlier, a third of the greenhouse gases come out of this system. So, you're not going to deal with climate change unless you deal with agriculture. You could get the transportation

system green, the power grid green, but if you're still growing food the same way, you're going to have a tremendous problem with climate change. So, you're going to need to – and you could nationalize healthcare but the cost will bankrupt the system unless you get a handle on chronic disease, which is to say unless you deal with the catastrophe that is the American diet, and that diet is linked to that agriculture. So, that was my effort to explain to the next president why this issue, with all the other issues on your plate, is worth dealing with, because if you can fix the American food system you will have so many benefits, you will cut down on healthcare costs, you will cut down on greenhouse gases. And I think by connecting the food issue to those other issues, it has raised its visibility in the debate. I mean, I sense that, that it's being taken more seriously in the media, more seriously in the councils of government, and that's a good thing. Whether President Elect Obama is ready to go to war with agribusiness – I don't see much sign of that, and it's probably premature to expect him to do that, but there's a lot he can do, and there's a lot we can do, too. We need to build this movement and make it bigger and create those cadres of policy makers and politicos to really drive change, because make no mistake, the agribusiness industrial complex is very powerful. Harry Reed said recently that the two best organized lobbies on the hill are insurance and the commodity groups, by which he means the corn and soy people, and the grain traders, and that whole group. They're really well organized. They don't have large numbers of people but they have got a lot of power.

HK: And they're under the radar. You don't…

MP: You don't hear about them much. No, but you will when their [overlap].

HK: So, some of what you're proposing are symbolic. I read in what you're saying here, you suggest going back to victory gardens of Eleanor Roosevelt, so the Obama children should have a garden for their little dog to run in, on the White House lawn. So, that could not be unimportant, in a way.

MP: No. I mean, I offered in this article changes at all different levels. I think you have to change the general incentives that are codified in the subsidies to encourage farmers to use less fossil fuel and more solar energy, and you do that through diversification. I talked about decentralizing the farm, the food economy, as having a lot of virtues and also driving fossil fuel from it, but I also talked about the bully pulpit. These are things the President can do without any approval from Congress, and those are things like putting a garden on the White House lawn. This could be an eloquent statement that the fact that, look, the sun still shines, there is abundance. Imagine a White House that was actually feeding the poor of Washington, as well as feeding itself. It would send a very important signal. So, I don't think that those things are trivial. I think that how the White House organizes its own household around food, the kind of food choices that are made in the White House, can set the tone, elevate the issue, because the more the public pays attention to this issue of food, the less tolerable the current policies will be.

HK: And interestingly enough, there's a national security issue here because the centralization of agribusiness…

MP: Very risky.

HK: …means that there're very few places where all the food, whether it's the meat, or whatever, passes which makes them vulnerable to a terrorism attack.

MP: That's right. This question was examined. Tommy Thompson talked about this and the GAO did a study, and they said, yes, our food system is very vulnerable to terrorist threats because it's so highly concentrated, and we wash 86 million portions of lettuce in the same plant in the Salinas Valley, eaten all over the country every year. We grind 50 million hamburgers in the same plant – I don't know where it is exactly – so that one terrorist armed with a vial of botulism, or some other toxin, could sicken a great many people. We've prized efficiency in the food system, we're very efficient, but efficiency is not everything. Resilience is very important too, as, if not more, important. And so, you get resilience with redundancy, with grinding your hamburger in a great many different places so that if something goes wrong in one part of the company, in one company, it doesn't affect all of us. So, that's a very strong national security argument for decentralizing food, and this was understood by the government right after 9/11. They took a good, hard look at this and decided, no, we're not going to – we're going to leave this alone, because it discomfits too many powerful companies.

HK: One final question. If students were watching this, how would you advise them to prepare for a future in which food is food and the kind of food culture that we've been talking about is taking place? What should they do to prepare for that future? Obviously start a garden…

MP: Well, that's not a bad thing. I mean, you learn a lot in a garden. You grow a lot of food and you can economize with a well run garden, but you also learn habits of mind that are going to be really important in the future, which is to say self-reliance, basically, that we may not be able to count on the society fulfilling all our needs when the oil runs out. We're going to have to do a lot more for ourselves, and in the garden you learn that hey, I can do that, I can feed myself in a pinch, very, very important lesson. Get out of the supermarket, shop at the farmer's market, vote with your fork essentially. We get three votes a day when it comes to food, and those votes, we have seen, have an enormous impact on the world. How you choose to spend your food dollars is a very important vote that you have, and so think about how you cast it and realize that yeah, you may spend a few extra pennies or dollars for that local food but you're accomplishing a lot. You're keeping farmers in your community, farmland open in your area, you're building redundancy into the food system, not to mention you're getting the healthiest, tastiest, freshest food you can get.

HK: Well, on that…

MP: And cook. That is one other very important thing. Learn how to cook because when you cook, you will be supporting local food and you'll be a lot healthier, too.

HK: On that note, Michael, I want to thank you very much for coming on our program. You were already in Berkeley – I welcomed you to Berkeley, so you're – let me show your two books to our audience. In Defense of Food is the most recent book, and before that, The Omnivore's Dilemma: A Natural History of Four Meals. I think that what people will find when they read your writings is, they'll want to read more and more.

MP: Well, thanks very much, Harry.

HK: And they will see a world that they may not have seen before.

MP: Thank you – great pleasure.

HK: Thank you very much. And thank you very much for joining us for this "Conversation With History."

[End of Interview]