

ERIK WRIGHT: I guess I can begin the introductions. I'd like to welcome everyone to this third and final plenary of the 2012 ASA Program. Sustainability is clearly one of the crucial challenges facing the world today, and if there's any substantive area of intellectual and political concern for which thinking about real utopias is important, surely sustainability is one. The problem of sustainability in real utopias brings together the practical concern of what we should do with the problem of what kind of world we want to create and how to move from here to there. Surprisingly in a way, from my point of view when I first began thinking about assembling a panel on sustainability and began reading more broadly, most of the discussion by sociologists on these issues has the character of identifying the problem, stressing the urgency, but not really talking about the actual institutions needed to fully resolve the problem. So I think there's a lack of real utopian thinking around environmental issues. There's utopian thinking and there's critical thinking, but real utopian thinking of the sort that I've been advocating? At least there's not a rich literature of a real utopian sort. My hope, then, in having a high-profile plenary panel on this topic is that it will begin the discussion of such institutional alternatives.

Now while I wanted to have a plenary on sustainability to join with equality and democracy as a kind of triplet of topics, it's not an area where I have a lot of professional expertise, and I hadn't read broadly in it. And so I turned to the ASA task force on climate change, which has recently completed its report. I turned to them to ask for help, and I especially want to thank Riley Dunlap and Robert Brulle for their enthusiastic and support of contributions to organizing this plenary session.

Let me now introduce our three panelists. Paul Ehrlich received his PhD from the University of Kansas, and thus I have a personal bond with him that I didn't know before because I grew up in Lawrence, Kansas, both of my parents being professors. And I can say that I was in Lawrence at a time when Paul was in Lawrence, and it could be that we passed ourselves, each other in the street. He is the Bing Professor of Population Studies in the Department of Biological Sciences at Stanford University, and president of Stanford's Center for Conservation Biology. He is the cofounder with Peter Raven of the field of coevolution. He has pursued long-term studies of the structure dynamics and genetics of natural butterfly populations. I think I can say with confidence that this is the first time in the history of the ASA that a specialist in butterflies has spoken at a plenary session of the annual meeting of the association, but I'm also

pretty sure that his presentation will not be mainly about butterflies, although I suspect that what he will have to say will be massively relevant to the fate of butterflies on our planet.

He has also been a pioneer in alerting the public to the problems of overpopulation and in raising issues of population resources and the environment as matters of public policy. He is probably best known to sociologists for work he has done in the area embodied in his book, *The Population Bomb*, which called attention to the severe environmental threats posed by rapid population growth to the carrying capacity of the earth's ecosystem. As I'm sure many of you know, that book was extremely controversial and raised many objections from sociologists. Indeed, I have to say, and I think this is a worthwhile anecdote, when I decided in conjunction with my colleagues in the climate change task force to invite Paul, I did get some objections from people whose reaction to him was entirely based on that work of almost 40 years ago. And in the spirit, even if those criticisms were correct of having broad perspectives, I felt this was important for Paul to continue to come. But I think it's also important to note that in more recent years, the analysis of these issues has shifted -- his analysis has shifted from the sheer problem of numbers per se, just the numbers of persons, to the problems of consumption, consumerism, and the political economic conditions of population growth, rather than just persons per se. I think his current perspective on these is much more congenial to sociology, and part of the reason for him being here is to increase the dialogue between sociology and the kind of perspectives that he works on rooted more in the natural sciences.

He has received an astonishing number of awards from professional organizations and other organizations around the world. To name just a few, he has received a MacArthur Prize Fellowship, a Crafoord Prize of the Royal Swedish Academy of Sciences, which is given in lieu of a Nobel Prize in those areas where the Nobel Prize is not given, the United Nations Sasakawa Environmental Prize, the Blue Planet Prize, the Eminent Ecologist Award of the Ecological Society of America, and the Distinguished Scientist Award of the American Institute of Biological Sciences.

Tim Jackson currently serves as Economics Commissioner on the UK government's Sustainable Development Commission, and is Director of RESOLVE, the research group on lifestyles, values, and the environment. After five years as senior researcher of the Stockholm Environment Institute, he became the Professor of Sustainable Development at the University of Surrey, and was the first person to hold that title in a UK university. He founded RESOLVE in May

2006 as an interdisciplinary collaboration across four areas: CES, psychology, sociology, and economics, aiming to develop an understanding of the links between lifestyles, societal values, and the environment. He is the author of the influential and really important book *Prosperity without Growth*, and he serves as the chair of the New Energy Solutions Advisory Board for the Danish investment company BankInvest, and is associate researcher on the Templeton Foundation Project on the Pursuit of Happiness. Tim is also an award-winning playwright, and his environmental drama, *The Cry of the Bittern*, won a Public Awareness of Science Drama award in 1998. His most recent play, *Variations*, won the 2007 Grand Prix Marulic, and was long listed for the 2008 Sony Drama Award.

Finally, Harriet Friedmann is professor in the Department of Sociology and Fellow at the Center for International Studies at the University of Toronto. She lectures and publishing widely in the US, European, and Canadian journals on issues related to food and agriculture. Professor Friedmann's research includes international regulation of food and agriculture, family and corporate enterprises in the agro-food sector of the world economy, patterns of international trade and farm structures, persistence and change in diets and cuisines, and agroecology. Professor Friedmann's current research project is entitled *Legitimacy in International Governance: Sovereignty, Science, and the Public Participation in Negotiating Food Standards*. In May 2001, she was awarded a Lifetime Achievement Award from the Canadian Association of Food Studies.

When I asked Harriet to ask a real utopia proposal on food systems for this -- for a proposal session, the complementary session that she will be -- or that she's presenting her work in tomorrow, when I asked her to do this, she eagerly agreed, but said she wanted to write it collaboratively with a circle of food activists with which she was connected. Rather than sit and think on these matters in her office and produce a paper on the theme, she wanted the proposal to directly emerge from conversations with her activist collaborators. This reflects her deep commitment not only to democratic participatory ideals in the world at large, but in the process of producing knowledge within her own work as well.

Each speaker will speak 20-25 minutes, and then we will have time, I hope, at the end for questions and answers. Thank you very much. Paul.

PAUL EHRLICH: Well, this is the first time I've been in a room with so many sociologists, although I've been in some bars with fewer of you, and so I don't feel all that much out of place.

What I'd like to do, since two hours for me to talk is not enough time, is to just say briefly what I'm going to say, and then if I forget something, we can come back to it later. Basically, I'm going to claim that the division between the social sciences and the natural sciences is an abysmal and ridiculous division and no longer has any application. And I give you some personal reasons why, in my development, we got -- I got to that conclusion. Is the sound all right? I'm getting feedback.

ERIK WRIGHT: Yeah, there's a little echo, but it's all right for you? Okay.

PAUL EHRLICH: Okay. The second thing I'm going to do is explain why the environmental situation is much, much worse than many people think, even some natural scientists, certainly the vast majority of social scientists. And that's a failure actually of our social system and our education system traceable to the culture gap, in part. And I'll talk about that a little and just give you a brief summary of why it's in the fan. And then I'm going to move to talking about what we as a scholarly community can do, possibly, to change our institutions and the course of our society away from the cliff and towards something that might resemble sustainability or, in fact, a real utopia. Because I still have in my heart of hearts the dream that there's at least a 10% chance of getting to a real utopia as defined by Erik Wright, but I have a big argument with a distinguished colleague over that. He says there's only a 1% chance. And both of us agree, however, that it's worth spending time to either make it a one and a half percent chance or an 11% chance, depending on what your colleagues think.

Look, I was born not in a log cabin as many people think, but it was a long time ago in an era where, for example, if you had a dark skin color, about the only thing you could do was keep your head down, try and make out, but you would not be able to play a sport except for boxing. And if you were in boxing, the New York Times could still publish papers that said we're looking for a white hope. If you were in the movies, you will be a janitor. You couldn't serve in the military in a combat role and so on. If you had the bad luck to be born with the wrong chromosomes, you could be a schoolteacher in the lower grades, a secretary, or a nurse, and that was it.

And when I look at cultural evolution as opposed to genetic evolution, I can see, as I think all of you can, that -- cultural evolution's something I've done research on. Cultural evolution in technological areas has been incredibly rapid over the last 100 years roughly, but cultural evolution in the areas of ethics, how we deal with each other, how we deal with our

environments and so on, has been depressingly slow. And it's easy to get really depressed. If you talk to philosophers, they'll point out that if you brought Plato back to life today and put him in a philosophy class, taught him English, he'd understand almost everything and the issues would be much the same as they were in his day. And that's not true in a computer science class, but I think we can get too depressed there too, because one of the few advantages of getting older is getting a perspective on what's happened culturally in our society.

And nowadays, there are entire TV shows in which people tend to have dark skins, and they turn out to be excellent people in combat, brilliant scientists, and so on and so forth. The whole thing has changed. I can remember I was a Dodger fan when Jackie Robinson was breaking in, and the only letter I ever sent relative to sports was to Pee Wee -- any of you remember Pee Wee Reese? I don't think there's anybody here old enough. Yeah, there we go. I wrote to his wife because Robinson -- that Reese was the one person on the team that really went all out to make Robinson feel comfortable. And of course, when I took my instrument training as a pilot, I had a woman who taught me. And the reason I had a woman -- I selected her particularly because I don't trust male trainers, male instructors, because they have too much machismo. They're likely to pull an engine on you in a full stall just to show that they've got the guts and can fix it up. And so -- and nowadays, many of you have probably had the experience of flying across the ocean with a female in charge of the entire airplane.

I make those points only to say it's easy to get too depressed to think that, as I believe, we're on the road down the drain. But to think it's really not possible to change our culture fast enough, to change our institutions fast enough to go in some direction? I hope that's not true, and I think there is some evidence, some historic evidence, that indicates it's not true. To give you a single example, I knew a lot of people, have known a lot of people in politics and political science and such disciplines. I don't know a single person who properly projected what was going to happen in Eastern Europe when the wall came down. Nobody I knew expected that despite the fact that they were well informed and so on. But a relatively few people, if you know the history of that particular time, a relatively few people actually maneuvered it. It wasn't Ronald Reagan's defense budgets, it wasn't a mass movement actually that started up there. There are a bunch of people who planned it and created a mass movement. And so I think one of the jobs for all of us is to, as a scholarly community, help become a critical intellectual group that helps to plan a mass movement and gets it going.

Now point two is the issue of how bad it is. Is it really worth getting head up over? Should we really actually try and take some action, or just continue writing papers and enjoying ourselves? Well, I'm a great fan of enjoying myself, so I see nothing wrong with writing papers and so on, but I see a lot wrong with not putting some of our time into actually changing the way the world works. Why? Well, you already had an excellent discussion by Clive Hamilton of the situation in climate change. There are a number of interesting things there. One is that most people think climate change is the most serious environmental problem we face, and it may be. My own guess is it's going to be absolutely catastrophic, and we've had some interesting small-scale tastes of it already this summer. But it may not be, and I'll come back to that. There may be some that are much, much worse. Second point is that if you talk to the general public a lot about climate change, the major error they make if they understand it's happening is they think that the worst effects are going to come from sea level rise.

Now you can relax right now. If it happens, you'll be able to out-walk it here in Denver at least. Maybe a little worse in the Keys in Florida or somewhere. Yes, sea level rise could easily cause the displacement of hundreds of millions of people and the deaths of tens to hundreds of millions people. That's perfectly true, and sea level rise is the single most certain thing that you will get out of warming the planet, not necessarily because of the melting of the ice, although that will help, but of course, as you all know, when you warm water, it expands. And so if you warm water, the oceans are going to expand. And they're warming, and they're expanding.

But the really serious problem there, the super serious one, is what happens to agriculture. And we've been having a little minor test case of it in the United States this summer. Our agricultural system absolutely depended upon the climate, and we're doing nothing at all to increase its resilience. Worse yet, and I'll come back to this if I have time, of course climate change is -- excuse me, agriculture is one of the huge contributors to climate change. So you have one of those neat feedbacks that is the more agriculture you have, the more the climate's going to change, the more it's going to damage agriculture. And there, the number of deaths could easily go into the billions. And of course, if it triggers even a small-scale nuclear war, the battle over the water for agriculture, the battle over food -- if, for example, as the most recent research shows, some of you may know the Turco paper on this, if India and Pakistan go at it with a small-scale nuclear war, 50 or 100 weapons, firecracker size, 15 kilotons roughly, it'll screw up the environment to the point where all societies will collapse.

So the climate change situation is very difficult, and it is tied in tightly with lots of other things like the prospects of resource wars. If there -- some of you may have seen Mike Clare's recent book, the Chase After the Last, about resources, but if you look at the resource situation, water is, in my view, the most likely one to trigger a large-scale, a small-scale nuclear war. We've already had the water war in Israel in 1967. Water is in really short supply for agriculture. And to top it off, of course, no society that I know of is planning to do what we're going to have to do over the next millennium if we're to survive as a civilization.

And that is not just restructure our energy technology dramatically as fast as we possibly can, but also restructure our water handling technology because, as Susan Solomon and others have shown, we are committed to at least a millennium, and probably much more, of continuous change in rainfall patterns. And rainfall patterns are what give us our food. For example, if you talk about the failure of the educational system, if you asked 100 Stanford faculty members in a row where their food came from, I guarantee at least 90 of them would say the supermarket. In other words, the single most important activity of human beings is getting their food, and we do not train any more than a very small percent of our people on what, for example, is involved in getting our food. How many people, for example, in your classes know the size of the fossil fuel subsidy of agriculture, the fact that agriculture itself contributes roughly, as I see, 20 to 25% of the climate disruption that we're now facing? So climate disruption is a huge, huge problem, and we're not doing anything about it. That's the bottom line. Every year, there's more greenhouse gases in the atmosphere. Every year, we discover more positive feedbacks.

Second point is it may not be the worst thing. Clive Hamilton and Jane Diamond and I were having a discussion at lunch about geoengineering. At least with the climate situation, there are some truly insane nutcase solutions we could move to if it gets out of hand. And of course, as you may know, the signs are now, certainly if you listen to Clive, that it's getting out of hand. Take another example, the toxification of the planet. We have spread something on the order of 100,000 toxic substances from pole to pole. We already -- we're learning more and more each year about what are called endocrine disrupting compounds, which are things like BPA, which simulate hormones, which screw up the development of children, which have changed the sex ratio of human beings in some places from the standard 108 or so, or 104 males to 100 females to 200 female births for every 100 male births. We don't know what the

interactions are or the effects of the vast majority of the compounds we release on human beings to begin with, or on the ecosystems that support human beings. And yet we keep producing more of these compounds and releasing them, more and more of them being endocrine disrupting compounds, which have the sad effect of having non-linear dose response curves so that in many cases, tiny little doses are much worse for you than great big doses. If we find out, for example, that these things are causing every human being to get pancreatic cancer by the time they're ten, what do we do about it? We probably won't know which ones are doing it. We don't know even the two-way synergisms of the vast majority of them, let alone the 35- or the 4,000-way synergisms among them. You get your graduate students out there and take them out of the environment with forceps? I don't think so.

So there's no equivalent of these crazy -- what are we going to do about climate change? Well, we're going to have the battleship Missouri fire its 16-inch guns every 5 minutes to put crap up in the atmosphere to shield the sun away and they only have to do it for 250,000 years, so not to worry. We don't have that kind of wonderful solution for the toxics problem. We don't have a solution for the decay of biodiversity. Our agricultural system, our lives depend on the activities of populations of other organisms, which we are now exterminating at a rate much more rapid than the standard geologic rate.

We are, in the opinion of most biologists, getting into a scale of extinction that compares with the last five big -- the last five big critical extinctions like the one 65 million years ago, when the dinosaurs bit the dust and so on. People tend to say if you read the rags like the editorial pages of the Wall Street Journal, they'll tell you don't have to worry. There always have been extinctions. Perfectly true. However, there wasn't a gigantic human population already one and a half times the carrying capacity of the planet trying to survive during those last extinctions, and the problem of extinction may prove to be much more difficult than the problem of climate disruption, but of course they're also tightly tied together. And they're also tightly tied to what we can do with agriculture. For example, you may have read of the problems we're having with pollination. Pollination, I think it supplies about \$18 billion worth of food in the United States each year, and we're having all kinds of trouble with it. That's part of the loss of biodiversity.

So another area where we're having difficult times is the decay of biodiversity and the loss, the resultant loss, of ecosystem services. I suspect if you asked the Republican nominees

for the presidency what ecosystem services were, the answer would be like to any other sensible question. Duh? I could go on with this litany, but I don't want to because I want to move on to some other things, except to say resource wars, particularly turning nuclear, have got a huge potential obviously for bringing the whole thing down.

And of course the decay of the epidemiological environment, which is extremely tightly tied to the size of the population -- if you know your epidemiology, the more people you have, the greater the chance of a -- and particularly the more malnourished people you have, and we have about a billion to two billion now, the greater the chance of a transfer of a pathogen from an animal reservoir to the human population. That's where all our infectious diseases came from originally. That's where AIDS came from. The potential for more is growing as we sit here. Not only is the chance of a transfer bigger, the chance of the transfer sticking is bigger. The better our mass transport systems are, the chances of it spreading is bigger. And we are busily involving in disarming ourselves against bacterial pathogens by the insane way we use antibiotics. Been known to be insane for at least 60 years, and we are still, for example, in many places feeding antibiotics to cattle. So much so that soil flowers are becoming antibiotic-resistant. So we are -- the possibility's there, as Josh Lederberg pointed out, of everybody dying if we're really unlucky, but we can easily lose billions of people there. Doing nothing at all about it at the moment, so not a particularly charming picture.

What do we need to do about it? Well, let me go back to the issue of my history and why the social sciences and the natural sciences are really the same thing, and why we ought to get the whole scholarly community involved in this. When I -- when I was very young, I went and -- my butterflies, I'll bring in butterflies. My first concern for these issues came when I discovered that the butterflies that I was trying to raise in New Jersey in the 1940s, I couldn't do because they were spraying so much DDT around that when I brought the food plant into the house to feed the butterflies, the butterflies gorked. You couldn't raise them. Then they were building Levittowns over the habitat, so that got me a little concerned, and that was where my first interest in population and the environment started to develop.

When I got to graduate school in Kansas -- even before that, I got to go because of butterflies to the Arctic, and I spent a long summer with the Inuit. That's where my first ideas about the culture gap developed, and that's where I got to see an indigenous group being beat up upon by a combination of the Canadian government, the Roman Catholic church, and the

Hudson Bay Company. They're not at it as much as they used to be, but it was a truly disgusting picture which shaped that. I almost became a professional anthropologist at the time. I did learn some Inuit. They're wonderful, incredibly marvelous people, but I went from there to a truly primitive culture. It was the white races of Kansas, indeed in Lawrence, Kansas, where when I arrived, the restaurants were segregated, the swimming pools were segregated, the theaters were segregated.

How many of you have heard of Wilt the Stilt Chamberlain? Famous story. They wanted to bring Wilt out to play ball for Kansas, and he said he wouldn't come unless the theaters were desegregated so he didn't have to sit in the balcony when he went to the movies. And so the chancellor was Frank Murphy in those days, and he called the movie owners in, one of whom was Fog Allen, the racist basketball coach who was dying to have Wilt. He was willing to associate with somebody with dark skin if he could make enough baskets. And Frank said, you guys got to desegregate or we won't get Wilt. And they all said, oh no, we couldn't do that. We'll lose our business and so on. And so Frank said, well in that case, I'll just have to show free movies on campus every Friday, Saturday, and Sunday night. And curiously enough, desegregation occurred in a nanosecond. These people turned liberal almost instantaneously, but we did have to -- I'm a semi-co-inventor of the sit-in. Ralph Bar and I and groups of mixed students managed to desegregate the restaurants in Lawrence in a matter of months by having what we called profitless lunch days. We would go in in a mixed group and sit in the booths. They wouldn't serve us, but they couldn't serve anybody else. The swimming pools didn't get segregated till the early -- didn't get desegregated until the early 60s.

Anyway, it's always been to me a combination of what's happening in the world, not just in butterflies, not just in DDT resistance in flies that I've worked on and so on, but in how the entire socio-political complex system interacts with the natural system. And that became more and more of a professional interest. And I think that now, for example, too many colleges still don't understand how vital the social sciences are to the entire picture. We struggle, for instance, to get our students all to take courses in the social sciences, our graduate students, but they don't all do it. They're just like -- you can't find most people who know what -- who know -- excuse me, who know where their food comes from. They also don't know what an externality is. But it's changing. We are getting the students to do it.

Yeah? Yeah, I have four minutes. I'm going to end. Don't worry. You think I'm going to go on forever, but I can always just stop talking.

ERIK WRIGHT: I'm the one that goes on forever.

PAUL EHRLICH: But on the other hand, I think, and we have good reason to believe, that not only social sciences, but virtually everybody else think the world works against an unchanging environmental background, that we have this complex human socio-political adaptive system which just functions, and there's this environmental background. It's just as adaptive, it's just as complex, and it's changing rapidly, and we're not doing it.

And one of my big hopes is that public sociology can really get on, get going, and that we are going to be able to -- what happened to the mob? Gee, the mob slide. I have it down here. I'm looking at it. Oh, there it is over there. We're trying to actually find a way to bring together the scholarly community and the civil society to start a bottom-up movement that's got to change things fast if we're going to survive. It's got to change it faster than I would -- most of us would like to imagine it can be changed, but I think it can be. I'm trying -- I'm here in part to recruit you guys to come join the mob. I sort of think of it as sort of a social Wikipedia, and help us build it. If we can't build a social movement from below and find a way to inter-digitate it with the things from above we've got to deal with, we're going to be, and we are already in my view, in very, very deep trouble.

So it's really a plea to forget about whether you're a sociologist, a political scientist, an ecologist, a molecular biologist. All of us have got to be putting time into this. And what we're trying to do with the mob is create a platform and some research proposals that will actually move toward rapid action because we have not got a lot of time. If we had 1,000 years, I would look at the record from the time we had the lynchings to the situation today and say, yeah, in several hundred years we're going to have an equitable society. If we're going to change, for instance, the population situation, we're going to have to give women equal rights in every nation, equal opportunities with men, give them access to modern birth control, give them access to back-up abortion. We know exactly how to do it, but we're not getting the job done, and that's the big issue.

And that's where the culture gap comes in. And we can talk about the culture gap later, but basically it says the Inuit -- every member of the Inuit society knew basically all the non-

genetic information of that society. If we put everybody in this room together, we don't jointly have one billionth of the non-genetic information of our society, and that's one of the reasons we're in the situation we are now of, as Joe Tainter would say, our complex society collapsing, most people not realizing it, and almost nobody doing anything about it. So when the time is ripe, societies, institutions, and so on can change very, very rapidly. And all of our jobs, in my view, is to ripen the time. Thank you very much.

TIM JACKSON: Thank you very much. It's a pleasure to be here, a delight to have listened to Paul speaking, one of the early heroes of the environmental movement in which I found myself somewhat reluctantly torn away from playwriting some 25 years ago and still trying to figure out why or how. But it may have had something to do with this work that I want to describe to you today, which originated actually, as Erik suggested, for the British government a couple of years ago and took on a life of its own. It wasn't terribly popular, it has to be said, with the British government. That was because it had two words put together in the title: without and growth.

And although sociologists from time to time have been quite good at criticizing the existing economic system, neither economists nor politicians have been very keen to do the same, so I was, to be honest, taken aback, very pleasantly surprised by the fact that the people who commissioned the report in a very loose sense when I was an advisor to the British government were not too interested in the outcome of it. It has had a sort of resonance, it seems to be a kind of conversation whose time has come. Is it possible to conceive of a kind of society, a kind of prosperity, that doesn't rely on endless growth? And the reason for doing that, really, is that the growth poses a dilemma to us, a very obvious dilemma. The first horn of that dilemma is that growth is unsustainable, at least growth of the kind that we have seen: fossil fuel-driven, material-intensive, degrading of the environment, socially unequal is unsustainable. Paul's mentioned some of the reasons for that unsustainability. This was a piece of work by Johan Rockström and the Stockholm Resilience Centre, pointing out how we are already at the points of exceeding planetary boundaries, not just in climate change, but as Paul suggested, an even bigger threat arising potentially through biodiversity loss, the loss of species.

I don't want to dwell on that. I want to bring you past the dilemma. But to do that, I have to pose the second horn of the dilemma, which is this: if we do away with growth, what do we have left? What is the opposite of growth? What is it if it isn't growth? We barely have a term for it, actually, but in the last five or ten years, the particularly French and Spanish nations

have provided one, which translates somewhat clumsily in my view into the word de-growth. I find the original French, which is *décroissance*, a lot more savory, almost like something you'd want for breakfast.

The difficulty is that whichever language you say it in, de-growth actually turns out to be unstable. We don't have economies that know how to do de-growth. De-growth is recession, is depression, is collapse. And I wanted to -- before I go on to solutions, I just want to show you a little bit how and why that happens. The mechanism for instability as soon as we give up growth, and it's a very familiar story to us in the wake of the financial crisis, is that our economies continually strive after increasing labor productivity, and that means we do more each year with the same number of people, so that if our economies don't grow, then we find unemployment rises. If unemployment rises, there's not enough spending power on the high street, so consumption goes down, tax revenues go down to government, government deficits go up, public expenditures go down. There is, if you like, a sort of spiral of collapse that's become ever-more familiar as the threat to politicians. The defaults on loans go up. We're seeing that big-time in the eurozone at the moment. And investment is down and the economy spirals further into collapse.

Here is the visceral fear of the politician confronted with the idea that the growth-based economy may not be the answer to our prayers. Here is why, for example, I received a phone call on the Friday before the report was launched in the UK from what can only be described as an irate official. I won't mention the name nor the department, but this person told me in no uncertain terms that No. 10 in some unnamed street in London had gone ballistic. And this spiral of collapse, the instability of de-growth, is the reason for that visceral fear. And to my mind, and one of the disappointing things for me about the reception by the UK government, is that one should, and in the report and in the book I did, acknowledge that this is a very, very profound dilemma. It is not a simple place to be. Our economic system for 70 years, since Keynes at least, before that, in essence has been one built around growth. And it is, of course, stability which is at stake when you abandon the growth-based economy. Keynes once said, in fact, that the whole purpose of the economy is to provide for social stability, and no government anywhere would be doing its job if it forewent the possibility of social stability. Social stability matters, and the dilemma of growth is a profound one.

That was my starting point. There are basically a couple of ways out of the dilemma, it seems to me. The one that is most swiftly reached for by technologists and economists is the idea of decoupling, the idea that we could decouple growth itself from its material impacts. This is -- at its roots, it's an appeal to the ingenuity of the human spirit, to technology, to efficiency, to innovation, to our cleverness as a species. And don't get me wrong, I have nothing wrong with the idea that the human species is sometimes clever and has sometimes good technologies. But with any such utopian solution to a complex dilemma, one must ask the question, is it actually feasible? Have we achieved any such decoupling? I won't go through the evidence, but it's actually pretty clear that we haven't historically achieved that decoupling. And when you ask the question, how much decoupling will we need, how clever would we have to be?

You find almost heroic answers, like the one encoded in this graph that I'm showing you now. So this is a graph of the carbon intensity of each dollar of economic activity in the world, and roughly where we are at the moment is on the left-hand side of that graph, 768 grams of carbon per dollar of economic activity. Now imagine a world in which everyone lived as people do in the west. Imagine a world in which 9 billion people, the UN central projection for 2050, all aspired to western living standards in which everyone was still growing at say 2% per year. And you can just do the math. You can ask yourself a very simple question. How low would the carbon intensity of the economy have to go? And I would have lost all dramatic intent if the answers to that question were not right over on the right-hand side of the picture, 6 grams of carbon. It's 130-fold improvement. It's technological improvement of a kind that we have just never seen in the process of industrial society. And it gets worse because it turns out that if you want to meet your carbon targets by the end of the century, you actually have to have an economy which is pulling carbon out of the atmosphere. The CO₂ intensity has to be less than zero. No politician anywhere knows what that means. No technologist really knows what it means. No economist knows what it means. However swiftly the appeal to the power of technology to solve the dilemma of growth, we have no idea how to achieve this.

Now I, at this point, have to confess I'm someone who likes a challenge, who enjoys the Olympics, particularly the wonderful Olympics that my country hosted against all odds in the last week. So I'm not going to tell you this is an impossible challenge. I'm not going to tell you it's an impossible technological challenge. The question I want to ask is, is this possible in this kind of

society, in the kind of society that we have? And that question is not just about critical perspective on perspective, it is also to identify the routes out of the dilemma if we find that decoupling is not enough. So let me just start with a blank slate and sketch a little bit of the dynamics which I think speaks to the heart of the kind of economy that we have. It starts, Economics 101, with the fact that firms produce goods for households. That's us. And they also provide us with incomes, which is very useful because we can spend them on more goods and services. It's called the circular flow of the economy, looks very simple at one set of time and one way of looking at it. It is just a set of relationships between people, between firms, people as producers, and households, people as consumers. And it turns out that they are more or less the same set of people, so it looks pretty harmless.

And then enters one feature of this system which turns out to have a very powerful dynamic, and it's around investment. Investment is what we do with the bit of our income that we don't spend, and typically what businesses do with that investment is to chase productivity, to increase the productivity of the processes that create the goods and services that we desire. And by increasing the productivity, one of the things they do is bring down prices, and that, all other things being equal, encourages people to buy more of the things that are being produced. So immediately, you begin to see here a dynamic. It's not simply a circular flow, it's a circular flow with a dynamic built into it because of the way that investment is used.

But I want to point to another feature of this system, another use of investment. Joseph Schumpeter pointed to it some time ago. He called it creative destruction, and it is about the pursuits of novelty. It's that firms continually search out new processes, new products, new markets for their products, and in this way stay ahead of the game, stay ahead of the competition. And what's fascinating about this is that the desire for novelty by firms has a counterpart in us, in people. Because it turns out that we have something of an appetite for novelty. We love new stuff: the latest gadget, the fastest car, the biggest house, the best holiday in the sun. All of this stuff appeals to us not just for reasons of status, although that's clearly at work here, but also for an almost basic sense that novelty signals hope to us. It tells us that the world is a brighter, newer, shinier place today than it was yesterday, and that our children's future will be brighter still. It plays an important part in our lives, novelty.

And here you have suddenly something which you could call an engine of growth. This is no longer a simple circular flow, it is something that almost relentlessly, and partly because of

our own humanity, draws materials through it in the production of goods and services that become ever more exciting to us and tell us stories about each other, about how important we are, about who our friends are, about who we disassociate ourselves from, about our children's future, about the world we live in, about the society we crave, about our sense of meaning and purpose in life. It's a bigger story embedded in a dynamic that is at least partly embedded in us, in the human psyche.

And what's interesting about this story is that should we be tempted to forget it for any moments in time, as indeed we are tempted to do during recessions, for example, then there is a host of advertisers, politicians, investors, bankers, financiers, credit companies who will encourage us to continue with it. And one of the mechanisms that they will do that through is the expansion of credit. The build up of consumer debt was one of the powerful stories of the pre-crisis years. This is what it looked like in my country. It didn't look very dissimilar, actually, in the US. Personal debt rose consistently over the 15 years before the crisis until, in the three years before the crisis, it was above the GDP. And at the same time, savings, the household savings ratio until just before the crisis, fell until it was, in fact, below zero, a negative savings ratio. It's a story, if you like in very short terms, of all of us, of people, or ordinary people being persuaded to spend money they don't have on things they don't need to create impressions that won't last on people they don't care about.

And where it leads, broadly speaking, is this. This is just one example of the chaos that was created, the social instability that was created. This was my country, my city only a year ago, and this pattern of violence and reaction to the austerity policies which followed the crisis which withdrew social investment from ordinary people in order to pay for the bailout of the financial system. This response, it seems to me, is in some sense an entirely understandable one, even if isn't entirely justifiable.

But I want to move on, as I promised you to utopia, to the idea of real utopia as being about identifying building blocks for the future. If we cannot solve these things simply through decoupling, through technological ingenuity, we must rebuild the institutions of the economy. And in particular, we must find a way of making an economy work when it isn't predicated on relentless material consumption growth. And I want to point to two ideas and a need, a research need if you like, in pursuit of that. Now before I do so, I want to ask, because my story of consumerism implies in some sense that we ourselves are to blame for this story. It is our

avariciousness, it's our instinct for acquisition, as William James called it 100 years ago, that is at the root of consumerism. And I want to ask if that is inevitably so. I want to ask, are we really those selfish, individualistic consumers that the conventional consumer capitalism assumes that we are? And one of the interesting things about the crisis is that it shows, dramatically in fact, that we're not. If you think of my savings graph dropping relentlessly pre-crisis, a very interesting thing happened to that line at the point the crisis struck. It turned a right angle upwards, and savings rates are now higher in the UK, and higher in many other nations, than they were even 40 or 50 years ago. There was a dramatic turn. It was a shift. It was a sense that people actually, at that point, no longer wanted to max out their credit cards. They wanted to save. They wanted to concentrate on necessity rather than luxury. They wanted to look at long-term security. The difficulty is, and Keynes himself pointed to this, he called it the paradox of thrift, is that this is exactly the wrong thing to do at the point of a recession. If you save during a recession, you simply prolong the depression. The economy can't recover, and that's why you have the politicians turning around again and again and again persuading people to get out and spend money on the high street.

My point is this: my point is that this is no longer at this stage a system well adjusted to the human psyche. It isn't the human psyche driving the system to relentless growth. Of course we have acquisitive -- of course we have acquisitive appetites, of course we have a partly selfish nature. It's not to deny that. It is simply to say that actually there are other parts of the human psyche. And I want to draw here on insights from some social psychology that support this view. The balance between self and other in the human psyche was pointed out I think rather clearly by the psychologist Shalom Schwartz . And he also gave it an evolutionary base. He argued that of course selfish behavior sometimes works, under conditions of fight or flight for example, but that other regarding behavior, altruistic behavior, social behavior, had a place in our evolution as a social species. And there's an even more interesting tension that he pointed to between novelty-seeking behavior and traditional conservation. And again, nobody's denying that we have this novelty-seeking behavior in us, but it's always been balanced for evolutionary reasons, for adaptive reasons, against conservation and tradition. Novelty is adaptive in fast-changing environments, but conservation and tradition are essential in providing the stability for the family group, for the community, and for society as a whole.

What is interesting to me about this perspective laid down through an understanding of evolutionary psychology and explored statistically across a wide range of countries and contexts is that it begins to make clear the fundamental error of the existing economic system: that we've built a system in which the institutions and the incentives continually assume that the human psyche lives in the right-hand upper quadrant of my diagram. In other words, that the people and their social good is always determined by assuming that they are novelty-seeking individual materialists. And by contrast, looking at this map of the human psyche, if we can call it that, it also points to solutions. It also points to the need, if you like, not to restrict human activity, but actually to open out the institutional assumptions on which our economies are built; to protect, to maintain, to nourish the fragile altruist within which is depicted in this lovely line drawing by Rembrandt.

That's a lovely philosophical thing to say. It's obviously very easy. We can statistically explore the dimensions of selfishness and social behaviors. We can statistically explore the dimensions of novelty-seeking and tradition. Can we build an economy in which we opened out our perspective of what it meant to be human in different directions? And if we could, what would it mean? What would it mean for investment, what would it mean for enterprise, what would it mean for the relationship between government and enterprise, what would it mean for macro economy? And I want in the final few minutes just to point to a few of those. I can do no more than that, but there is more in the things that I've written, and indeed in the work that I'm doing now, which I'll mention briefly at the end.

So where is this -- where are the elements of this green economy? And I like to think that they are really in some senses rather simple, and that they go back to basics. So the first element I'd like to point to is the role of investment. And I pointed to the key role that that played in the dynamic of the pursuit of novelty and the pursuit of productivity. But actually, investment in its basic terms is simply a relationship. It's fanciful of me perhaps, but I like to think of economics, to the tough subject for many, simply at one level as a science of relationships. It describes the relationships between us as producers and consumers, between the poorest and the richest, between the state and the citizens. And it also describes the relationship between the present and the future. And it is investment that holds that relationship between the present and the future. So it -- re-conceiving investment, building investment around the protection of ecological assets, around the protection of the assets from

which we draw our own prosperity is one of the planks, one of the platforms for building a different economy.

The second is to ask, what on earth is enterprise for? Is it really the mindless pursuit of bubbles of value in order to allow us to consume more and more stuff? Or is it the basis to provide the services that make our lives worthwhile? And actually, this very simple shift of the idea of enterprise not as the mass output of material stuff, but as the concept of delivering services to people turns out to be a very powerful one. Of course, you have to make this work in a macroeconomic context. And perhaps the hardest task of all, the one I'll only touch on very briefly in a couple of minutes, is the task of creating a macro economy in which these things work together in a way that provides employment, improves our lives, gives us the opportunities to flourish, and also maintains economic stability. That is a hard task. It is not a trivial one. It is one that I think it calls, actually, for economists, for sociologists, for psychologists to engage in it robustly over the next years for all sorts of different reasons. Not the least is that actually under the current circumstances, we may just not get growth back again in the way that we assumed that it would be there before the crisis.

But let me say a few words very quickly about this idea of greening investment. First of all, it has different investment targets, so its targets are now carbon reduction, resource productivity, the protection of wetlands, perhaps investing in community, investing in community services, and I'll come back to that point later. But these investment targets create a different ecology of investment. They will not work under the conditions of existing Basel accords, which allow the deregulation of financial markets to the point where it matters no longer what investment is in as long as it creates a bubble of value. This is a different platform for investment. It requires a different archeology, a different ecology.

This will also have different productivity and profit stability implications. These will not necessarily be Icelandic shares. They won't be the kind of bubble that created the instability of the market. They will have longer, slower senses of capital. This long, slow idea, long, slow capital just seems to be something that is hardly prized at all in existing markets, even though from institutional investors' perspective for example, penchant funds, insurance companies, it makes surely much more sense to have a long, slow capital that is secure in its basis than it does to have the kind of speculation that led to the crisis.

So the reform of financial markets is absolutely essential, and clear here too is the role of the public sector. What is the role of the public sector in creating these investment markets? Certainly some sense of oversight in relation to financial regulation, certainly some sense of using the idea of public assets, of social assets, returning to the idea of the social good as a formational component of a new economy. Let me say something briefly about the kinds of enterprises that I perceive here. What am I talking about here? Of course we need food, clothing, and shelter. But beyond those basic material commodities, the kinds of enterprise that improves the quality of our lives is to do with health, is to do with education, is to do with social care, is to do with recreation and leisure, is to do with the maintenance of parks and gardens, is to do with the building and renovation of museums, quiet centers, games halls, places where we meet as a community and begin to think of ourselves as embedded, in Michael Sandel's lovely words, in a common endeavor. Places, in other words, where prosperity can be less materialistic, more social.

And in the process will employ more people because here is one of the strange things about this sector, this services sector that I want to build an economy from. It is less labor productive in general terms. And why is that? It's because it employs people. It employs teachers, it employs doctors, it employs physicians, it employs social care workers, it employs yoga teachers and martial arts instructors, it employs people who exchange their time for the benefit of others. And this is exactly why it's more labor-intensive, because it's the value of the human time that contributes to the value in the economic activity.

There was a paper a few years ago by a well-known economist called Braudel who described the points very well in the context of music. What does it benefit us to ask the New York Philharmonic to play Beethoven's Ninth Symphony faster and faster each year? It's a nonsense in some sense, as it is a nonsense to ask teachers to teach bigger and bigger classes and doctors to see more and more patients. The quality of time actually is the benefit of the economic activity. And this gives us, wonderfully in my view, a route back to full employment, even in an economy which isn't growing. If you employ people over a slower time scale, contributing their expertise without the continual pressure of productivity growth, actually you get better quality services and you get higher employment rates.

I've done no more here really than tempt you, tease you almost, with ideas. I think what's fascinating to me about these ideas is how basic they are, how much they are

fundamental institutional building blocks. Investment is the core of what economic activity means. Enterprise is the relationship between the firm and the household. It is at the core of what we need to achieve. There are a few examples of this. Just running through them very briefly, one here in the United States, the Unified Field Corporation. People are already beginning to build institutional structures in different ways around these principles. Here is a search engine, Ecozia. If you do take only one thing today, go and look up ecozia.org and instead of using Google or Yahoo, search on Ecozia, and as they claim, every search saves rainforest. They devote 80% of their revenues to rainforest protection.

A new kind of enterprise, a new sense of return, a sense of social and ecological return to replace meaningless growth in speculative commodities. We still have tough questions to answer, and they are all really about whether this can be made to work in terms of achieving economic stability. I can't give you, sadly, today very definite answers about that. All I can tell you is that, to me, it's the one thing that leaps out as being an important thing to be working on, and that's why I'm doing it. I'm going back from Denver tomorrow, in fact, to work with my collaborator, Peter Victor at the University of York in Toronto. And our idea here, it really is to build a tool that allows not just economists, but sociologists, psychologists, civil society groups, politicians, and who knows, maybe even one day treasury departments and central banks to ask previously unaskable questions. How could we build an economy which has economic stability without relying on relentless consumption growth? And in the process, perhaps, reach towards a sense of prosperity that is more meaningful than the consumerist vision of a material heaven that we know well is not a real utopia. Prosperity consists at the end of our day in our ability to flourish as human beings within the ecological limits of the finite planet. That is a manifesto I submit to you for a real utopia. Thank you very much.

HARRIET FRIEDMANN: Is it there? Oh, I see, oops. There. It's a very great honor to be following these two inspiring speakers. I'm going to actually talk about some social innovations, social innovations that I think can be done right here and now that really do lead in this direction. And in particular, I'm going to be talking about things that relate to social enterprises and to human capacities for enterprise as positive social activities, so I'll be following Tim in a wonderful way, I hope. I'm going to be talking about emergent systems, how to scale up to social and technical innovations. Many, many experiments are bubbling up everywhere. Some of them are unified like Transition Towns, some of them are sectoral experiments. I'll be talking about food and

energy examples. The question for emergent systems, how to scale up these innovations, is how to design policies to encourage what Hilary Wainwright quoted Thomas Paine as talking about: the dormant capacities of individuals. How to create institutions that generalize and institutionalize and encourage these dormant capacities. How do we learn -- how do we learn, that is across scale, including across borders? And how do we learn across jurisdictions? So some of my examples will speak to that, although I can only tell these stories very briefly.

The idea of emergence comes from a whole literature, some of which is in the business literature, which I find very encouraging. Margaret Wheatley is one of the key figures in this in Canada. Frances Westley is another that I've taken quite a lot of inspiration from. This quote refers specifically to social emergence, the emergence of social and I'm going to say policy institutions. How living systems begin as networks, shift to intentional communities of practice, and evolve into powerful systems capable of global influence. The global influence is tricky because we're talking about a multi-scalar world, so hold onto that idea. I'll get to it at the end.

The most important point I want to make today because of the frequent opposition in social movement language, which I think is a bit sloppy often in this regard is to oppose markets to the social good, not something economists would easily come across. These innovations I'm going to talk about actually use markets, and we're talking about transforming the economy into a social economy, one that encourages the flourishing of people. These institutions I'm going to describe I think are examples of the kind of social change that actually marries the altruist within with the material and spiritual needs of the self. I know Tim was getting there at the end, but often when I think -- when we think materialism is a bad thing, I actually think that we're not materialist enough. If we loved our objects, if you think of the objects you love, a piece of pottery, a piece of art, a piece of clothing, a meal, those things we don't throw them away. We don't waste them. We care about where they came from, we care about where they go, we hold onto them.

Markets are the way we coordinate our activities, and they are what the rules shaped them to be. So macro economics is very important, but I think we need -- and I think we need to start with something older and ask what the basis of our economic institutions are in society. Fernand Braudel is my touchstone here. We as a species, as societies, social species, have always needed material life. It's what we do. And that material life has usually included markets. And sometimes, as Polanyi has taught us, those markets are long-distance as well, even before

capitalism. Capitalism is a particular way of organizing markets, and it often is predatory on them. I can expand on that if you want, but I just recommend that you read Braudel. I'm just trying to recover the idea of markets as something that are actually shaped by social institutions, very much part of the sociological repertoire.

And I'm going to -- I've been forgetting to move through here. I'm going to talk about two examples. Food is -- I'm glad to hear Paul include it as the central idea. It often gets lost. As food and agriculture have been marginalized in our policy institutions, put at the bottom of hierarchies or social needs, it's certainly coming back. And as crisis comes back, it does come back into attention. I point out just to -- as an example of how capitalism is predatory on social needs, the crisis in agriculture that's going on right now because of the drought has led to some very perverse effects. A farmer in Iowa said to the New York Times, I can't -- it's not worth my while to harvest the crops I have. He is so caught in the cost of his investments that it's going to cost more to harvest a crop than to sell it. That means that a small crop doesn't become a small amount of consumption. A small crop means no crop from his field available for consumption. In Canada, a farmer looked at his field of beans and corn and wheat and he said, I'm not going to harvest my beans. It's not worth it. But my wheat? That's okay. I'm going to do fine this year because the wheat harvest down in the US is much worse, so the prices are high. That's going to cover the cost of my lost beans. Those lost beans aren't going to go into the market either. That's what it means for capitalism to be predatory on material life and even on markets.

So to move to food, the example I'm going to give is one of public procurement as a way of ratcheting up local markets that have been disorganized by global trade rules, by financial speculation, by turning food into simply a commodity, let's say a fungible commodity, something translatable from one thing into another as long as the profits are maximized for those organizing it and trading it. Even for those completely committed to it like the supermarkets, who have reorganized -- which have reorganized commodity supply chains in the last two decades so that, for instance, Kenyans grow green beans. Instead of a mixed agro-ecological farming system with food that would enter into local markets, they grow green beans that enters into the Sainsbury supply chain to wind up in the UK. And they're not going to be able to eat green beans if the Sainsbury checker doesn't like it or the global gap checker. And even if -- and if the crop fails, they have almost nothing.

So the same's -- and our local producers, who are the ones I'm really going to be talking about here, producers of horticulture, of small animals, of chickens, eggs, small cheeses, have been displaced from the margins of cities by the spread of those cities. We've paved over the best farmland, which is the reason we located those cities there in the first place. The imports through these long supply chains of fruits and vegetables, of cheeses, of all products, have further marginalized these producers. So the ability to reshape local and regional food systems that would be resilient in the case of rapid energy increases, in the case of climate change, in all the cases of disasters and breakdowns that are looming and that occasionally happen, that that becomes harder and harder to do. And what one tool is for governments, mostly municipal governments, which are in the center of regions, to use their power of purchase to be able to favor local and sustainable food. One of the best books on this is by Kevin Morgan and Roberta Sonnino, *The School Food Revolution*.

The question in the US might be how to scale up smaller-scale innovations like farm to school programs that are translating the universal system of student nutrition in this country into support for local farmers providing healthy food and changing the quality of that system through changing the quality of the relationships and changing the market.

Municipal purchasing is bigger than that. It changes the rules of the game. The rules of the game need to be changed back from the way they've gone through trade rules in the past couple of decades. In Toronto, the North American Free Trade Agreement was thought to be a barrier to municipal purchasing of local and sustainable foods when we were proposing it in the Toronto Food Policy Council in the 1990s. It turned out not to be so, and in fact eventually, as ignored as we were at the time, it came through a different direction through a sustainability office, and it is being done. It's being done in Toronto, in satellite cities such as Markham, in other cities across Canada, and indeed across the world. Now the threat is being explicitly addressed through trade agreements. The European Union in this case is negotiating. All these negotiations are secret, little bits released and little pressure, new release, little less bad. They want to limit the ability that -- the threat -- they want to create a very low threshold for municipalities to be able to favor local producers of anything, and that includes water, transport, and so on, but certainly food in their purchasing policies.

So the battle continues, the game continues, but it is happening. The new frontier is hospital food, and this is about recovering not just sustainable markets, but also some of the

topics Tim was describing, meaningful work and skills, a new kind of recovery of lost skills and lost meaning even in certain kinds of work. So some of you may know that hospitals now, that hospital kitchens, which ought to be feeding healthy food to people who need to get well, instead have completely closed their kitchens, at least in Canada. Now maybe with your private hospitals and so on, I don't know that you don't do that here, but you'll recognize this from other institutions as well, that hospital food is now done centrally by giant transnational food service corporations. It's sent to hospitals and other institutions where it's reheated in re-therm units, and the quality of the food is something that I probably don't need to talk about, but the quality of the work, the de-skilling, the closing of the kitchens, the difficulty of reestablishing meaningful work, preparing food by kitchen staff in hospitals to help patients get better, is really the challenge.

So I'm going to tell you about one little example that's happening in our area. There are other examples happening all over the US and in other parts of the world. The challenge is to create good work along a regionalized, re-localized, values-based -- values-based institutional supply chain. One very small initiative funded by private donor and some government money, Scarborough is a -- Scarborough Hospital, which is in a hospital in Toronto. The slide on the right is one from the farmer that has devoted a specific part of the crops in her field to deliver directly to the hospital, being delivered by Hung, one of the hospital staff who's received the goods directly from that farmer. That farmer has now not only found a new market for her sustainable produce, she's also joined the Toronto Food Policy Council. If you want to hear more about it, come to my 4:30 talk today, not tomorrow, about the Toronto Food Policy Council. And she has become a -- found a way to engage and express a policy knowledge and a policy interest, and to work in a common endeavor with other people who are interested in a good food system.

Joshna Maharaj, who is the chef who left a very high-end restaurant job and career to work as a food system activist, has headed up this program, and she is there with a pot of stock. She had to use most of the grant to re-equip the kitchen with pots and pans and knives, and has taught the staff teaching skills, kitchen skills, knife skills, stock skills, all the rest of it. And the staff have become, as a result of this, even a tiny proportion of what's produced there, have become excited. They wear their chef's outfits with pride and they feel that they're doing meaningful work. Now the way this happened is important because it was championed not by anybody in the health professions in this hospital. The hospital champion was the vice president

in charge of the patient experience. So what that suggests is that clients, customers, patients, families of patients, the Toronto Food Policy Council, government officials can all play a part in trying to recover meaningful nutrition and nourishment, nourishment for people who are ill in the community.

The second example I'm going to give is energy, and I'm going to focus more on the social aspects of a particular policy which everyone should know about and I think everyone should support. And it has the potential for reaching tipping points. That's the Feed-in Tariff. It's been renamed recently in the US in a bunch of words that has the acronym CLEAN, so you can look for it that way if you don't already know about it. In the Feed-in Tariff, individuals and groups become producers of sustainable energy that they are able to feed into the grid. This is not individualistic. This is not survivalist. This is not getting off the grid. This is being able to become a producer and entrepreneur in the economic and the social sense, a social entrepreneur in a collective endeavor to transform the energy grid into a sustainable one. The policy works by the government or the central utility authority paying, creating the infrastructure for photovoltaics or other sustainable energy sources to feed into the grid, to work in the reverse direction from receiving electricity, and also guarantees an incentive price, and in the case of Ontario triple the price for a fixed amount of time: in the case of Ontario, for 20 years.

It's a very important example, I think, that works with the same sort of logic as open source around tipping points. It's one that's a different kind of logic of social change that can be very encouraging in the sense that things can quickly -- can move up incrementally and change very quickly. The reason this is good -- well first, it's been adopted very widely. It can move pretty quickly. In 20 years in Germany, which was one of the first innovators in this, it went from 5% of electricity to 20%. It allowed sustainable energy to grow in that way. And even more important related to the hospital example -- not even more, equally important, it created thousands of green jobs. That is thousands of jobs where people can feel meaningfully that they are not doing bad work, not doing work that destroys the environment, destroys health, as many people are aware that they do at some level when they get the kinds of jobs that are available. Instead, they can do meaningful work that contributes to a better society. And most important, they can encourage the capacities of people to become -- to take initiative

themselves. To scale up the demand for photovoltaics means tapping the best qualities of people: initiative, cooperation, and consumption and living that is meaningful.

The story in Ontario was very -- I'll tell it very quickly. It always is particular, but it can happen more easily as the wave grows. There were particular individuals, social movements, and government involved, and it is a community-building activity. So before I do that, what happened, very briefly, was that the David Suzuki Foundation, a major environmental organization in Canada, approached the Minister of Energy of Ontario at that time, which is the early 2000s, and convinced him to go on a tour of Denmark and Germany, convinced him to adopt the Feed-in Tariff Program.

That wouldn't have been sufficient. In addition, a community of energy practice was a very well established in Ontario and was ready with specific versions of that plan that would work in Ontario. And when this minister was able to pitch it to his colleagues, they did indeed implement it. It can work on any scale. There's Daimler Benz with a 2.5-acre roof that's contracted with a solar cooperative called Solar Share. They produce a lot of electricity on a giant roof on areas -- the roof itself was actually contributing to heat entering the atmosphere. It's now becoming a major electrical producer in a partnership with this co-op.

And there's me. You can do it on any scale. So I live in a house much like this. This is a picture of some other houses on my street, and I have seven panels on my roof. I get an equivalent check each month for the energy produced by that to pay for the electricity I use. It's an opportunity for individuals to be part of transformative change. You don't have to have a meeting. You don't have to decide for everyone to do it. You can do it when you're ready.

It can also work cooperatively, and it encourages cooperative organization, encourages new form of finance to do this so that this cooperative I just described, Solar Share, issued solar bonds which you could buy for \$1,000 each. And it empowers people with existing skills such as engineers and lawyers, environmental lawyers, to start to enter to make the system better, to make it grow. And it gives meaning to be part of the change you want to be. So lawyers, the environmental engineer who has his job because the demand in the market has been ratcheted up, people who really just want to create a better society. Farmers who have trouble making a living now get another income source by becoming energy producers and get to feel like they're doing the right thing in a double way.

This is not an alternative. It's collaborative, social, intentional. It's also provisional. I don't want to be too romantic about this. Ontario cut back. The implementation was very problematic. But it suggests that we could reach a tipping point. So I just want to end with a few thoughts about how this can happen in a new way of thinking about territory, space, and governance. This is a map of the existing electricity grid in Europe and in Canada, the US. I'll point you to the Canada-US one. There was a power shortage, power outage in Ontario a few years ago, and it turned out that the problem had happened in Ohio. We're all on a grid, and so the idea that the Ontario or the Canadian or the Ohio or the US government can simply introduce policies that will be sufficient is not enough. It's important, and they are starting from municipal, state, national levels, and they need to go that way. The question is, how do they go beyond that? How do we think about territory?

And I want to leave you with a, I hope, possibly provocative thought about an ecological model for governance that would be a post-territorial way of organizing a governance. Particularly one place I can point you to is an article by John Ruggie in International Organization in 1991 about post-territorial states. It's amazing to me that, hard as it is to think about different kinds of economy, it seems even harder to think about a different kind of state system. And yet, the state systems that we have are not doing the jobs anymore. And when the jobs are being done, climate change initiatives are being taken by British Columbia and the West Coast states of the US working together on climate change initiatives. It's happening through the International Federation of Municipalities, where municipal governments are working together to try to reduce carbon and have a climate-positive -- move in climate-positive directions.

So we still get attached to this idea. It's very hard to think out of the idea of our state and then inter-governmental agreements. No, Kyoto has not done it for us, nor even less has the Convention on Biodiversity. So if we think about foodsheds and bio-regions, if we think about grids for electrical transmission and transport networks, if we think about climate and atmosphere just for a moment, it becomes clear that inter-governmental agreements are probably not the best route to follow. Now they're all we have, and I certainly don't attack the UN. I'm trying to work within the Food and Agricultural Organization, a tiny bit of it now, to try to shift some things in a positive direction, and I'm a big supporter of working at multi-scalar initiatives. However, we need to be realistic about that, like everything else.

And so I think the best examples we have are lessons from the European experiment. That may not seem too positive at the moment when the euro is not doing well, but I will point to some massive social and governing innovations that were introduced in the EU and that may be a model for the world as we move forward. The first is to renegotiate sovereignty instead of having wars, which is the way borders have shifted and do shift. In the Westphalian system, the way that minorities feel that they can get recognition is to have their own state. It's been very problematic, and even that has been helped a lot by containment within a larger structure. Subsidiarity is perhaps the most interesting, and that's the idea that you do everything at the smallest scale possible and it gets nested and overlapping up as the scale of the issue increases.

And finally, the most important from a food system perspective, and possibly from others that I am not so familiar with, is the precautionary principle. Let's take care of ourselves and care of the earth and not be so reckless about the kinds of financial and technical innovations that we introduce.

And there are more. There are more ideas I want to leave you with: the idea of common pool resources as a way of organizing land, open source knowledge as a way of channeling competition in healthy directions, as well as making available everything we all need to know in our common endeavor to solve these problems, and finding new ways to organize our money systems so that they serve social goals. I'll end with that, and thank you very much for your patience.

ERIK WRIGHT: Well, as often happens in this kind of academic format, we allocate time, we start a little bit late, we spill over on each speech, and in the end we run out of time without time left for question and answer. So I guess since it's ten after two, this is the end of the third plenary, and I have been asked to remind everybody that there'll be another plenary, but it won't be until August of 2013 in New York City at the next annual meeting of the American Sociological Association. And you are all invited to come. Thank you very much.