



Introduction to Food Sovereignty

FOOD and DEMOCRACY

Rob Avis, Sue Branford, Lester R. Brown, Peter Emerson, Marcin Gerwin, Richard Heinberg, Toby Hemenway, David Jacke, David Korten, Geoff Lawton, Craig Mackintosh, Kelly McCartney, Frances Moore Lappé, Helena Norberg-Hodge, Martina Petru, Peter Rosset, Eric Toensmeier



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Edited by
Marcin Gerwin



Polish Green Network 2011

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Polish Green Network (Polska Zielona Sieć – PZS) is a national alliance of non-governmental organizations working for sustainable development and civil society. PZS' mission is to promote development in harmony with nature. The main areas of its activities are: building public support for sustainable development, establishing social control mechanisms over public funds, increasing consumers' impact on policies of multinational corporations, supporting civil society in Eastern Europe and promoting sustainable development in the Global South countries. PZS is a member of international NGO networks: CEE Bankwatch Network, ANPED and SFTEAM, as well as national networks: Polish NGO Federation, Zagranica Group, Fair Trade Coalition, Climate Coalition and Clean Clothes Polska.

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Foreword from the Publisher

Nearly a billion people in the world suffer from hunger, with over 90% of them living in developing countries, mostly in rural areas. However, contrary to popular belief, the present problem of hunger is not caused by insufficient amounts of food produced globally, nor is it most of all an effect of armed conflicts or natural disasters.

Hunger is first and foremost a development issue caused by a lack of access to appropriate resources or the means of production, which would enable poverty-stricken people to produce or purchase sufficient amounts of food. The currently dominant global food system, characterized by the unjust distribution of food, land, and production resources, a disadvantageous organization of agricultural markets, and inappropriate agricultural policy at both the international and local levels, are the primary reasons for such a scandalous situation to occur.

The publication you are holding was created as a part of the WYŻYWIĆ ŚWIAT (FEED THE WORLD) campaign for food sovereignty and sustainable agriculture, run since 2010 by Alliance of Associations Polish Green Network. The purpose of our campaign is to raise public awareness on the real causes of hunger in the world and to promote food sovereignty principles and sustainable agriculture as an effective means to tackle these causes.

We are attempting to encourage food consumers and producers to consider the impact of agricultural production and food distribution systems on hunger in developing countries. It is our intention to mobilize the public to change those consumer and civil attitudes that negatively affect the development of sustainable food production and consumption. Through our activities we are providing evidence that sustainable agriculture, local food systems, conscious consumption, and properly understood democracy are solutions which bring economic and social benefits, protect the environment, and truly improve lives of people living in the poorest countries.

Our campaign is also aimed at politicians on national and European levels to make them more aware of the issue of food sovereignty. We are also insisting that European policies (the agricultural, trade and development ones, among others) must to a greater extent take into account the right to food and the food situation of people in developing countries.

Food sovereignty is a right of communities and countries to self-define their agricultural and food policies in a way that caters best to the needs and expectations of people, and enables them to reach sustainable development goals without having a negative

impact on other communities at the same time. It gives priority to local food production and consumption, but does not exclude international trade of agricultural products. Food sovereignty, however, supports developing such trade policies and practices that best serve the people's right to healthy and culturally appropriate food, as well as safe and ecologically sustainable production.

The foundation of food sovereignty is based on the necessity of democratic participation in shaping agricultural and food policies by everyone affected, especially people living in rural areas.

Our hope is that this publication will be an interesting source of knowledge and an inspiration to action.

Alliance of Associations Polish Green Network

Introduction

Marcin Gerwin

Imagine you could have a say in how the whole food system is designed – from access to land, through methods of farming, food processing, and finally, to food distribution. Wouldn't it be just great? And that's exactly what food sovereignty is about – it's the ability of your local community, of the people in your region or in your country to decide how the food system works. If necessary, some issues could even be decided at the international level, but it's the local level that is the most important. Since most of us live in democratic countries, how is it possible that we are not directly involved in decision-making with regards to food? Well, that's because in most countries the democratic process is not really that democratic. There are elections every 4 or 5 years, we cast a vote and that's it. Democracy is over, we can go home and politicians will take care of all the rest. That's not quite the same as being involved in discussions about subsidizing milk farms or voting on whether or not to ban the production of certain pesticides, is it?

In March 2011 in the United States, residents of the small coastal town of Sedgwick, Maine, voted unanimously to adopt the Local Food and Self-Governance Ordinance in order to preserve small-scale farming and food processing. The ordinance asserts that direct farm sales, as well as foods made in the home kitchen, are exempt from state and federal licensing and inspection. It means that if, for example, you would like to sell your homemade raspberry cake or an apricot jam at the town fair it is legal for you to do so. As local farmer Bob St.Peter notes: "This ordinance creates favorable conditions for beginning farmers and cottage-scale food processors to try out new products, and to make the most of each season's bounty."¹

The ordinance states that:

We the People of the Town of Sedgwick, Hancock County, Maine have the right to produce, process, sell, purchase and consume local foods thus promoting self-reliance, the preservation of family farms, and local food traditions. We recognize that family farms, sustainable agricultural practices, and food processing by individuals, families and non-corporate entities offers stability to our rural way of life by enhancing the economic, environmental and social wealth of our community. As such, our right to a local food system requires us to assert our inherent right to self-government.

We recognize the authority to protect that right as belonging to the Town of Sedgwick. We have faith in our citizens' ability to educate themselves and make informed

*decisions. We hold that federal and state regulations impede local food production and constitute a usurpation of our citizens' right to foods of their choice. We support food that fundamentally respects human dignity and health, nourishes individuals and the community, and sustains producers, processors and the environment.*²

And that's food sovereignty in practice – a local community deciding upon the way food is produced and sold in the place they live in. Even though the ordinance was dismissed by Maine's Department of Agriculture as being invalid, because the state law is above local regulations, it may be considered as invalid only at this time. Why not change the law and allow local decision-making with regards to agriculture and food distribution? It can be done very, very easily.

Yet food sovereignty is much more than just decision-making. The concept of food sovereignty was first introduced in 1996 by an international farmers organization, La Vía Campesina. According to La Vía Campesina:

*Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through sustainable methods and their right to define their own food and agriculture systems. It develops a model of small-scale sustainable production benefiting communities and the environment. It puts the aspirations, needs and livelihoods of those who produce, distribute and consume food at the heart of the food systems and policies rather than the demands of the markets and corporations. Food sovereignty prioritizes local food production and consumption. It gives a country right to protect its local producers from cheap imports and to control production. It ensures that the rights to use and manage lands, territories, water, seeds, livestock and biodiversity are in the hands of those who produce food and not the corporate sector.*³

What La Vía Campesina promotes is a broader vision of agriculture and economy that includes social justice, real democracy, and care for the environment.

As Michel Pimbert points out, policies for food sovereignty pursue three types of objectives:

- Equity: securing the rights of people and communities, including their fundamental human right to food; affirming and celebrating cultural diversity; enhancing social and economic benefits; and combating inequalities, such as the ones responsible for poverty, gender discrimination and exclusion.

- Sustainability: seeking human activities and resource use patterns compatible with ecological sustainability.

- Direct democracy: empowering civil society in decision-making, as well as democratizing government institutions, structures and markets.⁴

Even though it may not be expressed directly, food sovereignty offers not only food security, which means that people have access to food at all times, but also a good life. This book presents how food sovereignty could be realized, along the whole food chain, starting with access to land (part 3), then on a farm (part 4), and what a local economy that

can create favorable conditions for local food to flourish would look like (part 5). The key to food sovereignty is, of course, real democracy, which is presented in part 2.

Shifting the conversation about access to food from farming methods to improving democracy may raise some eyebrows. Nevertheless, in many cases hunger and malnutrition are not caused by droughts or poor soil, but the ways in which current economic and political systems work. The food crisis cannot be fully solved by unaccountable governments, institutions like the World Bank, the International Monetary Fund, or corporations, which are actually part of the problem (for more on this subject see Chapter 1 by Craig Mackintosh). Representative democracy can work fine, but only to some extent, and if we wish to deal with the root causes of poverty and the food crisis than ordinary people must get involved and lead the change.

Leaving the economy and agriculture in the hands of politicians and their “experts” is a risky business. Can ordinary people do it better? Yes, if they are given good conditions for deliberation and access to information on the subject. One of the reasons for this is that ordinary people don’t need to think in terms of the 4-year election cycles or try to impress the media; instead, they can make decisions that take into perspective whole generations and the common good. Real democracy also means transparency, which means an end to lobbying behind closed doors. There can be a huge difference between decisions made in quiet restaurants of five-star hotels and in open discussions where all those who are affected by the decision can participate.

The great thing about real democracy is also that when people are directly involved in decision-making they can agree to do things they would otherwise strongly oppose if suggested by politicians. Take, for example, a deliberative poll in Texas where people were presented with a choice of various energy sources. It showed that people from all regions of the state of Texas not only wanted clean, renewable energy, but they also indicated their willingness to pay more for it. Now imagine their reaction to increased energy prices as suggested by a politician. As Marvin Weinsbord, co-director of the non-profit Future Search Network, puts it: “People support what they help to create.”

The challenges of the twenty-first century, such as peak oil, which is explained by Richard Heinberg in Chapter 3, as well as climate change, falling water tables, and population growth, which are mentioned by Lester R. Brown in Chapter 2, can be best addressed if local communities get involved, rather than by central governments acting alone. This is the approach of Transition initiatives, which are a community-led response to the pressures of climate change, fossil fuel depletion, and economic recession. They are based on the recognition that people have to work together and they need to work now, rather than waiting for the government or “someone else”. Transition initiatives start with raising awareness around peak oil, climate change, and the need to undertake a community-led process to rebuild resilience and reduce carbon emissions. Then they start up practical projects such as local energy companies, social enterprises or complementary currency systems.

It may not be practical or necessary, however, for the people to make all the decisions directly. It can be useful to have representatives, such as members of parliament or city councilors who are full-time engaged in policy making. The question is then – how do we elect them and also how do our representatives vote? The electoral system is the foundation of the political system, but its significance is not fully grasped by all farmers and activists involved in promoting food sovereignty. Preferential voting system? Excuse me, what? I think I'd better go and mulch some potatoes. Yet the outcome of elections depends not just on the voters, but also on the electoral system. Obviously, the results of elections have in consequence an effect on decisions made in the parliament or in the city council.

It is not a coincidence that, for decades in the U.K., two parties have won most of the seats in Parliament and that coalition governments are rare. It is caused in part by the first-past-the-post voting system and single seat constituencies. Could the result of the same elections be different if a different voting method was used? Yes! Definitely! Someone else could become the president of the country, the prime minister, or a political party could lose working majority in parliament. See why is it so vital?

The nuts and bolts of the voting methods are explained in Peter Emerson's article "Towards a More Inclusive Democracy" (Chapter 7), which is especially important in these times of uprisings in North Africa. Since the old regimes in Tunisia or Egypt are now gone and people are demanding democratic solutions, it is important to understand the impact that such a seemingly minor issue like majority voting can have on political life and the entire society too. Even though preferential voting may be more complex than simple majority voting, their benefits are worth taking the time to explore more deeply. And while people in Africa may look at Europe as an example of democracy to follow, the demonstrations on the plazas and streets of Spain show precisely that European political systems need some upgrades as well.

One of the best ways of getting people involved in the matters of their local community is participatory budgeting. Participatory budgeting means that ordinary people decide how to allocate portions of a municipal or public budget. Throughout the process, citizens can identify, discuss, and prioritize projects they need, then they vote to select the most important ones. There is a fundamental difference between regular public consultations and participatory budgeting, because a decision made by citizens in the process of participatory budgeting is final, even though it may not be regulated by law, but simply held by an informal declaration of the councilors or the mayor to respect the will of the people. Participatory budgeting was first tried in Porto Alegre, Brazil, in 1989 and since then it has spread all over the world. How the involvement of a local community can help in dealing with hunger is explored in the article by Frances Moore Lappé about the city of Belo Horizonte, Brazil (Chapter 5).

Why emphasize democracy so much? It's because no matter how wonderful the vision of organic agriculture, small family farms and social justice we create, there is always the question: How we can actually achieve it? Who will write the new laws to make it happen?

One of the key obstacles to democracy and food sovereignty in the U.S. is the ruling of the U.S. Supreme Court (*Citizens United v. FEC*, 2010), which means that corporations can spend as much money as they want on elections. In this way companies can influence politicians and change laws for their own good rather than for the benefit of society. What this verdict means in practice has been shown in Wisconsin's recall campaigns in 2011, in which around \$30 million was spent by outside groups to promote candidates in their favor. It simply cannot work like this. It has nothing to do with democracy at all. If you wish to write a law that benefits all, you need participatory democracy. Sure, you can also lobby, meet politicians at fancy dinners, and organize demonstrations to put pressure on them. But it doesn't have to be like this. All people interested in the subject, no matter if they are rich or poor, can meet, discuss it, consult with experts, and come to an agreement on what to do about it. It can be an open, transparent and deliberative process. Yes, it means taking away some power from politicians. Nevertheless, since in democratic countries politicians are our representatives, they shouldn't mind, right?

Using democratic tools such as referendums, participatory budgeting, and public meetings, we can provide people access to land, which is often a first step in alleviating poverty and reducing malnutrition. Various approaches to land reform are presented by Peter Rosset in Chapter 9. Participatory land reform may be essential especially in the cases where governments are more involved in protecting the interests of foreign investors, rather than the people they should represent (the issue of global land grab is described by Sue Branford in Chapter 8). In the part about access to land, Kelly McCartney writes also about the Landshare project (Chapter 10), which connects people who wish to grow food with those landowners willing to donate spare land for cultivation as well as with community farms where people can come, volunteer their time, and enjoy the harvest.

Participatory democracy can be also used to promote ecological methods of farming, such as the food forests and gardens rich in plant and animal species that Toby Hemenway writes about in Chapter 12, while Dave Jacke with Eric Toensmeier explore the subject of forest gardens further in Chapter 13. Agriculture doesn't have to deplete life in soils, by using artificial fertilizers or pesticides (Rob Avis writes about it in Chapter 11). Farms can be designed in a way that mimics natural ecosystems with soil that is full of microorganisms that help plants grow and keep a good health.

Now, how can you design farms that have the diversity, stability, and resilience of natural ecosystems? That's exactly what permaculture is about. Permaculture is a design system that was developed in the 1970s by two Australians, Bill Mollison and David Holmgren. It aims at the harmonious integration of landscape and people – providing food, energy, shelter, and other material and non-material needs in a sustainable way. An introduction to permaculture is presented by Geoff Lawton in Chapter 15. Permaculture, however, is not only about designing abundant gardens, but it's also about building a vibrant local economy. The benefits of local food are described by Helena Norberg-Hodge in Chapters 4 and 17. And an important step to creating a sustainable economy would be

to change the current cultural stories that underpin it and that's what David Korten writes about in Chapter 18.

Achieving food sovereignty means creating a sustainable and socially just world where people's voices matter. This publication is just an introduction to the subject. There's plenty more to learn about participatory democracy, forest gardens and local economy. Oh, yes, and about voting methods as well. If you would like to get involved in making food sovereignty possible, a good place to start could be to join or to establish a Transition initiative (see www.transitionnetwork.org for more information). Even though Transition initiatives are primarily a response to peak oil and climate change, their aim is to create a local economy with food grown in an ecological way, and that's the aim of food sovereignty as well. A good idea would be also to attend a full permaculture design course that covers a whole range of subjects from soil building and harvesting rainwater to house design and local currencies. If democracy is your thing then introducing participatory budgeting in your city or village may be just right for you. Don't think it can't be done. After two years of campaigning, participatory budgeting was introduced in my city of Sopot, Poland. It can be done, and you may be surprised with how many friends you'll meet on the way.

Marcin Gerwin

Sopot, summer 2011

Notes

1. *Maine Town Passes Landmark Local Food Ordinance*, Food for Maine's Future, <http://savingseeds.wordpress.com/2011/03/07/maine-town-passes-landmark-local-food-ordinance/>, March 7, 2011.
2. *Ibid.*
3. *The International Peasant's Voice*, La Via Campesina, http://www.viacampesina.org/en/index.php?option=com_content&view=category&layout=blog&id=27&Itemid=45, February 9, 2011.
4. Michel Pimbert, *Towards Food Sovereignty*, IIED, 2008, p. 51.---

Part One

WHY FOOD SOVEREIGNTY?

Chapter 1

Orchestrating Famine^{*}

Craig Mackintosh

The era of cheap food is over – this means disaster for millions, and mega-profits for a few. How did we get into this mess?

Most objective observers of the current food crisis are understandably concerned. Around 45% of the world's population live on two dollars per day or less. Skyrocketing food prices are now bringing stress to two billion people, and despair to millions – around one hundred million, actually. The situation is only expected to further deteriorate as: the price of oil continues to soar; climate change-related disasters increase in frequency and intensity, and as policy decisions such as mandated biofuel quotas in our fuel supply further strengthens the already strong price connection between fuel and food. It is a humanitarian disaster that's well underway, and one which seriously threatens to destabilise international security. As I'm sure you can appreciate, a hungry man is an angry man.

Making a killing

And yet, this situation is playing into the arms of large corporations who are making windfall profits out of desperate demand for the most basic of needs, and who see even greater opportunities for a lot more of the same in the coming months and years.

Much of the news coverage of the food crisis has focussed on riots in low-income countries, where workers and others cannot cope with skyrocketing costs of staple foods. But there is another side to the story: the big profits that are being made by huge food corporations and investors. Cargill, the world's biggest grain trader, achieved an 86% increase in profits from commodity trading in the first quarter of this year. Bunge, another huge food trader, had a 77% increase in profits during the last quarter of last

^{*} First published by Permaculture Research Institute of Australia (www.permaculture.org.au) in August 2008. Craig Mackintosh has worked as an environmental photojournalist and editor since 2006. His work has covered sustainability issues and looked at sustainable cultures in places such as [Vietnam](#), [Sri Lanka](#), [Chile](#), [Jordan](#), the [West Bank](#), [Australia](#), [Slovakia](#) and more. Craig is also the architect behind [the Worldwide Permaculture Network](#) – the result of his desire to see the holistic solutions found in the design science of permaculture given a wider audience, and to help permaculturists network, share and leverage each other's work so as to help transition the world into a post-carbon future.

year. ADM, the second largest grain trader in the world, registered a 67% per cent increase in profits in 2007.

Nor are retail giants taking the strain: profits at Tesco, the UK supermarket giant, rose by a record 11.8% last year. Other major retailers, such as France's Carrefour and Wal-Mart of the US, say that food sales are the main sector sustaining their profit increases. Investment funds, running away from sliding stock markets and the credit crunch, are having a heyday on the commodity markets, driving prices out of reach for food importers like Bangladesh and the Philippines.

These profits are no freak windfalls. Over the last 30 years, the IMF and the World Bank have pushed so-called developing countries to dismantle all forms of protection for their local farmers and to open up their markets to global agribusiness, speculators and subsidised food from rich countries. This has transformed most developing countries from being exporters of food into importers. Today about 70 per cent of developing countries are net importers of food. On top of this, finance liberalisation has made it easier for investors to take control of markets for their own private benefit. – ENN ¹ (see also: Multinationals make billions in profit out of growing global food crisis and Making a killing from hunger)

Orchestrating famine

The ability of developing nations to feed themselves has been progressively undermined by trade policies and Structural Adjustment Programs forced upon them by the World Trade Organization (WTO), the International Monetary Fund (IMF) and the World Bank. This 'unholy trinity', as these partner institutions are often described, has brought our current food crisis upon us through their neoliberal 'free' trade agenda, tailoring markets in developing countries to suit Northern corporations. Recipients of IMF and World Bank loans must open their borders to the influx of highly subsidised agricultural produce from countries like the U.S. of A., who sell their food at below the cost of production (a practice called 'dumping'), undercutting local producers and putting them out of business – causing mass urbanisation as millions leave their fields to work or beg in cities, as well as swelling numbers of illegal immigrants into the North.

Whilst called 'free trade', the reality is that these Structural Adjustment Programs are inherently unfair. Wealthy states like the U.S. and the E.U. continue to subsidise their production, and refuse to consider any kind of program to ensure their farmers do not over-produce, whilst developing nations are forced to remove subsidies for their production. This imbalance makes it impossible for small scale farmers to compete with Big Agribusiness – so they simply stop growing food. As it happens, the same thing occurs within rich countries too – small scale American farmers are giving up at a rate of about 330 per week – but, while some of these farmers commit suicide ("suicide is now the leading cause of death among American farmers, occurring at a rate three times higher than in the

general population.”), most manage to find a way to continue getting food onto the table. It is not so in the developing world.

One of the main requirements imposed on developing countries is that they must plug into the global market by transforming themselves into export-oriented economies. Where a country before was producing a full and diverse range of agricultural produce on small landholdings, this transition sees traditional practices such as crop rotations and composting being supplanted by large scale monocrops intended for export to Northern supermarkets. Production of food for local consumption thus gives way to agricultural specialisation and mass transit of goods, and closed or virtually closed farming systems are converted into input- and water-intensive monocrop energy hogs, that only serve to deplete soils and create vulnerability to pests and disease.

Cash crops are exported for foreign currency, needed to repay debts to the World Bank and IMF. These commodity crops take up the best agricultural land, whilst producing food for local markets is disincentivised, reduced in scale and moved to less fertile fields. These countries thus become dependent on food imports themselves – and in each direction money continues to line the pockets of those orchestrating the production, transfers and transactions. Whilst there are some benefitting from this paradigm shift – from giant agribusiness entities like Cargill, Archer Daniels Midland (ADM), and Monsanto, to shipping and air-freight industries, western supermarket chains, and let’s not forget the oil industry, without whom none of this would be possible (hint hint) – the nation doing the exporting is not amongst them.

Some weeks ago I wrote about Haiti – where people have had to resort to eating mud to survive. As astonishing as this is, the following makes that mud even harder to swallow:

Thirty years ago, Haiti raised nearly all the rice it needed. What happened?

In 1986, after the expulsion of Haitian dictator Jean Claude “Baby Doc” Duvalier the International Monetary Fund (IMF) loaned Haiti \$24.6 million in desperately needed funds (Baby Doc had raided the treasury on the way out). But, in order to get the IMF loan, Haiti was required to reduce tariff protections for their Haitian rice and other agricultural products and some industries to open up the country’s markets to competition from outside countries. The U.S. has by far the largest voice in decisions of the IMF.

Doctor Paul Farmer was in Haiti then and saw what happened. “Within less than two years, it became impossible for Haitian farmers to compete with what they called ‘Miami rice.’ The whole local rice market in Haiti fell apart as cheap, U.S. subsidized rice, some of it in the form of ‘food aid,’ flooded the market. There was violence, ‘rice wars,’ and lives were lost.”

“American rice invaded the country,” recalled Charles Suffrard, a leading rice grower in Haiti in an interview with the Washington Post in 2000. By 1987 and 1988, there was so much rice coming into the country that many stopped working the land.

“(...) People from the countryside started losing their jobs and moving to the cities. After a few years of cheap imported rice, local production went way down.”

Still the international business community was not satisfied. In 1994, as a condition for U.S. assistance in returning to Haiti to resume his elected Presidency, Jean-Bertrand Aristide was forced by the U.S., the IMF, and the World Bank to open up the markets in Haiti even more. – Counterpunch ²

Haiti also used to be the world’s largest exporter of sugar – now it has to import even this.

The environmental impacts of the giant food-swap oriented globalised model are immense, but the socioeconomic impacts are equally so. This is effectively a tax-payer funded assault on poor countries, accompanied by the cha-ching sound of escalating profits for the world’s largest corporations.

Twenty years of policy restructuring also brought about the ‘famine’ in Niger in 2005. The following 2005 article on the Niger food crisis shows how it’s not production that’s the problem, but ‘free market’ induced poverty.

In Tahoua market, there is no sign that times are hard. Instead, there are piles of red onions, bundles of glistening spinach, and pumpkins sliced into orange shards. There are plastic bags of rice, pasta and manioc flour, and the sound of butchers’ knives whistling as they are sharpened before hacking apart joints of goat and beef.

A few minutes’ drive from the market, along muddy streets filled with puddles of rainwater, there is the more familiar face of Niger. Under canvas tents, aid workers coax babies with spidery limbs to take sips of milk, or the smallest dabs of high-protein paste.

Wasted infants are wrapped in gold foil to keep them warm. There is the sound of children wailing, or coughing in machine-gun bursts.

(...) This is the strange reality of Niger’s hunger crisis. There is plenty of food, but children are dying because their parents cannot afford to buy it.

The starvation in Niger is not the inevitable consequence of poverty, or simply the fault of locusts or drought. It is also the result of a belief that the free market can solve the problems of one of the world’s poorest countries. – Guardian ³

Just as in Niger in 2005, the current problem is not a lack of food, but of massive social inequality brought about by an unrestrained, extractive, capitalist system. People that could be providing for their own needs by the labour of their own hands must now, instead, fulfil those needs through purchase. No money, no food.

Where from here?

The World Bank, IMF and WTO are increasingly on the defensive as the double whammy of a recession and the food crisis hit hard. They have, after all, been effectively

running the economies of the very nations we're now watching become unglued. Over the last decade some countries have begun to wise up, seeking alternative sources of funding, so as to avoid the stranglehold conditions imposed in exchange for receiving loans from the IMF. In fact, business has been so bad for the IMF of late that it's intending to liquidate some of its enormous gold reserves to plug its own funding shortfalls.

The Economist says that "the food crisis of 2008 may become a challenge to globalisation". It is obvious that the world is ripe for change. We recently covered the huge IAASTD report on world agriculture, where 400 scientists and agricultural experts conducted a three year study which concluded that if we are to feed the world we need to relocalise markets and return to sustainable farming systems (a report that is being undermined, see section 'The Obstacles', by the countries whose industries reap the most benefits from globalised trade and who are pushing the use of genetically modified crops, which the scientists rejected...).

At the same time, there is also a very real risk that the 'solutions' applied to this global food crisis will be implemented by the same organisations that brought it upon us, bypassing lasting change to just bring more of the same.

The World Bank has announced emergency measures to tackle rising food prices around the world.

(...) The World Bank endorsed Mr Zoellick's "new deal" action plan for a long-term boost to agricultural production.

Emergency help would include an additional \$10m (£5m) to Haiti, where several people were killed in food riots last week, and a doubling of agricultural loans to African farmers. – BBC ⁴

Again, the problem is not one of production, but the World Bank 'solution', ignoring root causes, is yet more loans and to 'boost agricultural production' – the latter, in their mind, means more destructive fossil fuel based monocrop agriculture, which means more profit for all the big players that have their fingers in the pie.

IMF/World Bank "economic medicine" is not the "solution" but in large part the "cause" of famine in developing countries. More IMF-World Bank lending "to boost agriculture" will serve to increase levels of indebtedness and exacerbate rather alleviate poverty.

World Bank "policy based loans" are granted on condition the countries abide by the neoliberal policy agenda which, since the early 1980s, has been conducive to the collapse of local level food agriculture. – Global Research ⁵

I must be on the same page as President Abdoulaye Wade of Senegal, as he has just come out with a scathing rebuke to the UN's Food and Agriculture Organisation (or FAO – which has worked closely with the World Bank since 1964), saying that the UN food body should be completely scrapped and that it is largely to blame for the current food crisis.

Food crisis opens door to greater use of GMOs

As if the above wasn't infuriating enough, the flip side to increased hunger is that it creates wonderful opportunities for Big Agribusiness to further the spread of genetically modified foods. People that need food aid, and seeds, are being pressured to accept it in a genetically modified form. Indeed, for many it's now their only alternative.

Soaring food prices and global grain shortages are bringing new pressures on governments, food companies and consumers to relax their longstanding resistance to genetically engineered crops.

In Japan and South Korea, some manufacturers for the first time have begun buying genetically engineered corn for use in soft drinks, snacks and other foods. Until now, to avoid consumer backlash, the companies have paid extra to buy conventionally grown corn. But with prices having tripled in two years, it has become too expensive to be so finicky.

(...) Even in Europe, where opposition to what the Europeans call Frankenfoods has been fiercest, some prominent government officials and business executives are calling for faster approvals of imports of genetically modified crops. They are responding in part to complaints from livestock producers, who say they might suffer a critical shortage of feed if imports are not accelerated.

In Britain, the National Beef Association, which represents cattle farmers, issued a statement this month demanding that "all resistance" to such crops "be abandoned immediately in response to shifts in world demand for food, the growing danger of global food shortages and the prospect of declining domestic animal production."

(...) Certainly any new receptivity to genetically modified crops would be a boon to American exporters. The United States accounted for half the world's acreage of biotech crops last year.

(...) Opponents of biotechnology say they see not so much an opportunity as opportunism by its proponents to exploit the food crisis. "Where politicians and technocrats have always wanted to push G.M.O.'s, they are jumping on this bandwagon and using this as an excuse," said Helen Holder, who coordinates the campaign against biotech foods for Friends of the Earth Europe. – NY Times⁶

The people of South Korea, who do not want GM foods in their country, are currently in a bind. Up until recently they imported corn from China, but, as the food crisis hit, China reduced its exports. This forces Korea to turn to the U.S., where 70 percent of the corn grown is now genetically modified.

I can almost see the Monsanto executives salivating. They've done a wonderful job of convincing naïve politicians worldwide that biotech is going to 'feed the world', despite report after report after report after report to the contrary.

Argentina, who have been farming with GM crops for some time, is a good 'developing country' example of how the introduction of GMOs has affected their farming communities:

Within the past decade in Argentina, 160,000 families of small farmers have left the land, unable to compete with large farmers. GM soya has served to exacerbate this trend towards large-scale, industrial agriculture, accelerating poverty.

(...) Argentina is currently the second biggest producer of GM Soya in the World. The countryside has been transformed from traditional mixed and rotation farming, which secured soil fertility and minimized the use of pesticides, to almost entirely GM soya.

Financial problems for farmers are set to worsen with Monsanto now starting to charge royalties for their seeds, where before, it was allowing farm-saved seeds. Twenty-four million acres of land belonging to bankrupted small farmers are about to be auctioned by the banks. – I-SIS ⁷

And that's without even looking the health dangers of genetically modified foods, and of course the documented increased usage of herbicides that result from using 'roundup ready' crops.

Time for a change

It's time for a sea change. Many people regard these mighty financial institutions as beyond redemption, and after years of their obstinately pushing their agenda, despite uprisings and protests against them the world over, I can only agree. It seems that at their most fundamental level they are in conflict with real social and environmental development. Real, tangible rural development is simply not their purpose. All the evidence demonstrates that their role is to facilitate a South-North transfer of wealth. It is economic colonialism – or corporate rape of developing countries.

Just as in the North, the people in the South need to return to the land. They need policies in place that make it financially viable to become what people the world over should be – self-sufficient stewards of their local environment. People need tools and knowledge – not genetically modified food 'aid', which threatens their food sovereignty and pulls the rug out from under the few people still trying to grow food for local consumption. Whilst charity is essential to keep people alive at the moment, this situation should not be used to push dangerous biotechnology, and all aid should be seen as a temporary stopgap measure while we help these people rebuild their farming communities, and thus their economies, their environment and our climate.

Nearly a quarter-century ago, an outright famine led to Live Aid, an international fund-raising effort promoted by rock stars, which produced an outpouring of global generosity: millions of tons of food flooded into the country. Yet, ironically, that very generosity may have contributed to today's crisis.

Over time, sustained food aid creates dependence on handouts and shifts focus away from improving agricultural practices to increase local food supplies. Ethiopia exemplifies the consequences of giving a starving man a fish instead of teaching him to catch his own. This year the U.S. will give more than \$800 million to Ethiopia: \$460 million for food, \$350 million for HIV/AIDS treatment – and just \$7 million for agricultural development. Western governments are loath to halt programs that create a market for their farm surpluses, but for countries receiving their charity, long-term food aid can become addictive. Why bother with development when shortfalls are met by aid? Ethiopian farmers can't compete with free food, so they stop trying. Over time, there's a loss of key skills, and a country that doesn't have to feed itself soon becomes a country that can't. – Time⁸

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Chapter 2

The New Geopolitics of Food*

Lester R. Brown

In the United States, when world wheat prices rise by 75 percent, as they have over the last year, it means the difference between a \$2 loaf of bread and a loaf costing maybe \$2.10. If, however, you live in New Delhi, those skyrocketing costs really matter: A doubling in the world price of wheat actually means that the wheat you carry home from the market to hand-grind into flour for chapatis costs twice as much. And the same is true with rice. If the world price of rice doubles, so does the price of rice in your neighborhood market in Jakarta. And so does the cost of the bowl of boiled rice on an Indonesian family's dinner table.

Welcome to the new food economics of 2011: Prices are climbing, but the impact is not at all being felt equally. For Americans, who spend less than one-tenth of their income in the supermarket, the soaring food prices we've seen so far this year are an annoyance, not a calamity. But for the planet's poorest 2 billion people, who spend 50 to 70 percent of their income on food, these soaring prices may mean going from two meals a day to one. Those who are barely hanging on to the lower rungs of the global economic ladder risk losing their grip entirely. This can contribute – and it has – to revolutions and upheaval.

Already in 2011, the U.N. Food Price Index has eclipsed its previous all-time global high; as of March it had climbed for eight consecutive months. With this year's harvest predicted to fall short, with governments in the Middle East and Africa teetering as a result of the price spikes, and with anxious markets sustaining one shock after another, food has quickly become the hidden driver of world politics. And crises like these are going to become increasingly common. The new geopolitics of food looks a whole lot more volatile – and a whole lot more contentious – than it used to. Scarcity is the new norm.

Until recently, sudden price surges just didn't matter as much, as they were quickly followed by a return to the relatively low food prices that helped shape the political stability of the late 20th century across much of the globe. But now both the causes and consequences are ominously different.

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In many ways, this is a resumption of the 2007-2008 food crisis, which subsided not because the world somehow came together to solve its grain crunch once and for all, but because the Great Recession tempered growth in demand even as favorable weather helped farmers produce the largest grain harvest on record. Historically, price spikes tended to be almost exclusively driven by unusual weather – a monsoon failure in India, a drought in the former Soviet Union, a heat wave in the U.S. Midwest. Such events were always disruptive, but thankfully infrequent. Unfortunately, today's price hikes are driven by trends that are both elevating demand and making it more difficult to increase production: among them, a rapidly expanding population, crop-withering temperature increases, and irrigation wells running dry. Each night, there are 219,000 additional people to feed at the global dinner table.

More alarming still, the world is losing its ability to soften the effect of shortages. In response to previous price surges, the United States, the world's largest grain producer, was effectively able to steer the world away from potential catastrophe. From the mid-20th century until 1995, the United States had either grain surpluses or idle cropland that could be planted to rescue countries in trouble. When the Indian monsoon failed in 1965, for example, President Lyndon Johnson's administration shipped one-fifth of the U.S. wheat crop to India, successfully staving off famine. We can't do that anymore; the safety cushion is gone.

That's why the food crisis of 2011 is for real, and why it may bring with it yet more bread riots cum political revolutions. What if the upheavals that greeted dictators Zine el-Abidine Ben Ali in Tunisia, Hosni Mubarak in Egypt, and Muammar al-Qaddafi in Libya (a country that imports 90 percent of its grain) are not the end of the story, but the beginning of it? Get ready, farmers and foreign ministers alike, for a new era in which world food scarcity increasingly shapes global politics.

The doubling of world grain prices since early 2007 has been driven primarily by two factors: accelerating growth in demand and the increasing difficulty of rapidly expanding production. The result is a world that looks strikingly different from the bountiful global grain economy of the last century. What will the geopolitics of food look like in a new era dominated by scarcity? Even at this early stage, we can see at least the broad outlines of the emerging food economy.

On the demand side, farmers now face clear sources of increasing pressure. The first is population growth. Each year the world's farmers must feed 80 million additional people, nearly all of them in developing countries. The world's population has nearly doubled since 1970 and is headed toward 9 billion by midcentury. Some 3 billion people, meanwhile, are also trying to move up the food chain, consuming more meat, milk, and eggs. As more families in China and elsewhere enter the middle class, they expect to eat better. But as global consumption of grain-intensive livestock products climbs, so does the demand for the extra corn and soybeans needed to feed all that livestock. (Grain consumption per

person in the United States, for example, is four times that in India, where little grain is converted into animal protein. For now.)

At the same time, the United States, which once was able to act as a global buffer of sorts against poor harvests elsewhere, is now converting massive quantities of grain into fuel for cars, even as world grain consumption, which is already up to roughly 2.2 billion metric tons per year, is growing at an accelerating rate. A decade ago, the growth in consumption was 20 million tons per year. More recently it has risen by 40 million tons every year. But the rate at which the United States is converting grain into ethanol has grown even faster. In 2010, the United States harvested nearly 400 million tons of grain, of which 126 million tons went to ethanol fuel distilleries (up from 16 million tons in 2000). This massive capacity to convert grain into fuel means that the price of grain is now tied to the price of oil. So if oil goes to \$150 per barrel or more, the price of grain will follow it upward as it becomes ever more profitable to convert grain into oil substitutes. And it's not just a U.S. phenomenon: Brazil, which distills ethanol from sugar cane, ranks second in production after the United States, while the European Union's goal of getting 10 percent of its transport energy from renewables, mostly biofuels, by 2020 is also diverting land from food crops.

This is not merely a story about the booming demand for food. Everything from falling water tables to eroding soils and the consequences of global warming means that the world's food supply is unlikely to keep up with our collectively growing appetites. Take climate change: The rule of thumb among crop ecologists is that for every 1 degree Celsius rise in temperature above the growing season optimum, farmers can expect a 10 percent decline in grain yields. This relationship was borne out all too dramatically during the 2010 heat wave in Russia, which reduced the country's grain harvest by nearly 40 percent.

While temperatures are rising, water tables are falling as farmers overpump for irrigation. This artificially inflates food production in the short run, creating a food bubble that bursts when aquifers are depleted and pumping is necessarily reduced to the rate of recharge. In arid Saudi Arabia, irrigation had surprisingly enabled the country to be self-sufficient in wheat for more than 20 years; now, wheat production is collapsing because the non-replenishable aquifer the country uses for irrigation is largely depleted. The Saudis soon will be importing all their grain.

Saudi Arabia is only one of some 18 countries with water-based food bubbles. All together, more than half the world's people live in countries where water tables are falling. The politically troubled Arab Middle East is the first geographic region where grain production has peaked and begun to decline because of water shortages, even as populations continue to grow. Grain production is already going down in Syria and Iraq and may soon decline in Yemen. But the largest food bubbles are in India and China. In India, where farmers have drilled some 20 million irrigation wells, water tables are falling and the wells are starting to go dry. The World Bank reports that 175 million Indians are being fed with grain produced by overpumping. In China, overpumping is concentrated in the North

China Plain, which produces half of China's wheat and a third of its corn. An estimated 130 million Chinese are currently fed by overpumping. How will these countries make up for the inevitable shortfalls when the aquifers are depleted?

Even as we are running our wells dry, we are also mismanaging our soils, creating new deserts. Soil erosion as a result of overplowing and land mismanagement is undermining the productivity of one-third of the world's cropland. How severe is it? Look at satellite images showing two huge new dust bowls: one stretching across northern and western China and western Mongolia; the other across central Africa. Wang Tao, a leading Chinese desert scholar, reports that each year some 1,400 square miles of land in northern China turn to desert. In Mongolia and Lesotho, grain harvests have shrunk by half or more over the last few decades. North Korea and Haiti are also suffering from heavy soil losses; both countries face famine if they lose international food aid. Civilization can survive the loss of its oil reserves, but it cannot survive the loss of its soil reserves.

Beyond the changes in the environment that make it ever harder to meet human demand, there's an important intangible factor to consider: Over the last half-century or so, we have come to take agricultural progress for granted. Decade after decade, advancing technology underpinned steady gains in raising land productivity. Indeed, world grain yield per acre has tripled since 1950. But now that era is coming to an end in some of the more agriculturally advanced countries, where farmers are already using all available technologies to raise yields. In effect, the farmers have caught up with the scientists. After climbing for a century, rice yield per acre in Japan has not risen at all for 16 years. In China, yields may level off soon. Just those two countries alone account for one-third of the world's rice harvest. Meanwhile, wheat yields have plateaued in Britain, France, and Germany – Western Europe's three largest wheat producers.

In this era of tightening world food supplies, the ability to grow food is fast becoming a new form of geopolitical leverage, and countries are scrambling to secure their own parochial interests at the expense of the common good.

The first signs of trouble came in 2007, when farmers began having difficulty keeping up with the growth in global demand for grain. Grain and soybean prices started to climb, tripling by mid-2008. In response, many exporting countries tried to control the rise of domestic food prices by restricting exports. Among them were Russia and Argentina, two leading wheat exporters. Vietnam, the No. 2 rice exporter, banned exports entirely for several months in early 2008. So did several other smaller exporters of grain.

With exporting countries restricting exports in 2007 and 2008, importing countries panicked. No longer able to rely on the market to supply the grain they needed, several countries took the novel step of trying to negotiate long-term grain-supply agreements with exporting countries. The Philippines, for instance, negotiated a three-year agreement with Vietnam for 1.5 million tons of rice per year. A delegation of Yemenis traveled to Australia with a similar goal in mind, but had no luck. In a seller's market, exporters were reluctant

to make long-term commitments.

Fearing they might not be able to buy needed grain from the market, some of the more affluent countries, led by Saudi Arabia, South Korea, and China, took the unusual step in 2008 of buying or leasing land in other countries on which to grow grain for themselves. Most of these land acquisitions are in Africa, where some governments lease cropland for less than \$1 per acre per year. Among the principal destinations were Ethiopia and Sudan, countries where millions of people are being sustained with food from the U.N. World Food Program. That the governments of these two countries are willing to sell land to foreign interests when their own people are hungry is a sad commentary on their leadership.

By the end of 2009, hundreds of land acquisition deals had been negotiated, some of them exceeding a million acres. A 2010 World Bank analysis of these „land grabs” reported that a total of nearly 140 million acres were involved – an area that exceeds the cropland devoted to corn and wheat combined in the United States. Such acquisitions also typically involve water rights, meaning that land grabs potentially affect all downstream countries as well. Any water extracted from the upper Nile River basin to irrigate crops in Ethiopia or Sudan, for instance, will now not reach Egypt, upending the delicate water politics of the Nile by adding new countries with which Egypt must negotiate.

The potential for conflict – and not just over water – is high. Many of the land deals have been made in secret, and in most cases, the land involved was already in use by villagers when it was sold or leased. Often those already farming the land were neither consulted about nor even informed of the new arrangements. And because there typically are no formal land titles in many developing-country villages, the farmers who lost their land have had little backing to bring their cases to court. Reporter John Vidal, writing in Britain's *Observer*, quotes Nyikaw Ochalla from Ethiopia's Gambella region: „The foreign companies are arriving in large numbers, depriving people of land they have used for centuries. There is no consultation with the indigenous population. The deals are done secretly. The only thing the local people see is people coming with lots of tractors to invade their lands.”

Local hostility toward such land grabs is the rule, not the exception. In 2007, as food prices were starting to rise, China signed an agreement with the Philippines to lease 2.5 million acres of land slated for food crops that would be shipped home. Once word leaked, the public outcry – much of it from Filipino farmers – forced Manila to suspend the agreement. A similar uproar rocked Madagascar, where a South Korean firm, Daewoo Logistics, had pursued rights to more than 3 million acres of land. Word of the deal helped stoke a political furor that toppled the government and forced cancellation of the agreement. Indeed, few things are more likely to fuel insurgencies than taking land from people. Agricultural equipment is easily sabotaged. If ripe fields of grain are torched, they burn quickly.

Not only are these deals risky, but foreign investors producing food in a country full of hungry people face another political question of how to get the grain out. Will villagers

permit trucks laden with grain headed for port cities to proceed when they themselves may be on the verge of starvation? The potential for political instability in countries where villagers have lost their land and their livelihoods is high. Conflicts could easily develop between investor and host countries.

These acquisitions represent a potential investment in agriculture in developing countries of an estimated \$50 billion. But it could take many years to realize any substantial production gains. The public infrastructure for modern market-oriented agriculture does not yet exist in most of Africa. In some countries it will take years just to build the roads and ports needed to bring in agricultural inputs such as fertilizer and to export farm products. Beyond that, modern agriculture requires its own infrastructure: machine sheds, grain-drying equipment, silos, fertilizer storage sheds, fuel storage facilities, equipment repair and maintenance services, well-drilling equipment, irrigation pumps, and energy to power the pumps. Overall, development of the land acquired to date appears to be moving very slowly.

So how much will all this expand world food output? We don't know, but the World Bank analysis indicates that only 37 percent of the projects will be devoted to food crops. Most of the land bought up so far will be used to produce biofuels and other industrial crops.

Even if some of these projects do eventually boost land productivity, who will benefit? If virtually all the inputs – the farm equipment, the fertilizer, the pesticides, the seeds – are brought in from abroad and if all the output is shipped out of the country, it will contribute little to the host country's economy. At best, locals may find work as farm laborers, but in highly mechanized operations, the jobs will be few. At worst, impoverished countries like Mozambique and Sudan will be left with less land and water with which to feed their already hungry populations. Thus far the land grabs have contributed more to stirring unrest than to expanding food production.

And this rich country-poor country divide could grow even more pronounced – and soon. This January, a new stage in the scramble among importing countries to secure food began to unfold when South Korea, which imports 70 percent of its grain, announced that it was creating a new public-private entity that will be responsible for acquiring part of this grain. With an initial office in Chicago, the plan is to bypass the large international trading firms by buying grain directly from U.S. farmers. As the Koreans acquire their own grain elevators, they may well sign multiyear delivery contracts with farmers, agreeing to buy specified quantities of wheat, corn, or soybeans at a fixed price.

Other importers will not stand idly by as South Korea tries to tie up a portion of the U.S. grain harvest even before it gets to market. The enterprising Koreans may soon be joined by China, Japan, Saudi Arabia, and other leading importers. Although South Korea's initial focus is the United States, far and away the world's largest grain exporter, it may later consider brokering deals with Canada, Australia, Argentina, and other major exporters. This is happening just as China may be on the verge of entering the U.S. market as a potentially massive importer of grain. With China's 1.4 billion increasingly affluent

consumers starting to compete with U.S. consumers for the U.S. grain harvest, cheap food, seen by many as an American birthright, may be coming to an end.

No one knows where this intensifying competition for food supplies will go, but the world seems to be moving away from the international cooperation that evolved over several decades following World War II to an every-country-for-itself philosophy. Food nationalism may help secure food supplies for individual affluent countries, but it does little to enhance world food security. Indeed, the low-income countries that host land grabs or import grain will likely see their food situation deteriorate.

After the carnage of two world wars and the economic missteps that led to the Great Depression, countries joined together in 1945 to create the United Nations, finally realizing that in the modern world we cannot live in isolation, tempting though that might be. The International Monetary Fund was created to help manage the monetary system and promote economic stability and progress. Within the U.N. system, specialized agencies from the World Health Organization to the Food and Agriculture Organization (FAO) play major roles in the world today. All this has fostered international cooperation.

But while the FAO collects and analyzes global agricultural data and provides technical assistance, there is no organized effort to ensure the adequacy of world food supplies. Indeed, most international negotiations on agricultural trade until recently focused on access to markets, with the United States, Canada, Australia, and Argentina persistently pressing Europe and Japan to open their highly protected agricultural markets. But in the first decade of this century, access to supplies has emerged as the overriding issue as the world transitions from an era of food surpluses to a new politics of food scarcity. At the same time, the U.S. food aid program that once worked to fend off famine wherever it threatened has largely been replaced by the U.N. World Food Program (WFP), where the United States is the leading donor. The WFP now has food-assistance operations in some 70 countries and an annual budget of \$4 billion. There is little international coordination otherwise. French President Nicolas Sarkozy – the reigning president of the G-20 – is proposing to deal with rising food prices by curbing speculation in commodity markets. Useful though this may be, it treats the symptoms of growing food insecurity, not the causes, such as population growth and climate change. The world now needs to focus not only on agricultural policy, but on a structure that integrates it with energy, population, and water policies, each of which directly affects food security.

But that is not happening. Instead, as land and water become scarcer, as the Earth's temperature rises, and as world food security deteriorates, a dangerous geopolitics of food scarcity is emerging. Land grabbing, water grabbing, and buying grain directly from farmers in exporting countries are now integral parts of a global power struggle for food security.

With grain stocks low and climate volatility increasing, the risks are also increasing. We are now so close to the edge that a breakdown in the food system could come at any time. Consider, for example, what would have happened if the 2010 heat wave that

was centered in Moscow had instead been centered in Chicago. In round numbers, the 40 percent drop in Russia's hoped-for harvest of roughly 100 million tons cost the world 40 million tons of grain, but a 40 percent drop in the far larger U.S. grain harvest of 400 million tons would have cost 160 million tons. The world's carryover stocks of grain (the amount in the bin when the new harvest begins) would have dropped to just 52 days of consumption. This level would have been not only the lowest on record, but also well below the 62-day carryover that set the stage for the 2007-2008 tripling of world grain prices.

Then what? There would have been chaos in world grain markets. Grain prices would have climbed off the charts. Some grain-exporting countries, trying to hold down domestic food prices, would have restricted or even banned exports, as they did in 2007 and 2008. The TV news would have been dominated not by the hundreds of fires in the Russian countryside, but by footage of food riots in low-income grain-importing countries and reports of governments falling as hunger spread out of control. Oil-exporting countries that import grain would have been trying to barter oil for grain, and low-income grain importers would have lost out. With governments toppling and confidence in the world grain market shattered, the global economy could have started to unravel.

We may not always be so lucky. At issue now is whether the world can go beyond focusing on the symptoms of the deteriorating food situation and instead attack the underlying causes. If we cannot produce higher crop yields with less water and conserve fertile soils, many agricultural areas will cease to be viable. And this goes far beyond farmers. If we cannot move at wartime speed to stabilize the climate, we may not be able to avoid runaway food prices. If we cannot accelerate the shift to smaller families and stabilize the world population sooner rather than later, the ranks of the hungry will almost certainly continue to expand. The time to act is now – before the food crisis of 2011 becomes the new normal.

Chapter 3

What Will We Eat as the Oil Runs Out? *

Richard Heinberg

The Lady Eve Balfour Lecture, November 22, 2007

Our global food system faces a crisis of unprecedented scope. This crisis, which threatens to imperil the lives of hundreds of millions and possibly billions of human beings, consists of four simultaneously colliding dilemmas, all arising from our relatively recent pattern of dependence on depleting fossil fuels.

The first dilemma consists of the direct impacts on agriculture of *higher oil prices*: increased costs for tractor fuel, agricultural chemicals, and the transport of farm inputs and outputs.

The second is an indirect consequence of high oil prices – the *increased demand for biofuels*, which is resulting in farmland being turned from food production to fuel production, thus making food more costly.

The third dilemma consists of the impacts of *climate change and extreme weather events* caused by fuel-based greenhouse gas emissions. Climate change is the greatest environmental crisis of our time; however, fossil fuel depletion complicates the situation enormously, and if we fail to address either problem properly the consequences will be dire.

Finally comes the *degradation or loss of basic natural resources* (principally, topsoil and fresh water supplies) as a result of high rates, and unsustainable methods, of production stimulated by decades of cheap energy.

Each of these problems is developing at a somewhat different pace regionally, and each is exacerbated by the continually expanding size of the human population. As these dilemmas collide, the resulting overall food crisis is likely to be profound and unprecedented in scope.

I propose to discuss each of these dilemmas briefly and to show how all are intertwined with our societal reliance on oil and other fossil fuels. I will then argue that the primary solution to the overall crisis of the world food system must be a planned rapid reduction

* The essay was published on Richard Heinberg's [website](#) as MuseLetter #188 in December 2007. Richard Heinberg is the author of "The Party's Over", "Peak Everything", "Blackout", among others. A senior fellow of the Post Carbon Institute (www.postcarbon.org), Richard is one of the world's foremost peak oil educators and an effective communicator of the urgent need to transition away from fossil fuels.

in the use of fossil fuels in the growing and delivery of food. As we will see, this strategy, though ultimately unavoidable, will bring enormous problems of its own unless it is applied with forethought and intelligence. But the organic movement is uniquely positioned to guide this inevitable transition of the world's food systems away from reliance on fossil fuels, if leaders and practitioners of the various strands of organic agriculture are willing to work together and with policy makers.

Structural Dependency

Until now, fossil fuels have been widely perceived as an enormous boon to humanity, and certainly to the human food system. After all, there was a time not so long ago when famine was an expected, if not accepted, part of life even in wealthy countries. Until the 19th century – whether in China, France, India or Britain – food came almost entirely from local sources and harvests were variable. In good years, there was plenty – enough for seasonal feasts and for storage in anticipation of winter and hard times to come; in bad years, starvation cut down the poor, the very young, the old, and the sickly. Sometimes bad years followed one upon another, reducing the size of the population by several percent. This was the normal condition of life in pre-industrial societies, and it persisted for thousands of years.¹

By the nineteenth century a profound shift in this ancient regime was under way. For Europeans, the export of surplus population to other continents, crop rotation, and the application of manures and composts were all gradually making famines less frequent and severe. European farmers, realizing the need for a new nitrogen source in order to continue feeding burgeoning and increasingly urbanized populations, began employing guano imported from islands off the coasts of Chile and Peru. The results were gratifying. However, after only a few decades, these guano deposits were being depleted. By this time, in the late 1890s, the world's population was nearly twice what it had been at the beginning of the century. A crisis was in view.

But crisis was narrowly averted through the use of fossil fuels. In 1909, two German chemists named Fritz Haber and Carl Bosch invented a process to synthesize ammonia from atmospheric nitrogen and the hydrogen in fossil fuels. The process initially used coal as a feedstock, though later it was adapted to use natural gas. After the end of the Great War, nation after nation began building Haber-Bosch plants; today the process yields 150 million tons of ammonia-based fertilizer per year, producing a total quantity of available nitrogen equal to the amount introduced annually by all natural sources combined.²

Fossil fuels went on to offer other ways of extending natural limits to the human carrying capacity of the planet.

In the 1890s, roughly one quarter of British and American cropland had been set aside to grow grain to feed horses, of which most worked on farms. The internal combustion engine provided a new kind of horsepower not dependent on horses at all, and thereby increased the amount of arable land available to feed humans. Early steam-driven tractors

had come into limited use in 19th century; but, after World War I, the effectiveness of powered farm machinery expanded dramatically, and the scale of use exploded throughout the twentieth century, especially in North America, Europe, and Australia.

Chemists developed synthetic pesticides and herbicides in increasing varieties after World War II, using knowledge pioneered in laboratories that had worked to perfect explosives and other chemical warfare agents. Petrochemical-based pesticides not only increased crop yields in North America, Europe, and Australia, but also reduced the prevalence of insect-borne diseases like malaria. The world began to enjoy the benefits of “better living through chemistry,” though the environmental costs, in terms of water and soil pollution and damage to vulnerable species, would only later become widely apparent.

In the 1960s, industrial-chemical agricultural practices began to be exported to what by that time was being called the Third World: this was glowingly dubbed the Green Revolution, and it enabled a tripling of food production during the ensuing half-century.

At the same time, the scale and speed of distribution of food increased. This also constituted a means of increasing human carrying capacity, though in a more subtle way. The trading of food goes back to Paleolithic times; but, with advances in transport, the quantities and distances involved gradually increased. Here again, fossil fuels were responsible for a dramatic discontinuity in the previously slow pace of growth. First by rail and steamship, then by truck and airplane, immense amounts of grain and ever-larger quantities of meat, vegetables, and specialty foods began to flow from countryside to city, from region to region, and from continent to continent.

The end result of chemical fertilizers, plus powered farm machinery, plus increased scope of transportation and trade, was not just an enormous leap in crop yields, but a similar explosion of human population, which has grown over six-fold since dawn of industrial revolution.

However, in the process, conventional industrial agriculture has become overwhelmingly dependent on fossil fuels. According to one study, approximately ten calories of fossil fuel energy are needed to produce each calorie of food energy in modern industrial agriculture.³ With globalized trade in food, many regions host human populations larger than local resources alone could possibly support. Those systems of global distribution and trade also rely on oil.

Today, in the industrialized world, the frequency of famine that our ancestors knew and expected is hard to imagine. Food is so cheap and plentiful that obesity is a far more widespread concern than hunger. The average mega-supermarket stocks an impressive array of exotic foods from across the globe, and even staples are typically trucked or shipped from hundreds of miles away. All of this would be well and good if it were sustainable, but the fact that nearly all of this recent abundance depends on depleting, non-renewable fossil fuels whose burning emits climate-altering carbon dioxide gas means that the current situation is not sustainable. This means that it must and will come to an end.

The Worsening Oil Supply Picture

During the past decade a growing chorus of energy analysts has warned of the approach of “Peak Oil,” the time when the global rate of extraction of petroleum will reach a maximum and begin its inevitable decline.

During this same decade, the price of oil has advanced from about US\$12 per barrel to nearly \$100 per barrel.

While there is some dispute among experts as to when the peak will occur, there is none as to whether. The global peak is merely the cumulative result of production peaks in individual oilfields and whole oil-producing nations, and these mini-peaks are occurring at an increasing rate.

The most famous and instructive national peak occurred in the US in 1970: at that time America produced 9.5 million barrels of oil per day; the current figure is less than 5.2 Mb/d. While at one time the US was the world’s foremost oil exporting nation, it is today the world’s foremost importer.

The history of US oil production also helps us evaluate the prospects for delaying the global peak. After 1970, exploration efforts succeeded in identifying two enormous new American oil provinces – the North Slope of Alaska and the Gulf of Mexico. During this period, other kinds of liquid fuels (such as ethanol and gas condensates) began to supplement crude. Also, improvements in oil recovery technology helped to increase the proportion of the oil in existing fields able to be extracted. These are precisely the strategies (exploration, substitution, and technological improvements) that the oil producers are relying on to delay the global production peak. In the US, each of these strategies made a difference – but not enough to reverse, for more than a year or two at a time, the overall 37-year trend of declining production. To assume that the results for the world as a whole will be much different is probably unwise.

The recent peak and decline in production of oil from the North Sea is of perhaps of more direct relevance to this audience. In just seven years, production from the British-controlled region has declined by almost half.

How near is the global peak? Today the majority of oil-producing nations are seeing reduced output: in 2006, BP’s *Statistical Review of World Energy* reported declines in 27 of the 51 producing nations listed. In some instances, these declines will be temporary and are occurring because of lack of investment in production technology or domestic political problems. But in most instances the decline results from factors of geology: while older oil fields continue to yield crude, beyond a certain point it becomes impossible to maintain existing flow rates by any available means. As a result, over time there are fewer nations in the category of oil exporters and more nations in the category of oil importers.⁴

Meanwhile global rates of discovery of new oilfields have been declining since 1964.⁵

These two trends (a growing preponderance of past-peak producing nations, and a declining success rate for exploration) by themselves suggest that the world peak may be near.

Clearly the timing of the global peak is crucial. If it happens soon, or if in fact it already has occurred, the consequences will be devastating. Oil has become the world's foremost energy resource. There is no ready substitute, and decades will be required to wean societies from it. Peak Oil could therefore constitute the greatest economic challenge since the dawn of the industrial revolution.

An authoritative new study by the Energy Watch Group of Germany concludes that global crude production hit its maximum level in 2006 and has already begun its gradual decline.⁶ Indeed, the past two years have seen sustained high prices for oil, a situation that should provide a powerful incentive to increase production wherever possible. Yet actual aggregate global production of conventional petroleum has stagnated during this time; the record monthly total for crude was achieved in May 2005, 30 months ago.

The latest medium-term report of the IEA, issued July 9, projects that world oil demand will rise by about 2.2 percent per year until 2012 while production will lag, leading to what the report's authors call a "supply crunch."⁷

Many put their hopes in coal and other low-grade fossil fuels to substitute for depleting oil. However, global coal production will hit its own peak perhaps as soon as 2025 according to the most recent studies, while so-called "clean coal" technologies are three decades away from widespread commercial application.⁸ Thus to avert a climate catastrophe from coal-based carbon emissions, our best hope is simply to keep most of the remaining coal in the ground.

The Price of Sustenance

During these past two years, as oil prices have soared, food prices have done so as well. Farmers now face steeply increasing costs for tractor fuel, agricultural chemicals, and the transport of farm inputs and outputs. However, the linkage between fuel and food prices is more complicated than this, and there are other factors entirely separate from petroleum costs that have impacted food prices. I will attempt to sort these various linkages and influences out in a moment.

First, however, it is worth taking a moment to survey the food price situation.

An article by John Vidal published in the *Guardian* on November 3, titled "Global Food Crisis Looms As Climate Change and Fuel Shortages Bite," began this way:

Empty shelves in Caracas. Food riots in West Bengal and Mexico. Warnings of hunger in Jamaica, Nepal, the Philippines and sub-Saharan Africa. Soaring prices for basic foods are beginning to lead to political instability, with governments being forced to step in to artificially control the cost of bread, maize, rice and dairy products.

Record world prices for most staple foods have led to 18 percent food price inflation in China, 13 percent in Indonesia and Pakistan, and 10 percent or more in Latin America, Russia and India, according to the UN Food and Agricultural Organisation (FAO). Wheat has doubled in price, maize is nearly 50 percent higher than a year ago and rice is 20 percent more expensive (...).

Last week the Kremlin forced Russian companies to freeze the price of milk, bread and other foods until January 31 (...).

India, Yemen, Mexico, Burkina Faso and several other countries have had, or been close to, food riots in the last year (...). Meanwhile, there are shortages of beef, chicken and milk in Venezuela and other countries as governments try to keep a lid on food price inflation.⁹

Jacques Diouf, head of the FAO, said in London early this month, “If you combine the increase of the oil prices and the increase of food prices then you have the elements of a very serious [social] crisis (...).” FAO statistics show that grain stocks have been declining for more than a decade and now stand at a mere 57 days, the lowest level in a quarter century, threatening what it calls “a very serious crisis.”¹⁰

According to Josette Sheeran, director of the UN’s World Food Program (WFP), “There are 854 million hungry people in the world and 4 million more join their ranks every year. We are facing the tightest food supplies in recent history. For the world’s most vulnerable, food is simply being priced out of their reach.”¹¹

In its biannual Food Outlook report released November 7, the FAO predicted that higher food prices will force poor nations, especially those in sub-Saharan Africa, to cut food consumption and risk an increase in malnutrition. The report noted, “Given the firmness of food prices in the international markets, the situation could deteriorate further in the coming months.”¹²

Meanwhile, a story by Peter Apps in Reuters from October 16 noted that the cost of food aid is rising dramatically, just as the global need for aid is expanding. The amount of money that nations and international agencies set aside for food aid remains relatively constant, while the amount of food that money will buy is shrinking.¹³

To be sure, higher food prices are good for farmers – assuming that at least some of the increase in price actually translates to higher income for growers. This is indeed the case for the poorest farmers, who have never adopted industrial methods. But for many others, the higher prices paid for food simply reflect higher production costs. Meanwhile, it is the urban poor who are impacted the worst.

Impact of Biofuels

One factor influencing food prices arises from the increasing incentives for farmers worldwide to grow biofuel crops rather than food crops. Ethanol and biodiesel can be produced from a variety of crops including maize, soy, rapeseed, sunflower, cassava, sugar cane, palm, and jatropha. As the price of oil rises, many farmers are finding that they can produce more income from their efforts by growing these crops and selling them to a biofuels plant, than by growing food crops either for their local community or for export.

Already nearly 20 percent of the US maize crop is devoted to making ethanol, and that proportion is expected to rise to one quarter, based solely on existing projects-in-development and government mandates. Last year US farmers grew 14 million tons

of maize for vehicles. This took millions of hectares of land out of food production and nearly doubled the price of corn. Both Congress and the White House favor expanding ethanol production even further – to replace 20 percent of gasoline demand by 2017 – in an effort to promote energy security by reducing reliance on oil imports. Other nations including Britain are mandating increased biofuel production or imports as a way of reducing carbon emissions, though most analyses show that the actual net reduction in CO₂ will be minor or nonexistent.¹⁴

The US is responsible for 70 percent of world maize exports, and countries such as Mexico, Japan, and Egypt that depend on American corn farmers use maize both as food for people and feed for animals. The ballooning of the US ethanol industry is therefore impacting food availability in other nations both directly and indirectly, raising the price for tortillas in Mexico and disrupting the livestock and poultry industries in Europe and Africa.

Grain, a Barcelona-based food-resources NGO, reports that the Indian government is committed to planting 14 million hectares with *Jatropha* for biodiesel production. Meanwhile, Brazil plans to grow 120 million hectares of fuel crops, and Africa up to 400 million hectares. While currently unproductive land will be used for much of this new production, many millions of people will be forced off that land in the process.¹⁵

Lester Brown, founder of the Washington-based Earth Policy Institute, has said: “The competition for grain between the world’s 800 million motorists, who want to maintain their mobility, and its two billion poorest people, who are simply trying to survive, is emerging as an epic issue.”¹⁶ This is an opinion no longer being voiced just by environmentalists. In its twice-yearly report on the world economy, released October 17, the International Monetary Fund noted that, “The use of food as a source of fuel may have serious implications for the demand for food if the expansion of biofuels continues.”¹⁷ And earlier this month, Oxfam warned the EU that its policy of substituting ten percent of all auto fuel with biofuels threatened to displace poor farmers. Jean Ziegler, a UN special rapporteur went so far as to call the biofuel trade “a crime against humanity,” and echoed journalist George Monbiot’s call for a five-year moratorium on government mandates and incentives for biofuel expansion.¹⁸

The British government has pledged that “only the most sustainable biofuels” will be used in the UK, but, as Monbiot has recently noted, there are no explicit standards to define “sustainable” biofuels, and there are no means to enforce those standards in any case.¹⁹

Impact of Climate Change and Environmental Degradation

Beyond the push for biofuels, the food crisis is also being driven by extreme weather events and environmental degradation.

The phrase “global warming” implies only the fact that the world’s average temperature increase by a degree or more over the next few decades. The much greater problem for farmers is destabilization of weather patterns. We face not just a warmer climate, but

climate chaos: droughts, floods, and stronger storms in general (hurricanes, cyclones, tornadoes, hail storms) – in short, unpredictable weather of all kinds. Farmers depend on relatively consistent seasonal patterns of rain and sun, cold and heat; a climate shift can spell the end of farmers' ability to grow a crop in a given region, and even a single freak storm can destroy an entire year's national production for some crops. Given the fact that modern agriculture has become highly centralized due to cheap transport and economies of scale, the damage from that freak storm is today potentially continental or even global in scale. We have embarked on a century in which, increasingly, freakish weather is normal.

According to the UN's World Food Program (WFP), 57 countries, including 29 in Africa, 19 in Asia and nine in Latin America, have been hit by catastrophic floods. Harvests have been affected by drought and heatwaves in south Asia, Europe, China, Sudan, Mozambique and Uruguay.²⁰

Last week the Australian government said drought had slashed predictions of winter harvests by nearly 40 percent, or four million tons. "It is likely to be even smaller than the disastrous drought-ravaged 2006-07 harvest and the worst in more than a decade," said the Bureau of Agriculture and Resource.²¹

In addition to climate chaos, we must contend with the depletion or degradation of several resources essential to agriculture.

Phosphorus is set to become much more scarce and expensive, according to a study by Patrick Déry, a Canadian agriculture and environment analyst and consultant. Using data from the US Geological Survey, Déry performed a peaking analysis on phosphate rock, similar to the techniques used by petroleum geologists to forecast declines in production from oilfields. He found that "we have already passed the phosphate peak [of production] for United States (1988) and for the World (1989)." We will not completely run out of rock phosphate any time soon, but we will be relying on lower-grade ores as time goes on, with prices inexorably rising.²²

At the same time, soil erosion undermines food production and water availability, as well as producing 30 percent of climate-changing greenhouse gases. Each year, roughly 100,000 square kilometres of land loses its vegetation and becomes degraded or turns into desert, altering the temperature and energy balance of the planet.²³

Finally, yet another worrisome environmental trend is the increasing scarcity of fresh water. According to United Nations estimates, one third of the world's population lives in areas with water shortages and 1.1 billion people lack access to safe drinking water. That situation is expected to worsen dramatically over the next few decades. Climate change has provoked more frequent and intense droughts in sub-tropical areas of Asia and Africa, exacerbating shortages in some of the world's poorest countries.

While human population tripled in the 20th century, the use of renewable water resources has grown six-fold. According to Bridget Scanlon and colleagues, writing in *Water Resources Research* this past March 27, in the last 100 years irrigated agriculture expanded globally by 480 percent, and it is projected to increase another 20 percent

by 2030 in developing countries. Irrigation is expanding fastest in countries such as China and India. Global irrigated agriculture now accounts for almost 90 percent of global freshwater consumption, despite representing only 18 percent of global cropland. In addition to drawing down aquifers and surface water sources, it also degrades water quality, as salts in soils are mobilized, and as fertilizers and pesticides leach into aquifers and streams.²⁴

These problems all interact and compound one another. For example, soil degradation produces growing shortages of water, since soil and vegetation act as a sponge that holds and gradually releases water. Soil degradation also worsens climate change as increased evaporation triggers more extreme weather.

This month the UN Environment Program concluded that the planet's water, land, air, plants, animals and fish stocks are all in "inexorable decline." Much of this decline is due to agriculture, which constitutes the greatest single source of human impact on the biosphere.²⁵

In the face of all these daunting challenges, the world must produce more food every year to keep up with population growth. Zafar Adeel, director of the International Network on Water, Environment and Health (INWEH), has calculated that more food will have to be produced during the next 50 years than during the last 10,000 years combined.²⁶

What Is the Solution?

International food agency officials spin out various scenarios to describe how our currently precarious global food system might successfully adapt and expand. Perhaps markets will automatically readjust to shortages, higher prices making it more profitable once again to grow crops for people rather than cars. New designer-gene crop varieties could help crops adapt to capricious climactic conditions, to require less water, or to grow in more marginal soils. And if people were to simply eat less meat, more land could be freed up to grow food for humans rather than farm animals. A slowdown or reversal in population growth would naturally ease pressures on the food system, while the cultivation of currently unproductive land could help increase supplies.

However, given the scale of the crisis facing us, merely to assume that these things will happen, or that they will be sufficient to overcome the dilemmas we have been discussing, seems overly optimistic, perhaps even to the point of irresponsibility.

One hopeful sign is that governments and international agencies are beginning to take the situation seriously. This month the World Bank issued a major report, "Agriculture for Development," whose main author, economist Alain de Janvry, appears to reverse his institution's traditional stance. For a half-century, development agencies such as the World Bank have minimized the importance of agriculture, urging nations to industrialize and urbanize as rapidly as possible. Indeed, the Bank has not featured agriculture in an annual report since 1982. De Janvry says that, since half the world's population and three-quarters of the world's poor live in rural areas where food production is the mainstay of the economy, farming must be central to efforts to reduce hunger and poverty.²⁷

Many agencies, including the INWEH, are now calling for an end to the estimated 30 billion dollars in food subsidies in the North that contribute directly to land degradation in Africa and elsewhere, and that force poor farmers to intensify their production in order to compete.²⁸

In addition, there are calls for sweeping changes in how land use decisions are made at all levels of government. Because soil, water, energy, climate, biodiversity, and food production are interconnected, integrated policy-making is essential. Yet policies currently are set by various different governmental departments and agencies that often have little understanding of one another's sectors.

Delegates at a soils forum in Iceland this month took up a proposal for a formal agreement on protecting the world's soils. And the World Water Council is promoting a range of programs to ensure the availability of clean water especially to people in poorer countries.²⁹

All these efforts are laudable; however, they largely fail to address the common sources of the dilemmas we face – human population growth, and society's and agriculture's reliance on fossil fuels.

The solution most often promoted by the biggest companies within the agriculture industry – the bioengineering of crops and farm animals – does little or nothing to address these deeper causes. One can fantasize about modifying maize or rice to fix nitrogen in the way that legumes do, but so far efforts in that direction have failed. Meanwhile, and the bioengineering industry itself consumes fossil fuels, and assumes the continued availability of oil for tractors, transportation, chemicals production, and so on.³⁰

To get to the heart of the crisis, we need a more fundamental reform of agriculture than anything we have seen in many decades. In essence, we need an agriculture that does not require fossil fuels.

The idea is not new. The aim of substantially or entirely removing fossil fuels from agriculture is implicit in organic farming in all its various forms and permutations – including ecological agriculture, Biodynamics, Permaculture, Biointensive farming, and Natural Farming. All also have in common a prescription for the reduction or elimination of tillage, and the reduction or elimination of reliance on mechanized farm equipment. Nearly all of these systems rely on increased amounts of human labor, and on greater application of place-specific knowledge of soils, microorganisms, weather, water, and interactions between plants, animals, and humans.

Critics of organic or biological agriculture have always contended that chemical-free and less-mechanized forms of food production are incapable of feeding the burgeoning human population. This view is increasingly being challenged.

A recent survey of studies, by Christos Vasilikiotis, Ph.D., U.C. Berkeley, titled “Can Organic Farming Feed the World?”, concluded: “From the studies mentioned above and from an increasing body of case studies, it is becoming evident that organic farming does not result in either catastrophic crop losses due to pests nor in dramatically reduced yields. (...).”³¹

The most recent publication on the subject, by Perfecto et al., in *Renewable Agriculture and Food Systems*, found that “Organic farming can yield up to three times as much food on individual farms in developing countries, as [conventional] methods on the same land (...).”³²

Moreover, it is clear that ecological agriculture could help directly to address the dilemmas we have been discussing.

Regarding water, organic production can help by building soil structure, thus reducing the need for irrigation. And with no petrochemical runoff, water quality is not degraded.³³

Soil erosion and land degradation can be halted and even reversed: by careful composting, organic farmers have demonstrated the ability to build humus at many times the natural rate.³⁴

Climate change can be addressed, by keeping carbon molecules in the soil and in forests and grasslands. Indeed, as much as 20 percent of anticipated net fossil fuel emissions between now and 2050 could be stored in this way, according to Maryam Niamir-Fuller of the U.N. Development Program.³⁵

Natural gas depletion will mean higher prices and shortages for ammonia-based nitrogen fertilizers. But ecologically sound organic-biological agricultural practices use plant and manure-based fertilizers rather than fossil fuels. And when farmers concentrate on building healthy topsoil rich in beneficial microbes, plants have reduced needs for nitrogen.³⁶

The impending global shortage of phosphate will be more difficult to address, as there is no substitute for this substance. The only solution here will be to recycle nutrients by returning all animal and human manures to cultivated soil, as Asian farmers did for many centuries, and as many ecological farmers have long advocated.³⁷

What Will Be Needed

How might we actually accomplish this comprehensive transformation of world agriculture? Some clues are offered by the example of a society that has already experienced and dealt with a fossil-fuel famine.

In the late 1980s, farmers in Cuba were highly reliant on cheap fuels and petrochemicals imported from the Soviet Union, using more agrochemicals per acre than their US counterparts. In 1990, as the Soviet empire collapsed, Cuba lost those imports and faced an agricultural crisis. The average Cuban lost 20 pounds of body weight and malnutrition was nearly universal. The Cuban GDP fell dramatically and inhabitants of the island nation experienced a substantial decline in their material standard of living.³⁸

Several agronomists at Cuban universities had for many years been advocating a transition to organic methods. Cuban authorities responded to the crisis by giving these ecological agronomists carte blanche to redesign the nation’s food system. Officials broke up large state-owned farms, offered land to farming families, and encouraged the formation of small agricultural co-ops. Cuban farmers began employing oxen as a replacement for the

tractors they could no longer afford to fuel. Cuban scientists began investigating biological methods of pest control and soil fertility enhancement. The government sponsored widespread education in organic food production, and the Cuban people adopted a mostly vegetarian diet out of necessity. Salaries for agricultural workers were raised, in many cases to above the levels of urban office workers. Urban gardens were encouraged in parking lots and on public lands, and thousands of rooftop gardens appeared. Small food animals such as chickens and rabbits began to be raised on rooftops as well.

As a result of these efforts, Cuba was able to avoid what might otherwise have been a severe famine.

If the rest of the world does not plan for a reduction in fossil fuel use in agriculture, its post-peak-oil agricultural transition may be far less successful than was Cuba's. Already in poor countries, farmers who are attempting to apply industrial methods but cannot afford tractor fuel and petrochemical inputs are watching their crops fail. Soon farmers in wealthier nations will be having a similar experience.

Where food is still being produced, there will be the challenge of getting it to the stores. Britain had a taste of this problem in 2000; David Strahan relates in his brilliant book *The Last Oil Shock* how close Britain came to political chaos then as truckers went on strike because of high fuel costs. He writes: "Supermarket shelves were being stripped of staple foods in scenes of panic buying. Sainsbury, Asda, and Safeway reported that some branches were having to ration bread and milk."³⁹ This was, of course, merely a brief interruption in the normal functioning of the British energy-food system. In the future we may be facing instead what my colleague James Howard Kunstler calls „the long emergency.”⁴⁰

How will Britain and the rest of the world cope? What will be needed to ensure a successful transition away from an oil-based food system, as opposed to a haphazard and perhaps catastrophic one?

Because ecological organic farming methods are often dramatically more labor- and knowledge-intensive than industrial agriculture, their adoption will require an economic transformation of societies. The transition to a non-fossil-fuel food system will take time. Nearly every aspect of the process by which we feed ourselves must be redesigned. And, given the likelihood that global oil peak will occur soon, this transition must occur at a forced pace, backed by the full resources of national governments.

Without cheap transportation fuels we will have to reduce the amount of food transportation that occurs, and make necessary transportation more efficient. This implies increased local food self-sufficiency. It also implies problems for large cities that have been built in arid regions capable of supporting only small populations from their regional resource base. In some cases, relocation of people on a large scale may be necessary.

We will need to grow more food in and around cities. Recently, Oakland California adopted a food policy that mandates by 2015 the growing within a fifty-mile radius of city center of 40 percent of the vegetables consumed in the city.⁴¹

Localization of food systems means moving producers and consumers of food closer

together, but it also means relying on the local manufacture and regeneration of all of the elements of the production process – from seeds to tools and machinery. This again would appear to rule out agricultural bioengineering, which favors the centralized production of patented seed varieties, and discourages the free saving of seeds from year to year by farmers.

Clearly, we must also minimize indirect chemical inputs to agriculture – such as those introduced in packaging and processing.

We will need to re-introduce draft animals in agricultural production. Oxen may be preferable to horses in many instances, because the former can eat straw and stubble, while the latter would compete with humans for grains. We can only bring back working animals to the extent that we can free up land with which to produce food for them. One way to do that would be to reduce the number of farm animals grown for meat.

Governments must also provide incentives for people to return to an agricultural life. It would be a mistake to think of this simply in terms of the need for a larger agricultural work force. Successful traditional agriculture requires social networks and intergenerational sharing of skills and knowledge. We need not just more agricultural workers, but a rural culture that makes farming a rewarding way of life capable of attracting young people.

Farming requires knowledge and experience, and so we will need education for a new generation of farmers; but only some of this education can be generic – much of it must of necessity be locally appropriate.

It will be necessary as well to break up the corporate mega-farms that produce so much of today's cheap food. Industrial agriculture implies an economy of scale that will be utterly inappropriate and unworkable for post-industrial food systems. Thus land reform will be required in order to enable smallholders and farming co-ops to work their own plots.

In order for all of this to happen, governments must end subsidies to industrial agriculture and begin subsidizing post-industrial agricultural efforts. There are many ways this could be done. The present regime of subsidies is so harmful that merely stopping it in its tracks might be advantageous; but, given the fact that rapid adaptation is essential, offering subsidies for education, no-interest loans for land purchase, and technical support during the transition from chemical to organic production would be essential.

Finally, given carrying-capacity limits, food policy must include population policy. We must encourage smaller families by means of economic incentives and improve the economic and educational status of women in poorer countries.

All of this constitutes a gargantuan task, but the alternatives – doing nothing or attempting to solve our food-production problems simply by applying mere techno-fixes – will almost certainly lead to dire consequences. All of the worrisome trends mentioned earlier would intensify to the point that the human carrying capacity of Earth would be degraded significantly, and perhaps to a large degree permanently.⁴²

So far we have addressed the responsibility of government in facilitating the needed transformation in agriculture. Consumers can help enormously by becoming more

conscious of their food choices, seeking out locally produced organic foods and reducing meat consumption.

The organic movement, while it may view the crisis in industrial agriculture as an opportunity, also bears an enormous responsibility. In the example of Cuba just cited, the active lobbying of organic agronomists proved crucial. Without that guiding effort on the part of previously marginalized experts, the authorities would have had no way to respond. Now crisis is at hand for the world as a whole. The organic movement has most of the answers that will be needed; however, its message still isn't getting through. Three things will be necessary to change that.

1. The various strands of the organic movement must come together so that they can speak to national and international policy makers with a unified voice.
2. The leaders of this newly unified organic movement must produce a coherent plan for a global transition to a post-fossil-fuel food system. Organic farmers and their organizations have been promoting some of the needed policies for decades in a piecemeal fashion. Now, however, there is an acute need for a clearly formulated, comprehensive, alternative national and global food policy, and there is little time to communicate and implement it. It is up to the organic movement to proactively seek out policy makers and promote this coherent alternative, just as it is up to representatives of government at all levels to listen.
3. I have just called for unity in the organic movement, and to achieve this it will be necessary to address a recent split within the movement. What might be called traditional organic remains focused on small-scale, labor-intensive, local production for local consumption. In contrast to this, the more recently emerging corporate organic model merely removes petrochemicals from production, while maintaining nearly all the other characteristics of the modern industrial food system. This trend may be entirely understandable in terms of the economic pressures and incentives within the food industry as a whole. However, corporate organic has much less to offer in terms of solutions to the emerging crisis. Thus as the various strands of the organic movement come together, they should do so in light of the larger societal necessity. The discussion must move beyond merely gaining market share; it must focus on averting famine under crisis conditions.

To conclude, let me simply restate what is I hope clear by now: Given the fact that fossil fuels are limited in quantity and that we are already in view of the global oil production peak, we must turn to a food system that is less fuel-reliant, even if the process is problematic in many ways. Of course, the process will take time; it is a journey that will take place over decades. Nevertheless, it must begin soon, and it must begin with a comprehensive plan. The transition to a fossil-fuel-free food system does not constitute a distant utopian proposal. It is an unavoidable, immediate, and immense challenge that will call for unprecedented levels of creativity at all levels of society. A hundred years from now, everyone will be eating what we today would define as organic food, whether or not

we act. But what we do now will determine how many will be eating, what state of health will be enjoyed by those future generations, and whether they will live in a ruined cinder of a world, or one that is in the process of being renewed and replenished.

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Chapter 4

Reclaiming Our Food^{*}

Helena Norberg-Hodge

Paris in the 1970s was a city full of character and life. Each quartier had its own colourful market, selling wonderful fruits, all kinds of vegetables, meats, superb cheeses and wine. All of that diversity originated at no great distance: most of it came from different regions of France, if not from the immediate surroundings of Paris. Today it can be difficult to find garlic in Paris that has not travelled from China. In the supermarkets, grapes from Chile and wine from California are increasingly commonplace. The diversity of French foods is in decline, and those that are available are becoming more and more costly.

In the little villages of Southern Andalucia in the 1980s, almost all the food in the shops came from the villages themselves or the immediate region: goat cheeses, olives and olive oil, grapes, fresh and dried figs, wine and many different kinds of meat. Today you will find almost nothing that has been produced locally. The olives may have been grown in the surrounding region, but they have travelled to the metropolis to be packaged in plastic and then sent back again. Virtually everything sold is vacuum-sealed in layers of plastic. Even cheese rinds are now made of plastic.

In line with these trends, Britain will this year export 111 million litres of milk and 47 million kilograms of butter. Simultaneously, we will import 173 million litres of milk and 49 million kilograms of butter. Apples will be flown 14,000 miles from New Zealand and green beans flown 4,000 miles from Kenya. We might wonder how these can possibly compete with local apples and beans: surely food produced locally should be cheaper. But it isn't. Generally speaking fresh local food is instead vastly more expensive than food from faraway. The main reason for this is government investments and subsidies.

Governments – that's you and me, the taxpayers – fund the motorways, high-speed rail links, tunnels, bridges and communications satellites that make the supermarkets' global trade possible. We also subsidise the aviation fuel and energy production on which supermarkets depend. And we help fund the research and advice for farmers geared toward biotechnology, mechanisation and intensive chemical use. Local traders, small-scale

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farmers, retailers and manufacturers pay the price through their taxes and also through being forced out of business.

Some people might argue that there is nothing wrong with such developments – that they are a sign of progress and the emergence of a global, cosmopolitan society based on the principle of choice. But the purported diversity offered by the global economy and its supermarkets is based on modes of production that are condemning producers to monoculture. The result is that day by day the diverse cheeses from France, the apple varieties of Devon and the olive groves of Andalusia are ripped out or replaced by standardised hybrids to suit the long distance, large scale marketplace. Small producers are being pushed out by the need to produce ever larger monocultures, with the mechanised production and high levels of chemical inputs that this entails. And this in turn has negative repercussions for the entire rural economy.

Recently, citizen groups around the world have begun to realise that it is our highly centralised and subsidised economic system itself – rather than the inefficient management, or insufficient scale, of it – that is the prime culprit behind food shortages in the South and food scares like BSE, salmonella and GMOs in the North. Increasingly, grassroots movements are pressing for major policy changes at national and international levels in order to bring the global financial markets under control. They are also working, against the economic odds, to strengthen local economies. And of all the movements promoting localisation, probably the most successful is the local food movement.

Re-localising Food: It's Already Happening

For virtually the whole of human history most cultures have relied on food produced within reasonable distance. The logic is unassailable: locally grown food is fresher, and so tastier and more nutritious, than food transported over long distances. It is also likely to be healthier, because the producer knows the consumer, does not view him or her merely as a faceless 'target market', and so is less likely to take risks and liberties with preservatives and other artificial chemicals. Faced with a bland, globalised, food culture, people are beginning to realise the advantages of local food, and are working to rejuvenate markets for it.

In the UK, for example, the first farmers' market, set up in the city of Bath in 1997, was restricted to producers based within a 30-40 mile radius. Public interest in the Bath market was extraordinary, with over 400 callers ringing the market itself in the first few weeks, many of them asking for information on how similar initiatives might be set up in their own areas. Enthusiasm is so high that the Soil Association, which promotes organic farming in the UK, is now offering one-day courses on how to set up a farmers market. Such markets are now planned or already operating in numerous towns and cities across the UK. In the USA, there are over two dozen farmers markets in New York City, adding several million dollars annually to the incomes of farmers in nearby counties. Cornell University's 'New Farmers New Markets' programme aims to add to these numbers by recruiting and

training a new generation of farmers to sell at the city's markets. The project is particularly interested in unemployed immigrants who have extensive farming skills.

At the same time, more and more people are also joining a variety of community supported agriculture (CSA) schemes in which consumers in towns and cities link up directly with a nearby farmer. In some cases, consumers purchase an entire season's produce in advance, sharing the risk with the farmer. In others, shares of the harvest are purchased in monthly or quarterly installments. Consumers usually have a chance to visit the farm where their food is grown, and in some cases their help on the farm is welcomed too. This movement is sweeping the world, from Switzerland, where it first started 25 years ago, to Japan where many thousands of people are involved. In America, where all but two percent of the population have already been pulled off the land, the number of CSAs has mushroomed from two in 1986 to almost 1,000 today. While small farmers dependent on markets beyond their reach continue to go bankrupt at an alarming rate every year, direct marketing is reversing that trend.

In the UK, the local food movement is particularly successful and widespread. The idea is to eliminate the 'middle men' in the food business, who scoop up so much of the money spent on food. Instead, farmers forge direct relationships with small-scale processors and shops, or with consumers, whose orders of fresh produce are brought to them directly from the farm once a week. A local food-promoting scheme in the Forest of Dean, which has only been running for just over a year, has already sold £25,000 of local food to local people. The 'Forest Food Directory' lists 32 different food producers, with products ranging from organic and free-range meat, to vegetables and local cheeses. A survey early this year revealed that some small local producers have seen their turnover increase by up to 25 percent as a result of the scheme, and its popularity is still growing.

People buying direct from the producers of their food are often very enthusiastic about the quality, and about the manner in which it is bought. In her book, *Local Harvest*, Kate de Selincourt quotes some satisfied customers: "The quality is superb... There is no possible comparison with the taste. You feel really sorry for the people going to the supermarket."

Farmers are also satisfied with such direct relationships: when farmers are allowed to sell in the local marketplace, more of the profit stays in their hands. Currently, only about 5 pence in every pound spent on food goes to the farmer. The rest goes towards such things as transport, packaging, irradiation, colouring, advertising and corporate profit-margins. But when these links are closed, the farmer receives more money and the consumer pays less. Both win. Kate de Selincourt asked farmer Pat Finn why she sells direct to customers rather than through a supermarket or butcher's shop: „We really enjoy the personal side of the work – it is nice to think that we have become so friendly with people just through business.”

Often, the joy of a direct connection between producers and consumers is that their ideals coincide. They want the same things: small-scale production and high organic quality. They both want freshness, variety and a non-exploitative price. Social life often flourishes when like-minded suppliers and consumers meet as friends.

Direct communication between producers and consumers creates a responsive economic system, one shaped by the needs of society rather than the needs of big business. Local food markets by their very nature create consumer demand for a wide range of products that are valued for their taste and nutritional content, rather than the ability to withstand the rigours of long-distance transport and to conform to supermarket specifications. This therefore helps to stimulate diversification, allowing farmers to change their mode of production from monoculture to diversified farming. The local food movement helps facilitate a return to mixed farming systems, where farmers can keep animals and grow some grain, grow some vegetables, some tree crops and some herbs on the same land. That diversity allows for cycles that reinforce one another in both ecological and economic ways. When animals, grain and vegetables are combined on the same farm, they all feed each other: the grain and vegetables feed both humans and animals, while the straw provides bedding for animals and also converts poisonous slurry into valuable fertiliser. The farmer thus finds the required inputs within reach, without having to pay for them, whereas farmers who are forced to produce monocultures are dependent on ever more expensive inputs. A strong local food economy also provides farmers with the opportunity to diversify into value-added products.

Local production is also often conducive to a gradual reduction in the use of artificial chemicals and other toxic substances. Food sold locally does not need to contain preservatives or additives, and doesn't need to be transported vast distances in lorries or planes. In addition, when we produce food locally, we do not need to subject the land to the conformist rigours of centralised monoculture, eradicating competing plants, birds, insects and other animals. By promoting multicultures for local production, we allow people and nature space to move and breathe: diverse people, plants and animals regain their place in local ecosystems.

The local food economy is the root and fibre of the entire rural economy, and efforts to strengthen it thus have systemic benefits that reach far beyond the local food chain itself. Although only two percent of the UK population is employed in agriculture, 14 percent rely on it indirectly for a significant portion of their income. A complicated web of interdependence, comprising farmers, farm shops, small retailers and small wholesalers, and spreading out from farming into all of its allied trades, underpins the economy of the market towns and villages, their tradespeople, bankers and other professional service-providers.

Simple steps towards closer links between farmers and consumers are thus helping to rebuild community, enhance human health and restore ecological balance. In joining the local food movement we take an apparently small step that is good for ourselves and our families. At the same time we also make a very real contribution towards preserving regional distinctiveness, biodiversity and the environment in general, and protecting jobs and rural livelihoods. This is true not only in the industrialised world, but particularly in 'developing' countries, where often as much as 80 percent of the population lives by farming, forestry

or fishing. The drive towards cash crops for export pushes small producers off the land in many developing countries and often creates local food shortages. Ensuring that land and fisheries remain in the hands of small producers concerned with producing for the local market is a better guarantee of food security, economic health and ecological sustainability than large-scale export oriented production.

Big business would like us to believe that diversifying and localising food production leads to inefficiency, job losses and economic hardship. The reality is that the opposite is true: as more of the wealth created by the community stays in the community, jobs are created locally and the prosperity of small business is secured.

Tipping the Scales Towards Local Production

For local food systems to flourish, prosper and be replicated in large numbers around the world, changes at the policy level are clearly necessary. Current economic policies across the world are artificially lowering the prices of industrially-produced foods by shifting the costs of production onto the community and the environment. If groups campaigning for sustainable farming, wildlife issues and better food do not take these hidden subsidies into account, and if they do not challenge the economic basis of our current monocultural, export-based food system, they risk falling into the trap of arguing that consumers should pay more for better food – when, as farmers markets and CSAs show, they can actually pay less. This approach marginalises the poor and opens campaigners to charges of elitism. Furthermore, to overlook hidden subsidies is to miss a fantastic opportunity: if these resources were diverted towards decent agriculture and retailing, we could have better food at no extra cost at all. In fact, the price of fresh local food would come down.

Recognising the global consequences of the economic system also gives agricultural and environmental groups common cause with those campaigning for social justice and the ‘Third World’. Access to fresh, healthy food is coming to be seen as a fundamental human right, and these diverse bodies are now beginning to join hands to demand a different set of economic priorities, and the redrawing of the global economic map. The most important thing to remember is that we do have the power to change things. The destructive global economy can only exist as long as we are prepared to accept and subsidise it. We can reject it. And we can start today to build a local food movement and reap the benefits of re-linking farmers and consumers. Fresh, local food for all may be one of the most rewarding – and certainly the most delicious – results of the battle against globalisation.

Part Two

DEMOCRACY AT WORK

Chapter 5

The City that Ended Hunger^{*}

Frances Moore Lappé

In writing *Diet for a Small Planet*, I learned one simple truth: Hunger is not caused by a scarcity of food but a scarcity of democracy. But that realization was only the beginning, for then I had to ask: What does a democracy look like that enables citizens to have a real voice in securing life's essentials? Does it exist anywhere? Is it possible or a pipe dream? With hunger on the rise here in the United States – one in 10 of us is now turning to food stamps – these questions take on new urgency.

To begin to conceive of the possibility of a culture of empowered citizens making democracy work for them, real-life stories help – not models to adopt wholesale, but examples that capture key lessons. For me, the story of Brazil's fourth largest city, Belo Horizonte, is a rich trove of such lessons. Belo, a city of 2.5 million people, once had 11 percent of its population living in absolute poverty, and almost 20 percent of its children going hungry. Then in 1993, a newly elected administration declared food a right of citizenship. The officials said, in effect: If you are too poor to buy food in the market – you are no less a citizen. I am still accountable to you.

The new mayor, Patrus Ananias – now leader of the federal anti-hunger effort – began by creating a city agency, which included assembling a 20-member council of citizen, labor, business, and church representatives to advise in the design and implementation of a new food system. The city already involved regular citizens directly in allocating municipal resources – the “participatory budgeting” that started in the 1970s and has since spread across Brazil. During the first six years of Belo's food-as-a-right policy, perhaps in response to the new emphasis on food security, the number of citizens engaging in the city's participatory budgeting process doubled to more than 31,000.

The city agency developed dozens of innovations to assure everyone the right to food, especially by weaving together the interests of farmers and consumers. It offered local family farmers dozens of choice spots of public space on which to sell to urban consumers, essentially redistributing retailer mark-ups on produce – which often reached 100 percent – to consumers and the farmers. Farmers' profits grew, since there was no wholesaler taking a cut. And poor people got access to fresh, healthy food.

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When my daughter Anna and I visited Belo Horizonte to write Hope's Edge we approached one of these stands. A farmer in a cheerful green smock, emblazoned with "Direct from the Countryside," grinned as she told us, "I am able to support three children from my five acres now. Since I got this contract with the city, I've even been able to buy a truck."

The improved prospects of these Belo farmers were remarkable considering that, as these programs were getting underway, farmers in the country as a whole saw their incomes drop by almost half.

In addition to the farmer-run stands, the city makes good food available by offering entrepreneurs the opportunity to bid on the right to use well-trafficked plots of city land for "ABC" markets, from the Portuguese acronym for "food at low prices." Today there are 34 such markets where the city determines a set price – about two-thirds of the market price – of about twenty healthy items, mostly from in-state farmers and chosen by store-owners. Everything else they can sell at the market price.

"For ABC sellers with the best spots, there's another obligation attached to being able to use the city land," a former manager within this city agency, Adriana Aranha, explained. "Every weekend they have to drive produce-laden trucks to the poor neighborhoods outside of the city center, so everyone can get good produce."

Another product of food-as-a-right thinking is three large, airy "People's Restaurants" (Restaurante Popular), plus a few smaller venues, that daily serve 12,000 or more people using mostly locally grown food for the equivalent of less than 50 cents a meal. When Anna and I ate in one, we saw hundreds of diners – grandparents and newborns, young couples, clusters of men, mothers with toddlers. Some were in well-worn street clothes, others in uniform, still others in business suits.

"I've been coming here every day for five years and have gained six kilos," beamed one elderly, energetic man in faded khakis.

"It's silly to pay more somewhere else for lower quality food," an athletic-looking young man in a military police uniform told us. "I've been eating here every day for two years. It's a good way to save money to buy a house so I can get married," he said with a smile.

No one has to prove they're poor to eat in a People's Restaurant, although about 85 percent of the diners are. The mixed clientele erases stigma and allows "food with dignity," say those involved.

Belo's food security initiatives also include extensive community and school gardens as well as nutrition classes. Plus, money the federal government contributes toward school lunches, once spent on processed, corporate food, now buys whole food mostly from local growers.

"We're fighting the concept that the state is a terrible, incompetent administrator," Adriana explained. "We're showing that the state doesn't have to provide everything, it can facilitate. It can create channels for people to find solutions themselves."

For instance, the city, in partnership with a local university, is working to "keep the market honest in part simply by providing information," Adriana told us. They survey

the price of 45 basic foods and household items at dozens of supermarkets, then post the results at bus stops, online, on television and radio, and in newspapers so people know where the cheapest prices are.

The shift in frame to food as a right also led the Belo hunger-fighters to look for novel solutions. In one successful experiment, egg shells, manioc leaves, and other material normally thrown away were ground and mixed into flour for school kids' daily bread. This enriched food also goes to nursery school children, who receive three meals a day courtesy of the city.

The result of these and other related innovations?

In just a decade Belo Horizonte cut its infant death rate – widely used as evidence of hunger – by more than half, and today these initiatives benefit almost 40 percent of the city's 2.5 million population. One six-month period in 1999 saw infant malnutrition in a sample group reduced by 50 percent. And between 1993 and 2002 Belo Horizonte was the only locality in which consumption of fruits and vegetables went up.

The cost of these efforts?

Around \$10 million annually, or less than 2 percent of the city budget. That's about a penny a day per Belo resident.

Behind this dramatic, life-saving change is what Adriana calls a “new social mentality” – the realization that “everyone in our city benefits if all of us have access to good food, so – like health care or education – quality food for all is a public good.”

The Belo experience shows that a right to food does not necessarily mean more public handouts (although in emergencies, of course, it does). It can mean redefining the “free” in “free market” as the freedom of all to participate. It can mean, as in Belo, building citizen-government partnerships driven by values of inclusion and mutual respect.

And when imagining food as a right of citizenship, please note: No change in human nature is required! Through most of human evolution – except for the last few thousand of roughly 200,000 years – Homo sapiens lived in societies where pervasive sharing of food was the norm. As food sharers, “especially among unrelated individuals,” humans are unique, writes Michael Gurven, an authority on hunter-gatherer food transfers. Except in times of extreme privation, when some eat, all eat.

Before leaving Belo, Anna and I had time to reflect a bit with Adriana. We wondered whether she realized that her city may be one of the few in the world taking this approach – food as a right of membership in the human family. So I asked, “When you began, did you realize how important what you are doing was? How much difference it might make? How rare it is in the entire world?”

Listening to her long response in Portuguese without understanding, I tried to be patient. But when her eyes moistened, I nudged our interpreter. I wanted to know what had touched her emotions.

“I knew we had so much hunger in the world,” Adriana said. “But what is so upsetting, what I didn't know when I started this, is it's so easy. It's so easy to end it.”

Adriana's words have stayed with me. They will forever. They hold perhaps Belo's greatest lesson: that it is easy to end hunger if we are willing to break free of limiting frames and to see with new eyes – if we trust our hard-wired fellow feeling and act, no longer as mere voters or protesters, for or against government, but as problem-solving partners with government accountable to us.

Chapter 6

Rediscovering Democracy^{*}

Marcin Gerwin

Political and economic systems can be designed just like gardens. We can design them in such a way that they will allow simple, harmonious living with nature, without much bureaucracy. It is not written in stone that there must even be taxes. Taxes are very practical, but, for example, Native Americans managed to do just fine without them for hundreds of years. And they did create a country, the Iroquois Confederacy can be considered as one. I'm not suggesting we get rid of taxation, my point is only that it's not an obligatory feature of a design. Many people see governments with ministers and presidents as the only way of ruling a country, even in democratic systems. It may seem that since all countries are now ruled by some form of government – parliamentary, presidential or monarchical – it must have always been like that. Well, it wasn't.

Swords and spears

Let's begin this story in the age before kings. Not so long ago, in the 6th century, dozens of tribes lived on the lands around the Vistula river in Central Europe. Romans called these lands Terra Incognita – the Unknown Lands – as they were a blank spot on their maps. People settled there along the rivers. They were farming, fishing, hunting and gathering crops in the forests. They grew wheat, rye, millet, barley, beans, and had cherry trees, apple trees, plums and peaches. They kept sheep, pigs, cows and horses. They were the Slavic peoples. There was no country there at that time. People lived in small groups and if there was an issue that the community wanted to deal with, a meeting of the all members of the community was held. The leader was chosen only at a time of war, to lead the defense of their lands from invaders. This simple political system is now called a war democracy.

For some strange reason Slavic peoples were fighting not just with the occasional invaders or robbers, but also among themselves. There were also signs of cooperation however – a 100 km long, fortified wall with moats was built by several tribes to protect themselves (the remains of this wall still exist today). Due to frequent wars a group

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of farmers or hunters became professional warriors. This is a crucial moment in human history. A community transferred some of its original power to a small group of people who became a military elite, a squad stronger than the rest of the community. Their original job was to protect the settlement, but some squad leaders realized that they had power not only to defeat the enemies, but also to dominate their own communities. It was a physical power, a power of sword and spear. The squad leader called himself a lord, a prince, the one who will set the rules – and whoever didn't want to obey his orders could be eliminated. And many communities did obey.

In the 10th century a prince from the Polans tribe, decided that he wanted to extend the area of his influence. He wasn't satisfied with merely ruling his own tribe. He wanted more. He had the same kind of sickness as the kings of men in Tolkien's "Lord of the Rings" – he wanted more power. So the prince gathered his troops and started to conquer his neighbours, successfully. At the end of his life he almost doubled the area of his principality. You might expect that historians will condemn the ruthless acts of tyrannizing and killing people for the pride of some prince. But, actually, no. They call it the unification of a country.

At that time of history, in the Middle Ages, if you wanted to justify your power, what could you do? There was no United Nations to turn to. The prince had an idea. He decided to baptize his country. It was very clever. Since he was baptized, he was not a pagan anymore and the kings from the neighbourhood didn't have a legal reason to attack his lands. And, he had to be recognized among the Christian rulers as a lawful one. What's more, he could now receive a crown from the pope. This was really a big thing. It was believed at that time that the power to rule a country came from God, and if you were a king it meant you were chosen by God himself and everyone had to listen to you. Although he didn't become a king, his son managed to do just that.

Now, in a traditional monarchy all the land is the personal property of a king. The king owns all natural resources, all forests, rivers, wild animals, rocks, everything. He is the lord of all people, their father and the highest judge. People were obliged to grow food for him and to provide him with goods and services. His power and his country could have been inherited by his family. Like a set of plates or a house. That was quite a change from the tribal rules where the land was common and people were free.

Since it wasn't easy for one person to rule a whole country without telephones and the internet, the king decided to lease some of the land to his trusted colleagues, in exchange for keeping his power there. In this way feudalism was born and aristocrats, barons and landlords with it. There is no doubt that for the privileged ones this system was very beneficial. They didn't have to do anything. They didn't work. Yet, they received all they needed just because of their social status. You know, I'm sometimes tired with capitalism in Poland and I wish it could be gone as soon as possible, along with the whole concept of the industrial society. But we've had capitalism in Poland, in its present form, for only 20 years. Just 20! And think about feudalism. It lasted in Europe for some 1,200 years. The last feudal

system of government in Europe was abolished on the 9th of April 2008 on the Sark Island in the English Channel. That's just a year ago....

The collapse of feudal systems and monarchies in Europe started with the French Revolution at the end of the 18th century. Next there was a time of Napoleon, World War I and the rise of communism, World War II and the division of the world into spheres in US or Russian influences, and at the end of the 20th century we have ended up with democratically elected governments in most parts of the world and capitalism as a dominant, global economic system. Although some countries such as Denmark, Sweden, Spain, Norway, United Kingdom, Australia, Canada, Japan or the Netherlands are still constitutional monarchies, the role of the monarch remains mostly symbolic. After many centuries, people can make decisions regarding their lives, for themselves, once again.

What is a democracy, anyway?

Bill Mollison writes:

In very recent societies, our basic 'right' is to vote, form unions, protest, or go to law (i.e. to support professional classes). Truly basic rights to grow or protect forests, to build a shelter, grow food, or provide water from our roof areas are commonly denied by local or state regulations. – Bill Mollison "Permaculture: A Designers' Manual", p. 509.

We can change that. We can use rainwater and grey water, build our own house and even have free access to a small parcel of land. We can pass a law to protect the forests and to clean up the streams. In a democratic country we, the people, can pass any law we wish. That's the whole point of a democracy.

Democracy means that people, not the king, set the rules – people govern the country themselves or by their elected representatives. Do you agree? Please read this definition again. If you still agree, then we have a problem, because many countries that claim to be democracies plainly are not. Take the USA, for example. The whole world watched the 2008 presidential election and cheered after the Americans chose Barack Obama. No, they didn't. In the USA people vote for the electors, not the candidates. The electors who pledged to vote for Obama received the majority of votes, so he won. OK, but does it really matter since Obama is the president now? Oh, it does matter, it does... In 2000 Al Gore received about half a million more votes in presidential elections than the candidate from the Republican party. It was the same Al Gore who later starred in the "Inconvenient Truth" and won the Nobel peace prize along with the IPCC. And who became the president? George W. Bush. The guy who received less votes. Furthermore, corporations and their lobbyists have such a strong influence on US politics that some people call this system a corpocracy – a country ruled by large private companies.

In Poland things are different. Private companies are not allowed to sponsor political campaigns. We choose our presidents directly. The election process is clear, transparent and if there is even a tiny problem, like someone tearing down posters in the night, it is reported in the mainstream media. When our representatives get elected, however, things get less

wonderful. For example, a person can be elected to the parliament, because he promised to help fishermen to set higher limits for catching cod. Then, after the elections, the first law that this deputy passes is a complete ban on cod fishing on Polish Baltic sea. Can he do it? Yes, he can. And what can people who elected him do about it? Nothing. Our constitution guarantees that deputies cannot be influenced by the voters. It's even worse. Even if this deputy wanted to help people who voted for him, his political party may force him to vote as the party wishes instead, even against his own will (or they throw him out). And you cannot get to the lower house of the parliament if you are not a member of a political party. So, since neither the deputies nor the president have to listen to the people who voted for them, how can they be called our representatives? That's not a democracy at all. This design looks more like an elective monarchy.

There are other problems with choosing our representatives. Our favorite candidate may have a very green programme – he or she may promise to promote renewable energy, invest in public transportation and support soil restoration. But for some unexplained reason they may also wish to promote genetically modified food. We may not share this enthusiasm with the candidate, but we cannot cross out this single point from his proposal – we have to vote for the whole package. The ban on GMOs may be proposed by some radical right-wing candidate, so we have to choose the lesser evil. Why not vote only for the ideas and solutions that we fully support?

There's one more thing – the very process of elections has become a beauty contest. Voters don't bother to think about implications of the economic or social programmes proposed. Some may vote because of the color of somebody's tie or the cut of a dress. Some candidates don't reveal details of their plans at all, or, they suggest solutions they know don't make any sense, however they do so to receive more votes. This whole system promotes irresponsibility and short-sightedness. And even if people did elect a candidate who decided to implement sustainable solutions to change the current course, they may oppose them. They may not want to go to work on a bus, they may prefer to drive their SUVs. Why pay more for electricity generated from coal? I don't want to pay more for that! The reason for this is that they didn't think it over themselves and these new policies are imposed on them. Even if it is done by the candidate they have chosen themselves, people may feel resentful.

Do you know that there were no political parties in the early days of US congress? There were no Democrats, no Republicans, not even a Green Party. There was a legal restriction on formation of political parties. Why? To keep partisan interests out of politics. To be honest I don't see what role political parties can play in a democratic system. There can be think-tanks promoting different opinions on economy or on various social issues, and I don't suggest a ban, but I just can't imagine why political parties need to exist. Perhaps they could be associations of people who have a similar world view, who meet for a chitchat over tea. But real discussions and decision-making takes place during open community meetings. It doesn't matter who is in favor of which political party. All that matters is whether the idea presented is good or not.

In a democratic design people have a direct say in all issues that they wish to have a say in. What's more, if people decided to invest in public transportation and to introduce a carbon tax, it means that they discussed this issue in their community. They understand the pros and cons, they have consulted on this with experts. They have digested the whole subject on their own and they have come up to a solution that they understand and accept. That's something very different from voting for a candidate from a TV commercial.

Democracy means meeting together, like in the old days, before kings. It is discussing the matters of your community and taking free decisions. It means that all people can have a say no matter what their sex, color of skin, social status or religion is. If we agree on this, then we have to make some amendments in history books. In school text-books it says that there was a democracy in ancient Greece, in Athens for example. But, guess what... women and slaves didn't get to vote.

Who votes?

Community-based democracy is a time-consuming thing. It's not as easy as voting once every 4 years and then just watching the news and criticizing politicians while drinking beer in a pub. That's one of the reason for leaving it all to our representatives.

When we were thinking how to design the process of decision-making in our city, the burning question was (and still is): how many people will come for the meetings? If only 1% of the citizens will come, would this vote be valid? Perhaps the remaining 99% of citizens would have a different opinion? And what about the city council? More than 60% of citizens took part in electing them, so they may have the right to decide on their behalf. The answer to this is pretty simple: the 99% of the citizens who didn't come for the meeting, didn't come most probably because they didn't care about the issue. The 1% of those who did show up was interested in it, and since only they care about it, they have the right to make this decision (we assume that all citizens will receive a printed calendar of events to their mailbox, so they would all know about the meetings, and a major vote on a budget will take place only once a year, and small meetings would be scheduled on specific issues, such as selling public land for private investments). Here is an example: I may be deeply concerned about what happens with the woodland around the archeological site in our city. There are some plans to "revitalize" this area, and I would like to keep it as it is (I've seen a deer there, in the middle of the city!). So I would definitely come for the meeting about this issue. However, if there was a meeting about leaking roofs in the communal flats, I wouldn't show up, because that's not really something that I'm interested in, and I would leave it to the people who live in these flats. Certainly, some people may be on vacation or really busy at work, so an additional voting time could be scheduled for them.

Now, regarding the role of the elected city council. If you start the community-based democracy with the existing law, it is all based on trust and cooperation between the city council and citizens. The candidate for the city mayor must have it made very clear that he or she will respect citizen' decisions taken in open public meetings after being elected.

That's why it doesn't matter that the mayor was elected by a larger number of people than those who came for a meeting. He or she was elected because of the pledge to respect the choice of the people. So, if only 1% of citizens come for a meeting, then their decision is valid. Those who are interested in the issue decide.

Democratic country – a network of communities

How much independence should local communities have? Actually, that's not the right question. In a democratic country we could ask instead: how much of our independence would we like to give away? It makes sense to have the same traffic laws for the whole country. It is reasonable to have a common foreign policy, tariffs or an army, if you wish to have an army at all (Costa Rica doesn't have one). Some other basic laws could be country-wide and... that's about it. I may be forgetting something, but there are not so many issues that it makes sense to set one law for the whole country. If people wish to harvest rainwater in their community, they should be able to decide about it locally. If they don't want to harvest it, they should be able to make this decision as well. It may be against the law to sunbathe naked on the beach in one community, while in the other it may be perfectly legal. Why should the deputies decide about these things for the whole country? Why should some dude from the parliament who has never been in our city decide about the primary school curriculum? All these decisions should be left for the local communities. The formal name for the process of making more and more decisions on the local level is decentralization.

And people could decide on the country-wide issues in their communities as well. Hmm... it would be interesting to vote on the foreign policy of our country! I can already imagine the discussions that we would have: tell Putin that we don't care about the missiles he has! He can place them along the whole border if he wishes to! Yeah, yeah! And what about this EU food policy? What do you mean we can't process cheese the way we did for the centuries? It's dirty? Who says so? And this French guy, what's his name... ah, Sarkozy, when is he coming for the working visit? I heard he wants to ban GM food in the whole European Union. Oh, wonderful! We'll get rid of this Franken-corn at last! It would be fun. And if you ask who I would vote for regarding our country's support for the 2016 Olympics candidate, it's Madrid.¹

We are starting with small steps, however. First a democratic municipality, hopefully combined with a Transition initiative. Then we need more democratic communities in our country, lots of them. But people can establish them only by themselves, if they wish to. It all sounds like a chance for a real change and a step towards a good life. So we try.

Notes

1. The official support of the Polish government goes for Chicago, but they forgot to ask us about our opinion.

Chapter 7

Towards a More Inclusive Democracy *

Peter Emerson

“...the theory of voting... appears to be largely unknown to anyone concerned with its practical applications... to the politicians... to experts in political institutions... to students of psephology... and even to those who advocate electoral reform.” (Dummett 1984: 5)

“...there is a surprisingly strong and persistent tendency in political science to equate democracy solely with majoritarian democracy and to fail to recognise consensual democracy as an alternative and equally legitimate type.” (Lijphart 1999: 6)

Introduction

In theory, the democratic process is meant to be a means by which all come together to identify policies on which they can all agree. By definition, therefore, the process is supposed to involve some give-and-take. The structures for both decision-making and the election of representatives should therefore cater for a degree of compromise.

But when the Greeks – or at least those of them who were neither slave nor female – went to the forum, something was amiss. Majority vote decision-making was adequate, it was thought, but in the elections, some of the candidates were a bit too egocentric, so a few city states decided the wiser course of action would be to run, instead of an election, a lottery. The politician, after all, was only the executive; it was the people who were really important, for it was they, *demos*, who made the actual decisions. Democracy then, in its infancy, was majoritarian, “...since the people are a majority, and the decision of the majority is sovereign.” (Aristotle c 330 BC.) But even at that stage, there were some doubts: “...what is the best condition for the state to be in (whether we assume that participation in the state is desirable for all or only the majority)?” (Ibid.)

The Romans encountered some difficulties as well. In electing Cicero for consul, for example, they used a form of preference voting (Harris 2006: 473). While on decision-making, Pliny the Younger suggested a plurality vote would be better than a series of majority votes.¹

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Europe then entered the dark ages and, with but a few democratic exceptions as in Iceland and the Isle of Man, societies were ruled by kings and tzars, and the people actually believed the monarchs had a divine right so to do. That is not to say, however, that there was no consultation with those less royal. The barons in England had their Magna Carta (or Great Paper) in 1215, so to say that the king was bound by the law; similarly, the boyars of Russia had their Duma (parliament), and in 1549, there was the first zemskii sobor (national council) which “had much in common with certain Western institutions and especially with the so-called Estates General” (Riasanovsky 1977: 209).

Slowly, over the years, the power of the monarch was further reduced, initially in favour of the upper classes, and later still, to all the people, rich and poor, male and female. Hence, today, many countries are indeed democratic, and they include even a few with titular monarchs. At the same time, while the science of social choice has advanced considerably, progress in the practice, as we shall see in a moment, has been minimal.

Little wonder, then, that the democratic world has many anomalies. For example, when politicians go to an international gathering like the 2007 UN conference on the environment in Bali, there is indeed the practice of give-and-take. Politics, after all, is the art of compromise. On returning to their various national parliaments, however, these same politicians then resort to the complete opposite: no compromise at all, no give-and-take, just a straight ‘winner-takes-all-and-loser-gets-nothing’ majority vote.

In this article, then, we will look at how this and other anomalies have come to be common practice, before then describing what could be a better polity.

Demos

If the number of persons involved is relatively small, the will of the people – *la volonté générale* – can be ascertained in an entirely verbal process. Indeed, admittedly for just a few of the perhaps more privileged individuals, often the older males, such practice seems to have been pretty universal. Be it in the pow-wows of the American Indians or the gacacas of Rwanda,² those involved sat in a circle and exchanged views until they came to an accommodation. No-one won everything, but everyone won something. That was the theory; and in practice, the polity was consensual.

Life is rather more complicated in a representative democracy, of course, but in theory, the principle remains. If the representative has been elected by a fair electoral system, he/she should represent the views of his/her electorate. Then, if all the elected representatives can identify their collective will, that will of parliament should represent the will of the people.

If we take the English version of events, that is how representative democracy started, there were no political parties as such; instead, there was just a gathering of elected representatives, albeit on a very limited franchise, and they came together to make collective decisions. The trouble came when the subject matters under debate were contentious; more of all this in a moment.

The first question, however, was how to elect a representative? Well, in days gone by, the only people who were literate and educated were the clergy, and some monks came to the conclusion that the best way of choosing the abbot was not necessarily a majority vote. The first thoughts on this matter were raised by Ramon Lull in 12th century Spain.³

Later, in 1435, Cardinal Nicholas Cusanus proposed a points system of voting – that which we now call a Borda count – for the election of the Holy Roman Emperor. (McLean, Urken 1998: 16-23)

The question of decision-making came in the 17th and 18th centuries, and whenever the matter was indeed contentious, it was generally assumed that, “the proposed law that has the greatest number of supporters will be enacted” (Dahl 2000: 54). This marked the move from a consensual practice to that of majoritarianism; “...such is the nature of representative government, that it quietly decides all matters by majority” (Paine 1985: 190).

John Locke and others tried to point out that a majority vote was suitable if and when the minority was also content with this methodology; in other words, a simple yes-or-no vote was sufficient if the subject matter was not too controversial. When the subject matter was more contentious, however, something more sophisticated was required. For some reason, and despite the fact that Jean-Jacques Rousseau “was at pains to stress that the general will was not necessarily the will of the majority, the former term passed quickly into normal usage as meaning just that” (Doyle 1990: 53). Hence today there are those who believe in the right of a majority to rule and its opposite corollary, the right of a minority to veto, with the same fervour as the peasants of old accepted the divine right of kings. The mistake was and still is not so much in believing that a majority has the right to rule; rather it lay and lies in the belief that the will of a majority can be identified by using a majority vote.⁴

At the time, the only practical example of a functioning democracy was the House of Commons, and this debating chamber had been built so that two sides sat opposite each other, in total confrontation. Initially, as noted above, the members were the elected representatives with, in theory, loyalties to only the (enfranchised) residents in their constituencies. There were no parties as such. But there were these two sides. And there were majority votes. So the members took sides. Instead of naming themselves in pride, however, they nicknamed each other in scorn: the word ‘whig’ was slang for a “money-grabbing Scots Presbyterian”, while a “tory” was “an Irish papist” (Churchill 1956: 294); in those days, such words were serious insults! The two political parties, then, formed almost by accident: a direct consequence of taking decisions in for-or-against majority votes. The polity, far from consensual, was now definitely majoritarian.

Abroad, meanwhile, the USA was in revolutionary mood, and France too was preparing to get rid of her ancien régime. Yet all the revolutionaries and academics concentrated on elections, and not on decision-making. In America, for example, George Washington regarded not only the French régime as ancien but the British one as well, and he was

highly critical of the party system of politics: the “alternate domination of one faction over another has perpetuated the most horrid enormities and is itself a frightful abomination.”⁵ Unfortunately, however, though the founding fathers devised a good presidential electoral system, in which the winner became the president and the runner-up the vice, they did not question the use of the two-option majority vote. Hence, in 1804, a change for the worse to the US presidential electoral system to what it is today, and the emergence of a party system and political patronage in the years following.

In France, meanwhile, everything deteriorated even more quickly. In the 1750s, members of l’Académie des Sciences had realised that one cannot identify *la volonté générale* by means of a majority vote. So M. de Borda and Le Maquis de Condorcet both proposed forms of preference voting: a Borda Count is the points system, as first suggested by Nicholas Cusanus of whom M. de Borda was unaware; while a Condorcet Count compares the popularity of options, two at a time, so to identify which option, if any, wins the most pairings.⁶ The two mathematicians argued somewhat but eventually, in 1784, they adopted the Borda count... not so much for decision-making, more for use in their internal elections.

It worked well. But then, in 1800, l’Académie was persuaded to go back to majority voting by one not best known for his democratic idealism: Napoleon Bonaparte (Black 1958: 180).

Majoritarianism

Since then, the (western) world has become distinctly majoritarian... in its parliaments.⁷ The consequences have been huge and often disastrous. Probably the first were Napoleon’s own referendums. He chose the question. The question was the answer. Thus, by a 99.8% majority, he became consul; in 1802, by the same margin, he was made consul for life; and two years later, he was declared emperor.

This example has been followed by all sorts of ‘democratic dictators’ (Emerson 2002: 104-110). In Chile’s first experience of a referendum in 1818, an Irishman, Bernardo O’Higgins, managed to get 100% support to become El Supremo. Benito Mussolini was down to a mere 98% in 1929, and then came, amongst others, Adolf Hitler, Ion Antonescu, Frances Duvalier, Augusto Pinochet,⁸ Ayatollah Khomeini, Franjo Tudjman and Saddam Hussein.

The most famous majority vote of all, however, took place in London in 1903, at a meeting of the Russian Social Democratic Workers’ Party. There were only 45 participants, but the agenda was fairly full. On the first vote, Lenin lost. Oh never mind, comrades, he insisted, “I do not think our differences are so important.” Come the next vote, however, he won, “by the accidental arithmetic of a single ballot.”⁹ (Deutscher 1982: 71) Oh but this was important, apparently. Hence the birth of the Bolsheviks, the members of the majority or bolshinstvo, БОЛЬШИНСТВО; while the others became the mensheviks, representing the minority or menshinstvo, МЕНЬШИНСТВО.

Another horrific consequence of our collective obsession with this majoritarianism relates to Rwanda. In the 1930s, the European colonial powers issued ID cards on the basis of a simple question: are you Hutu or Tutsi? Basically, the small were Hutu, and the tall Tutsi. For those who were of average height, a further question was asked: how many cows have you got? Nine or less? Hutu. Ten or more? Tutsi. In this way, a social division was transformed into a tribal one, and all to maintain a system of rule by a tiny minority of settlers: the Hutus were the workers, under the middle class Tutsis, and all were under the colonial masters. Then, after WWII, the Europeans changed their minds: from hence forth, they advocated rule by the majority. So the losers of yesterday could be the winners of tomorrow. The first sectarian murder in Rwanda took place in 1959 and then, in 1994, the Interahamwe launched their dreadful genocide with the slogan, “Rubanda Nyamwinshi” “we are the majority people”, the bolsheviks.¹⁰ (Prunier, 2002: 183)

The Right of Self-Determination

A further disadvantage of majoritarian decision-making is inherent in many plebiscites on sovereignty. In 1916, President Wilson published his famous 14 points. Amongst them was the right of self-determination, which was primarily designed for Belgium, rather than for any of the colonies which the allies wished to continue ruling. Later on, however, in his retirement, he reflected on these matters and confessed, “I never knew there were a million Germans in Bohemia” (quoted in Eban 1998: 38).

The weaknesses of his statement raise two questions: firstly, who can determine themselves? In other words, what is a people?

– Is it those who share a given territory, like the island of Ireland? In which case, what happens to the Scots on the neighbouring island of Britain? Or what happens to the people of Indonesia, where the citizens of one country share 3,000 inhabited islands?

– Is it all those of a common language? So what happens to the German/French/Italian speakers of Switzerland? Or what happens when many peoples share one language, like Serbo-Croat?

– Or, to take another Balkan example, is it all those of a common religion, as with the Catholics of Croatia? So what happens to the Catholics in Bosnia? Or what happens to the Moslems left behind in India? Or to the Timorese, where the western half of the island is more Moslem and the eastern half more Catholic?

The questions go on and on, with countless exceptions, and the basic conclusion of the constitutional lawyers is that “the people” are those who live there, wherever ‘there’ might be... and ‘there’ is defined as the borders which, by histories more often bloody than benign, have been bequeathed.

The second question is how shall a people, once identified, determine themselves? Alas, many of these same lawyers along with countless academics and politicians have not considered this matter. More often than not, it is just assumed that the methodology will be a majority vote. But this raises considerable difficulties.

- A majority vote referendum on sovereignty (or on many another topic, for that matter) ‘forces’ people to take sides and does not allow for any third or fourth minority. In Quebec, for instance, the argument was between the English-speakers and their French counterparts, yet the indigenous Cree Indians were all but disenfranchised.
- As often as not, there are only two options on the ballot paper, so in many such referendums, there is no compromise on offer.
- This sort of plebiscite ignores other peoples: those who do not regard themselves as belonging to one side or the other, like the children of a mixed marriage, or those who have moved beyond what they believe to be this petty nationalism.
- A majority vote offers little for those in the minority. Little wonder, then, that the Catholics in Northern Ireland boycotted the 1972 border poll; just as their co-religionists in the mainly Orthodox Croatian Krajina boycotted a referendum on autonomy on 17. 8. 1990; just as in the other parts of Croatia, the other Croatian Orthodox boycotted the Croatian referendum one week later; just as the Bosnian Orthodox boycotted the poll in Bosnia on 11. 3. 1992; and just as both the (Serb) Orthodox and the (Albanian) Moslems boycotted the independence referendum in Macedonia on 8. 9. 1991.
- In a word, the right of self-determination is often subject to “matrioshka nationalism”¹¹. When Ireland opted out of the UK, Northern Ireland opted out of Ireland. When Bosnia opted out of Yugoslavia, both Herzeg-Bosna and Republika-Srpska tried to opt out of Bosnia. When Georgia opted out of the USSR, Abkhazia and South Ossetia tried to opt out of Georgia. And when Azerbaijan opted out of the Soviet Union, Nagorno-Karabakh tried to opt out of Azerbaijan.

The conclusion in the Balkans is the starkest of all: to quote Sarajevo’s now legendary newspaper, *Oslobodjenje*, “all the wars in the former Yugoslavia started with a referendum”, 7. 2. 1999.

Despite all this evidence, British and other diplomats still regard the majority vote referendum as an instrument to facilitate reconciliation. By way of example, a referendum on self-determination was inserted into the July 2002 Machakos Protocol, so to end the civil war in Sudan, and so to give South Sudan the possibility of secession. Well, needless to say, if one ‘bit’ can opt out, then why not another? Balkanisation! Six months later, there emerged the renewal of an old conflict: Darfur, an upsurge caused in part by a peace agreement.

Mediation

Decision-making by majority vote, then, has often been disastrous. This applies not only to referendums on sovereignty, but also to debates in parliaments and councils, world-wide.¹² If a majority vote is to be the decision-making process at the end of the debate, participants will tend to keep their cards very close to their chest; this is because “once your fall-back positions are published, you have already fallen back to them” (Eban

1998: 81). There is, then, little transparency in any majoritarian discussion. Before examining a process which might be more accurate, however, let us first look at the theory underlying many forms of conflict resolution work.

No matter whether the dispute is domestic, industrial or political; no matter whether it concerns just two people, hundreds, or even millions; the practice of conflict resolution work is as follows: the mediator first talks to both or all parties in turn, invariably on the basis of questions which must be open: what can be done? how can matters be repaired? what are the options for the future? In this way, she is able to draw up a list of options, if need be by adding one or two of her own. The next phase is often called shuttle diplomacy, during which she re-visits each of the parties, presenting the options, discussing any possible modifications with all concerned, and establishing what are the parties' preferences on these options. Thus the cards are on the table, face up! Then she identifies that option which is the highest average preference for all concerned, which finally leads to a meeting of the various parties and an agreement (if not a hand-shake on the lawns of the White House).

It must be noted, then, that throughout the mediation process, reliance is placed on open questions. In stark contrast, politics is usually based on the very opposite, on questions which, when reduced to the vote, are closed: politics is invariably either/or,¹³ win-or-lose. Even in documents like the Good Friday Agreement, decision-making is still adversarial, everything is still subject to a majority vote, and still there is no compromise! For years the 'Troubles' raged over the question: are you British or Irish? And now, in peace, we find exactly the same question. It should therefore come as no surprise to learn that sectarianism in Northern Ireland is still rampant.

What is even more extraordinary is the fact that the Belfast Agreement is said to be based on the principle of consent. Now in civil society, this word 'consent' implies the agreement of both or all parties, marriage being the obvious example. In politics, however, the meaning changes: everything, it seems, is majority rule, win-or-lose; the "will of the people" becomes the "consent of a majority", it is a marriage without a bride. Furthermore, the instrument by which that consent is to be determined, a majority vote referendum, cannot measure the level of consent for it measures the very opposite – so many 'for' and so many 'against' – the degree of dissent.

Alas, the world remains obsessed with majority voting. Hence statements like "democracy rests upon the principles of majority rule..." (US Dept of State) which is bad enough, but some are even worse: "Democracy is based on majority decision. It is the most important instrument for finding peaceful solutions to conflicts." (International UNESCO Education Server for Civic, Peace and Human Rights Education)¹⁴

Decision-Making

Decisions can be taken, either by talking and then voting, or by just talking and talking. If democracy is for everybody (and not just a majority), then on contentious issues,

both processes, as mentioned earlier, should involve a bit of give-and-take.

Of those voting procedures currently in use, some are majoritarian in that they are binary. They include:

- simple majority voting,
- weighted majority voting,
- twin majority voting,
- qualified majority voting, and
- consociationalism.¹⁵

Further variety depends upon who sets the question. In a citizens' initiative, for example, the subject matter for debate is the prerogative of the people.

- In a simple majority vote, success depends on just 50% + 1 of the vote.
- Weighted majority voting is usually reserved for more serious matters – constitutional changes in South Africa, for example; the weighting is usually 2/3, but it can vary, and Finland sometimes “uses 5/6 majorities for certain types of economic legislation” (Lijphart 1999: 103).
- Twin majority voting is used in referendums in Switzerland, when not only a majority of the people is required, but so too a majority of the cantons.
- While qualified majority voting is a mechanism devised for the EU, so that each country has a certain weight, depending on the size of its population.
- And finally, consociationalism. First proposed in 1603 by one Johannes Althusius, it requires majority votes in separate constituencies. In yesterday's Czechoslovakia, one constituency was Czech and the other Slovak; in today's Belgium, there are the Flemings and the Walloons; while in Northern Ireland, it's the unionists and the nationalists. One disadvantage of this methodology is that it tends to ignore those not willing to be 'designated'¹⁶ as either 'this' or 'that', such as the Moravians in Brno, or the Chinese community etc. in Belfast.

The main disadvantage of all these forms of decision-making is that the question is invariably reduced to a dichotomy, that or a series of dichotomies. In a divided society, this is at least unwise.

Other forms of decision-making involve multi-option votes, and they include:

- plurality voting,
 - approval voting,
 - the alternative vote,
 - Borda Count,
 - Modified Borda Count, and
 - Condorcet Count.
- The alternative vote starts with a plurality vote, so it too can be rather capricious.
 - The Borda methodologies are discussed in the next section, while
 - a Condorcet count was outlined in note 6.

A More Peaceful Polity

As the Nobel Prize-winning economist Sir Arthur Lewis has forcefully pointed out, the first rule of democracy is that “all who are affected by a decision should have the chance to participate in making that decision either directly or through chosen representatives”; the second meaning is that “the will of the majority shall prevail”. The two meanings, he argues, are incompatible. (Lewis 1965: 64-65)¹⁷

Democracy, however, need not be straight majoritarian. At the very least, it can be consociational; and better still, consensual. What follows are voting procedures based on inclusion. Furthermore, if democracy is to be the pre-requisite of any peace agreement, then the decision-making process within that democratic structure must itself be ‘peaceful’!

As we said at the beginning, the democratic process should be one of give-and-take, and this should apply not only to the debate, but also to the vote with which that debate concludes. Compromise, then, must be possible; this usually means the ballot must be multi-optional... which it can be, if the question is asked correctly.¹⁸ Come the vote, the voter should be able to cast his/her 1st preference, but he should also be able to cast a 2nd preference – ‘yes, this is my compromise option’ – and maybe too her 3rd preference – ‘yes, I don’t like this one very much but, if it’s the consensus of all concerned, then I’ll go along with it too.’

This is the basis of the points system or Borda count, BC. If there are five options ‘on the table’ – options A, B, C, D and E – each participant should be asked to cast their preferences on these options. In this instance, a 1st preference gets 5 points, a 2nd preference gets 4 points, and so on... and the option with the most points is the winner. In effect, then, the outcome depends upon the preferences of everybody (and not just upon those of a majority).

The psychological effects are beneficial. Imagine that I have proposed an option which obviously I want to win. Well, in a BC, I know that I need not only a lot of high preferences, but also very few low preferences. Therefore, in campaigning for my proposal, I should talk to everybody, including or even especially to those who, in a majoritarian setting, would have been my adversaries. To persuade someone who had intended to give my option a 5th or 4th preference, to now give it a 3rd or even 2nd preference, would be a great boost! Whereas to persuade someone who had wanted to give me a 2nd preference to now give me a 1st might be far more time-consuming. In a nutshell, the very fact that the decision-making process at the end of the debate is to be consensual helps to make the debate itself consensual.

Now there may be those who do not want to cast a full list of five preferences.¹⁹ In order to ensure that the voting procedure and, indeed, the entire democratic structure, encourage all concerned to participate fully, or as fully as their individual consciences permit, the recommended voting procedure is therefore the Modified Borda Count, MBC.²⁰ The count works as follows: she who votes for only 1 option gives her favourite option only 1 point;

he who votes for 2 options gives his favourite 2 points (and his second choice 1 point); while she who casts preferences for all n options gives her favourite option n points, (her second choice n-1 points, and so on). This rule thus encourages the voter to submit a full ballot. Nevertheless, no matter how the voters vote, whether they participate fully or partially, each always gives his/her favourite option 1 more point than he gives his next preference, whether or not she has expressed that next preference.²¹ In the MBC, there is no especial weighting.

That covers the vote; what about the debate? In other words, and most importantly, who chooses the options? In majoritarian politics, as we have seen, it is often those in power who decide what is to be the question... and (almost certainly) the answer. In consensus politics, however, the process by which is established the choice of options must be just as democratic as the process by which, subsequently, everyone makes their collective choice. Be it in a public meeting (or in parliament), the people (or their representatives) must be able to make suggestions, i.e., propose options, ask questions, move amendments, or have a new idea. In other words, the debate must be allowed to develop. And throughout this process, a team of impartial 'consensors' make and then maintain a balanced (short) list of all the options, to represent that debate.

If, at the end of it all, there is just the one option left 'on the table' (and computer screen), that option can be assumed to represent the result. In this scenario, the democratic process was indeed one of give-and-take, and the outcome is the verbal consensus.

If instead of just the one option, a number of options remains, the chair may ask all concerned to proceed to the vote – a consensus vote – so to identify that option which gets the most points, i.e., which represents the result of a slightly different scenario but which nevertheless works on the same democratic principle of give-and-take: this outcome is the 'votal' consensus.

'Peace-ful' Elections

A similar principle of compromise should also apply to any election. In other words, the voter should be allowed to vote, not only for his/her 1st preference, but also for a compromise candidate. Furthermore, and especially in any post-conflict society, the democratic process should enable those who want to regard the election as an act of reconciliation, to do exactly that. The voter may perhaps cast a 1st preference for a favourite candidate, but he/she can also give a 2nd or subsequent preference to a candidate from the erstwhile opposite side. That is, the electoral process should allow those who want to cross the gender, the party and even the sectarian divide, to do so.

Such an electoral system is based on an MBC which, as we saw above, encourages the voter to submit a full ballot. It also works on the basis of a quota, to ensure proportionality. In a 6-seater constituency, then, the voter would be asked to cast six preferences; and to get elected, a candidate would need either a quota of very high preferences, and/or a high MBC score. To see how such a Quota Borda System, QBS, might work, let us consider

a hypothetical example: a mixed community in Bosnia, 30-30-30, in a 6-seater constituency.²² If all works roughly as might be expected, each of the three communities might hope to get two persons elected or, if one of them does really well, perhaps it might get three... in which case, of course, one of the other parties will do rather badly.

Now, as it happens – and this is largely because societies and groups within societies tend to take decisions on the basis of a two-option majority vote – each of the three religious groups in Bosnia have tended to be dominated by two political parties, one bigger and one smaller, along with some other fractious factions. So, in such an election, we might expect the following number of candidates:

Bosniac ²³

SDA 2

Stranka za BiH 1

Patriotic Bloc 1

Croat

HDZ BiH 2

HDZ (1990) 1

Serb

SNSD 2

SDS 1

SRS 1

as well as, say

Other

SDP 1

That is twelve candidates in all. In such a scenario, no party is going to field more than 2 or at the most 3 candidates, and no ‘ethnic group’ will tolerate more than about 4 candidates, lest they split the quota and thus fail to get anybody elected at the first stage of the count.²⁴ So, if voters are going to fill in a full ballot, as the MBC encourages them to do, then they must cross at least one sectarian divide.

Governance

If majority voting is not very democratic, then majority rule is not very democratic either. “The idea that democracy is effective only when there are two parties, one in government and the other in opposition, is an Anglo-American myth.” (Lewis 1965: 70) Parliament should represent all the people (if the electoral system is fair) and, in theory, the government should represent the entire parliament (if the system by which a parliament chooses its government is also fair). Governments everywhere should therefore be based on all-party, power-sharing coalitions.

Alas, in majoritarian systems of governance, ministerial appointments are sometimes in the gift of just one individual! In the UK, for example, the prime minister alone chooses

his/her cabinet, and no wonder the system has often been called an elected dictatorship. The consequences, in both the UK and in many of its former colonies, like Zimbabwe, have been at least sad.

There is no reason, however, why the elected democrats in parliament should not themselves be democratic and elect their government. Granted, there is a complication in that there is normally only one minister of finance and only one minister of foreign affairs etc., and you cannot have proportionality in only one individual. Nevertheless, by using the methodology of a matrix vote (Emerson, 2007: 61-85) a parliament could elect a power-sharing government, with automatic post-sharing. Every member of parliament would be able to vote for a full (let us say 12-member) government, choosing in his/her order of preference, not only 12 members to form that government, but also the ministerial posts in which he/she would like each of these nominees to serve. The system is based on a QBS count which, as we know, is itself based on an MBC. The result is bound to be both a GOAT and a GNU, a 'government of all the talents' and a 'of national unity'.

Conclusion

Will it work? The first reform is to allow parliament to take (electronic) multi-option preference votes, and such votes must of course be free. The role of the speaker should therefore be expanded to employ a team of three consensors. In each debate, as implied above, they would display and maintain an up-to-date (short) list of all the options on a computer screen. Then, at the appropriate time, each MP would cast his/her preferences on his/her own 'zapper', to feed this information into the consensors' computer. A few microseconds later, the MP's voting profile would be displayed on the screen, and then too the analysis of that profile. In this way, parliament could decide what should be a particular policy; and the executive, the government, could then execute that policy. As happened, in a way, in ancient Greece.

In most majoritarian systems, the expression 'collective responsibility' applies to the government but not to parliament as a whole. In a consensual polity, the entire parliament would be responsible for what happens in its name. This does not mean that individual MPs would all have to agree with everything. Not at all. Under each policy heading, and certainly under any controversial topic, doubtless there would be several options. All of the MPs would have their own preferences on each of these matters, and doubtless too, these preferences would all be a matter of public record with both the debates and the votes noted in the parliamentary minutes. Granted, on those occasions where the individual MP cannot feel he/she can go along with the consensus of all his/her colleagues, he/she can but say so, and in extreme cases, resign.

An obvious example of such a situation could have been the 2003 UK vote in parliament on Iraq. There again, if the question had not been a dichotomy, a closed question of whether or not to go to war; if (as we implied earlier) the question had been asked properly – what shall we do about Iraq? – and if in other words the question had been open, then might

all the other options been given due consideration: continued sanctions, more, the same or fewer; continued inspections, more, the same or fewer; and maybe further measures as well.

The conclusion is simple: a consensual polity may well be one of the reforms needed, not only in post-conflict societies to make sure the people there do not return to war, but also, throughout the world, to try to prevent both 'ethnic' and other disputes from ever deteriorating into violence.

The author wishes to acknowledge the work of Professor Sir Michael Dummett, who invented the QBS (Dummett 1997: 151-157). He also wants to thank his colleagues in the De Borda Institute, not least Professor Emerita Elizabeth Meehan, for their continued support in developing the practice of inclusive decision-making. And finally, in the preparation of this article, he wants to express his gratitude to Věra Stojarová, Daniel Bochslar and the anonymous reviewers for their helpful comments and advice; this final draft is very different from the original, but responsibility for any remaining errors remain the author's.

Notes

1. This was in AD 105. The Consul Afranius Dexter had been murdered. His manservants were accused of the deed and, in the subsequent trial, there were three options on the agenda: options A, acquittal; B, banishment; and C, condemnation to death. Pliny the Younger realised that a majority vote – or rather, two or three majority votes – could be problematic, for if option C was considered first, all the A and B people would gang up against C, whereas if A was taken first, B and C would gang up against A, or whatever. So they took a plurality vote, B won, and at least the accused was allowed to live out his days. (McLean, Urken 1998: 14-15)
2. See note 10.
3. He suggested a form of what is now called a Condorcet count, and he may also have suggested a Borda count (McLean, Urken 1998: 16-19). Both systems are discussed in the text which follows: see note 6.
4. It is impossible. A majority will may be confirmed, or ratified, by a majority vote, if and only if that will is expressed as an option on the ballot paper. But it cannot be identified, and this is especially true if the debate involves more than two possible outcomes. By way of a dispassionate example, consider the case when the International Olympic Committee debated the venue for the 2012 Olympics. There were five options 'on the table': London, Madrid, Moscow, New York and Paris. Now a Sovyetski chairperson could have called for a majority vote on the question: 'Moskva, da ili nyet?' Doubtless, there would have been a result. But in such a multi-option context, that outcome would have been almost meaningless.
5. His farewell address of 1796.
6. In a football competition, we try to identify which team is the best. If all the teams play each other, two at a time, then the rules could say that the champion is either the team which scores the most goals (Borda), or the team which wins the most matches (Condorcet). In most seasons, the winner

under both rules will be one and the same. In both Borda and Condorcet counts, everyone casts their preferences. In a Borda count, preferences mean points, and the winner is the option which gets the most points; whereas in a Condorcet count, the relative popularities of options are compared, two at a time, and a Condorcet winner (when there is one) is the one which wins the most pairings. Majority voting, in contrast, is more like a knock-out competition.

7. Meanwhile, in its international fora as in Bali, it sometimes relies on a consensual polity; on other occasions, as in the WTO, it uses a very unfair form of weighted voting.

8. Pinochet held three referendums in all and, on the last occasion, when seeking a second term in office, he actually lost!

9. The Bolsheviks, however, were never the majority. In the elections of January 1918, the SRs got 370 seats and thus a 52% majority in the 707-seat Duma. The Bolsheviks got only 175 seats. So Lenin's troops then stormed the parliament in what was, basically, a coup d'état.

10. In a brilliant attempt to overcome the legacy of this genocide, the Rwandan government has initiated a series of gacacas, their traditional decision-making processes, consensus-seeking discussions by the local elders, combined with a system of restorative justice, in every village in the land (NURC 2003).

11. This is the name of the argument used in Russia against any use of a referendum on self-determination, in Chechnya or anywhere else for that matter. The fear is that the whole Russian federation would thus collapse into a countless number of medium, small or even tiny statelets. (Reid 2002: 136)

12. A most glaring instance was the October 2002 debate in the UN Security Council on Resolution 1441 in Iraq. France did not like the draft; in particular, she objected to the expression "serious consequences". Yet because there was only one option 'on the table', France voted in favour. If, instead of a majority vote, the debate had allowed for a more plural methodology, then France, and Germany, could have proposed an alternative wording: option B. Syria might have suggested option C, etc. So then a multi-option preference vote could have been held. A summary of those parliamentary votes which have been decided by a single ballot is in Emerson 2002: 113 et seq.

13. In fact, of course, most questions concern not only the black and white, but also the grey. There is perhaps one question which is definitely 'this-or-that': 'which side of the road shall we drive on?' Interestingly enough, however, the only country ever to hold a referendum on this question – Sweden in 1955 – had a ballot paper on which the number of options was three: left, right and blank.

14. Although admittedly, the web-site goes on to discuss a few of the inherent difficulties.

15. Consociationalism is often seen in contrast to majoritarianism and the two are indeed very different. The former, however, should not be (but sometimes is) confused with a consensual democracy. Consociationalism is binary; a consensual polity is more like a mediation process, it allows for a multi-option approach.

16. There are three 'designations' in the Belfast Agreement: 'unionist', 'nationalist' and 'other'. Those MLAs termed 'other' actually have fewer voting powers.

17. And Lijphart agrees (Lijphart 1997: 31).

18. For example, the question should not be: "Capital punishment, yes or no?" or "Nuclear power, yes or no?" Instead, we should ask: "How do we deal with the convicted murderer?" or "How are energy needs to be met?"

19. Indeed, there may be some who do not vote at all and who prefer to abstain. In the absence

of compulsory voting (as in Australia), such must remain the prerogative of the voter.

20. Sometimes known as a Borda preferendum.

21. In the MBC, those who cast their preferences for all n options shall effect $n, n-1 \dots 2, 1$ points, while those who vote for only m options shall effect $m, m-1 \dots 2, 1$ points. In more general terms, it reads as follows: the voter gives his/her x th preference, if expressed, 1 more point than his/her $(x+1)$ th preference, whether or not he/she has expressed that next $(x+1)$ th preference.

22. In the first post-Dayton election of 1996, the electoral system used by the OSCE was a single-preference form of PR-list. So the voters could cast only a 1st preference. In effect, therefore, the whole process was little more than a sectarian headcount!

23. SDA is the Party of Democratic Action (mainly Bosniac); HDZ is the Croatian Democratic Union; SNSD is the (Serb) Party of Independent Social Democrats; SDS is the Serb Democratic Party; SRS is the Serb Radical Party; and the SDP is the Social Democratic Party.

24. In this regard, PR-STV works in the same way. And in elections in Ireland, it is very interesting to see how well the parties understand the tactics inherent in the electoral system.

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Part Three

ACCESS TO LAND

Chapter 8

The Great Global Land Grab *

Sue Branford

News of another big land deal between a rich nation and a poor developing country is becoming a common occurrence. In August a group of Saudi investors said that they would be investing \$1 billion in land in Africa for rice cultivation. They are calling it their '7x7x7 project', since they are aiming to plant 700,000 hectares of land to produce seven million tonnes of rice in seven years. The land will be distributed over several countries: Mali, Senegal and maybe Sudan and Uganda.

A few weeks earlier South Korea acquired 700,000 hectares of land in Sudan, also for rice cultivation. India is funding a large group of private companies to buy 350,000 hectares in as-yet unspecified countries in Africa. A group of South African businessmen is negotiating an 8 million hectare deal in the Democratic Republic of Congo. And so it goes on. The United Nations believes that at least 30 million hectares (about 74 million acres, well over the size of the UK) were acquired by outside investors in the developing world during the first half of this year alone.

The land grab was indirectly spawned by the international financial crisis. It's interesting to trace the investors' train of thought because it says a lot about the kind of world we're heading towards. Some two years ago many financial players – the investment houses that manage workers' pensions, private equity funds, hedge funds, big grain traders and so on – saw that the sub-prime mortgage bubble was about to burst and moved money into the safer commodities market. Although there was no real shortage of food, food prices (especially of cereals, but also of dairy and meat) rose dramatically.

Countries dependent on food imports were badly hit, with a big increase in the domestic price of some food staples, particularly rice. People coped by changing their eating habits, in many cases cutting back on meals, but they also took to the streets to demand government action. By early 2008 riots had broken out in nearly 40 countries, instilling fear among the world's political elite. Panic-stricken governments rushed to increase their food imports, leading several food-producing nations to restrict exports, fearful that they too could be hit by shortages.

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The big winners from the crisis were not the farmers, as one might have expected. They enjoyed a big increase in the prices they were paid at the farm gate, but all their potential income gains were gobbled up by higher production costs. The people who made a real killing were the suppliers of agricultural inputs. With their quasi-monopoly control over seeds, pesticides, fertilisers and machinery, these giant companies made obscene profits out of the higher prices squeezed out of largely poor populations.

Close on their heels in the ranking of the profiteers came the world's largest grain traders. These companies played a role in artificially creating the food scare in the first place, so they made sure they were well placed to profit from it. Cargill, the world's largest grain trader, reported an increase in profits in 2008 of nearly 70 per cent over 2007, a 157 per cent rise in profits since 2006. Profits for ADM, the world's second largest grain trader, showed a lower rate of increase in 2008, partly because of its heavy investments in the sinking ethanol market, but the company's profits were still more than 200 per cent higher than they were in 2006.

Going abroad

The crisis eventually eased, at least temporarily, but by then its impact on rich, food-insecure nations had been profound. Take Saudi Arabia. Since the late 1970s the country had been seeking to become self-sufficient in some foods, particularly wheat. But just before the food crisis erupted, the government reluctantly decided that this strategy was doomed, largely because the country simply didn't have enough water to irrigate crops.

In a radical change of tack, it decided that it would cover all of its grain consumption through imports by 2015. But this, of course, left the country completely reliant on the world market, just at a time that this market was showing itself to be alarmingly unreliable. Not surprisingly, a rather panic-stricken government sent out a directive to private businessmen instructing them to invest in agricultural production abroad. Adnan al-Naiem, secretary general of the Asharqia Chamber in the Eastern Province, put it succinctly in a briefing: 'The objective is to achieve long-term food security for Saudi Arabia and to secure a continuous supply of food to the kingdom at low and fair prices.'

China is another example. While self-sufficient in food at the moment, it has a huge population, its agricultural lands have been disappearing to industrial development and its water supplies are under serious stress. With 40 per cent of the world's farmers but only 9 per cent of the world's farmland, it should surprise no one that food security is high on the Chinese government's agenda. And with more than \$1.8 trillion in foreign exchange reserves, China has deep pockets from which to invest in its own food security abroad.

As many farmers' leaders and activists in south-east Asia know, Beijing has been gradually outsourcing part of its food production since well before the global food crisis broke in 2007. Through China's new geopolitical diplomacy, and the government's aggressive 'Go Abroad' outward investment strategy, some 30 agricultural cooperation deals have been sealed in recent years to give Chinese firms access to 'friendly country' farmland in exchange for Chinese technology, training and infrastructure development funds.

Other countries, such as South Korea, Egypt, Libya, Kuwait, India and Japan, have also decided for their own reasons that, faced with the prospect of a world shortage of food in the future, it makes sense to find reliable sources outside their own borders for at least part of their food supply. This is what is driving the current land grab, comparable in a way to the 'scramble for Africa' in the late 19th century. Huge areas of the world are being taken over by foreign powers, but they are no longer using military force – they are waving chequebooks, which in today's world can be an even more powerful weapon.

Although land is being grabbed in many different parts of the world, Africa is under heavy assault. Many impoverished governments in sub-Saharan Africa are sorely tempted by the offer of money up-front, and the foreign investors know that if the deals go sour in the future the weak governments will find it hard to expel them. Not that the foreign investors are leaving much to chance. There have already been reports of some of the leased land being protected by private security firms.

There is much to worry us about the new carve-up. Some of the world's poorest countries are letting go of land that they need to feed their own populations. The Sudanese government has sold a 99-year lease on 1.5 million hectares of prime farmland to the Gulf states, Egypt and South Korea. But Sudan is also the world's largest recipient of foreign aid, with 5.6 million of its citizens dependent on food packages from abroad. All principles of basic justice tell us that Sudan should be using this land to feed its own people.

At the moment, the foreign investors speak of a win-win situation, in which both occupying and occupied countries benefit. Take the 7x7x7 Saudi project mentioned earlier. 'West Africa has an annual deficit of about 2 million tonnes of rice,' according to the Foras International Investment Company, one of the partners in the scheme. 'Our project will confront the food shortage crisis, increase agricultural output and improve rice productivity.' In other words, there will be enough rice to feed the local population and to send abroad. Yet the day may come when there isn't enough rice for both Arabs and West Africans. It is hard to imagine that the investors will put the needs of impoverished African families before the needs of their own, much richer, more powerful people.

The day the food runs out

The day that the food starts to run out in the world may come far more quickly than most of us imagine. At present, there are more than a billion people going hungry even though there is no shortage of food. The very poor don't eat enough because they don't have enough money. The underlying problem is one of social inequality, of the highly skewed distribution of financial resources in the world.

Over the next century much worse food shortages may emerge. The climate crisis is already arriving far more quickly than scientists expected and proving far more dangerous. For a while, many scientists believed that the increase in carbon dioxide in the atmosphere would be partly compensated for by an increase in plant growth, caused by the greater availability of CO₂. But now it seems that carbon fertilisation, as it is called, will not happen or will happen far less reliably than was once imagined.

One of the most comprehensive models of the impact of climate change, carried out in 2007 by William R Cline, predicts that, without carbon fertilisation, crop productivity in the developing world is likely to decline drastically, by 21 per cent over the next 80 years. And these predictions may also be underestimates, as they haven't taken into account all the so-called 'positive feedbacks' – the melting of the ice sheets in the Arctic and the Antarctic, the melting of the glaciers, the much greater frequency of forest fires, the growing water shortage and so on – which will make everything worse. Indeed, many of the nations that are scouring the world for arable land will have been warned by their own scientists that a world of dire shortages lies ahead.

Yet, in this dog-eat-dog world, the very actions that the rich countries are taking will increase the likelihood of a global food shortage. The land being grabbed by outside powers has its own precious ecosystems and much of it is used, at least for parts of the year, by local people. Even though governments say that they are only selling 'empty' or 'marginal' land, such a concept simply does not exist for many of the traditional peasant and indigenous communities in Africa, Asia and Latin America.

And the world destroys its biodiversity at its peril, for it is hugely important to have genetically varied populations and species-rich natural and agricultural ecosystems, particularly at times of environmental stress. Biodiversity plays a crucial role in supplying the raw materials and the genes that make possible the emergence of the new plant varieties on which we all depend. Such new varieties will be urgently required as the world heats up.

The outside investors, however, working with large private companies, are destroying existing ecosystems and creating huge areas of monoculture crops dependent on chemical fertilisers and pesticides. With the destruction of the ecosystems comes the dispersal of the peasantry and other traditional communities of farmers and herders, who have a profound knowledge of the local biodiversity. These communities could play a crucial role in combating climate change.

To give just a single example, with adequate financial support they could be linked together in a vast network of seed markets, stretching across the whole of the African continent, that would help plants to 'migrate' as climatic conditions change. They are perhaps mankind's greatest hope of coping with the climatic cataclysms that lie ahead. Yet the current breakneck land grab is destroying the very basis of their livelihoods. And it is all of us, throughout the world, who will pay the price.

Chapter 9

Food Sovereignty and Alternative Paradigms to Confront Land Grabbing and the Food and Climate Crises^{*}

Peter Rosset

Introduction: A world facing multiple crises

In the contemporary world we are facing a systemic crisis where multiple dimensions converge. There is a convergence of an economic, a financial, a climate, an energy and a food crisis, and all are manifestations of medium-to long-term trends in global capitalism. Underlying this is a long-term crisis of access to land by food producing rural people (Rosset, 2006a, b; De Schutter, 2010), and the recent surge in land grabbing by foreign capital (Zoomers, 2010).

In the past few years, we have witnessed the explosion of mining concessions, petroleum exploration, bioprospecting, large-scale logging, eco-and adventure-tourism investment, large infrastructure projects (dams, ports, airports, economic development zones, highways, etc.), agrofuel plantations, carbon-credit plantations, paper-pulp plantations, food plantations for export to wealthy food deficit countries, and other old and modern forms of land grabbing through concessions, rentals, forced sales, and outright theft (Rosset, 2009c; Zoomers, 2010). Almost all of this has come at the expense of local communities of peasants, indigenous people, pastoralists, potential agrarian reform beneficiaries, artisanal fisherfolk, etc., who have progressively lost their land and territories or at least become engaged in protracted struggles to defend them, typically becoming the victims of the criminalization of social protest and rampant militarization of rural areas (Rosset, 2009c).

In addition to these assaults on land and territory, the food price crisis is partially a product of the long-term undermining of the food production capacity of family farm and peasant agriculture due to neo-liberal policies, which have shifted state support toward boosting the productive capacity of agroexport elites and agribusiness (Rosset,

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2006b). The climate crisis is beginning to affect both the livelihoods of rural people and food production. As the climate changes and becomes more unpredictable, farmers have to face shifting planting dates, drought in the rainy season, torrential rains and floods in the dry season, increased average temperatures and aridity, and ever more extreme climate events like hurricanes, monsoons, and extreme droughts (FAO, 2010). Peasant farmers are then doubly victimized, as the false solutions to the climate crisis like agrofuels and carbon credits generate still more land grabbing, evictions, and displacement.

Faced with these multiple crises, it is important to collectively seek solutions. In the following, I outline several interrelated alternative paradigms.

Food sovereignty

In country after country, the proportion of food coming from the small farm sector is far greater than – typically more than double – the proportion of land that is actually in the hands of small farmers.¹ These farmers are over-represented in food production and under-represented in export and agrofuel production, because they have a food-producing vocation. Yet, the continued growth of the dominant model directly undermines food production, driving small farmers off the land and into migrant streams.

In order to reverse these trends and provide a life with dignity for farming people, protect rural environments, and correct the structural causes of the food crisis, we need to revitalize family and peasant farming. That means restoring the public sector rural budgets that were cut under neo-liberal policies, restore minimum price guarantees, credit and other forms of support, and carry out redistributive agrarian reform. The peasant and family farm sectors in most countries cannot be rebuilt without land reform, which redistributes land from export elites to food producing peasants and family farmers. This is a central pillar of the alternative proposal for our food and agriculture systems, as put forth by the international farmers' movement.

Many of the world's organizations of family farmers, peasants, the landless, rural workers, indigenous people, rural youth, and rural women have joined together in global alliance, the La Via Campesina.² According to La Via Campesina, we are facing an historic clash between two models of economic, social, and cultural development for the rural world; and La Via Campesina has proposed an alternative policy paradigm called food sovereignty (La Via Campesina and People's Food Sovereignty Network, 2006; Rosset, 2006a, b). Food sovereignty starts with the concept of economic and social human rights, which include the right to food, but it goes further, arguing that there is a corollary right to land and a 'right to produce' for rural peoples.

Food sovereignty argues that feeding a nation's people is an issue of national security – of sovereignty, if you will. If the population of a country must depend for their next meal on the vagaries and price swings of the global economy, on the goodwill

of a superpower not to use food as a weapon, on the unpredictability and high cost of long-distance shipping, then that country is not secure, neither in the sense of national security nor in the sense of food security. Food sovereignty thus goes beyond the concept of food security, which says nothing about where the food comes from or how it is produced. To achieve genuine food sovereignty, people in rural areas must have access to productive land and receive prices for their crops that allow them to make a decent living, while feeding their nation's people.

But it also means that access to land and productive resources is not enough. The current emphasis in trade negotiations on market access for exports, to the detriment of protection of domestic markets for domestic producers, is a critical problem. According to La Via Campesina, 'food sovereignty gives priority of market access to local producers. Liberalized agricultural trade, which gives access to markets on the basis of market power and low, often subsidized, prices, denies local producers access to their own markets',³ and thus violates the right to produce, while undercutting local and regional economic development.

One way to promote local economic development in rural areas is to recreate local circuits of production and consumption, where family farmers sell their produce in local towns and villages, and buy other necessities from artisans and merchants in those towns. As been clearly demonstrated in a recent landmark study in Brazil, the presence of agrarian reform settlements, as a result of land occupations by peasant movements, boost local economies, even when a country lacks a comprehensive agrarian reform policy (Heredia et al., 2006).

Only by changing development tracks from the export-led, free trade-based, industrial agriculture model of large farms, land concentration, and displacement of people, can we stop the downward spiral of poverty, low wages, rural-urban migration, environmental degradation, and food crisis. Redistributive land reform and a reversal of dominant trade policies hold the promise of change toward a smaller farm, family-based or cooperative model, with the potential to feed people, lead to broad-based economic development, and conserve biodiversity and productive resources. In this context, it is useful to review current developments in agrarian reform.

AGRARIAN REFORM AS PART OF FOOD SOVEREIGNTY

On-going agrarian reforms: the 'official' reforms

For the past decade or more, the World Bank has been taking the lead in promoting, and in some cases financing, comprehensive 'reforms' of land tenure, including titling, ownership mapping and land registries, land market facilitation, market-assisted or negotiated redistributive reforms, and credit, technical assistance and marketing support. While they call this 'land reform', they are privatizing land and transforming it from a collective right of rural people into a commodity that is bought and sold, where money is the key to access to land. In this policy environment, national, and regional

institutions – including governments, aid agencies, and other development banks – are following the lead of the World Bank and aggressively implementing some, or in some cases, all of these reforms (Rosset et al., 2006 Part II).

The Bank's land policies largely fail to address the underlying causes of poverty and exclusion because of their market-based methods and in many cases have made things worse. Land titling programmes can lead to new land loss, as in Thailand, where people who had enjoyed continuous access to land for generations suddenly lost it when given saleable titles in the midst of a national economic crisis, or to conflicts, as in Mexico, where the demarcation of private parcels on what was once a collective land, has produced violent conflicts between neighbours, where peaceful coexistence was once the norm. Furthermore, supposed beneficiaries of Bank-funded land credits are strapped with heavy debts for expensive land of dubious quality as in Guatemala and Brazil. Worst of all, market-based 'solutions' tend to depoliticize the problem of landlessness, which by its nature can only be resolved by structural changes of a kind that can only be addressed in the sphere of politics, rather than the market. Finally, these 'reforms' leave intact the neo-liberal policy environment and its underlying model, both inimical to family agriculture. We can hope for little positive change, then, from these efforts (Rosset et al., 2006).

On-going agrarian reforms: state-led land reforms

'In every Latin American case where significant land redistribution benefiting the rural poor took place, the state played a decisive role', wrote the late land reform theorist Solon Barraclough (1999). Unfortunately, as he also pointed out, in every case where reform was denied or deformed, the state also played a critical role.

On the positive side, progressive governments in Venezuela, Bolivia, Cuba, Ecuador, Paraguay, and Nepal have all made commitments to take further steps in already well-advanced reforms (i.e., Cuba), or to develop new ones.

Since the 1990s, Cuba has been carrying out new stages of its revolutionary agrarian reform. This is both an example of how a nation is trying to overcome the food crisis by promoting re-peasantization via agrarian reform, and is an important case of the complementary nature of such an agrarian reform with sustainable peasant agriculture, in the form of a national social movement to promote agroecology. The combination is helping boost national food production and construct food sovereignty (Alvarez et al., 2006; Machín Sosa et al., 2010; Rosset et al., 2011).

The cases of Venezuela and Bolivia, on the other hand, are very promising but still very much up in the air (Wilpert, 2006; Gascón and Montagut, 2010). While the governments of Presidents Chavez and Morales have made clear their commitment to agrarian reform, a number of factors have so far conspired to keep progress uneven at best (Wilpert, 2006). These include the resistance of landlords and bureaucrats, a slow response to the dumping effects of massive food imports, and the relative lack

of organization of the peasantry into an actor in the case of Venezuela, or at least active subject, to push land reform. In Bolivia, landlords are actively and violently resisting Evo Morales' 'agrarian revolution' with overt and covert support from the United States.

Land reform from below

The majority of the countries in the world do not enjoy governments' committed to state-led redistribution of land based on expropriation, with or without compensation to former landowners. This is the fundamental cause behind the phenomenal rise in land occupations and reclamations – land reform from below – being carried by a new generation of sophisticated social movements around the world.

In Indonesia, some 1 million hectares of land have been occupied by landless peasants since the end of the Suharto dictatorship. Of this land, approximately 50 percent land was formerly held in tree crop plantations (such as rubber or oil palm), 30 percent was in corporate timber plantations, and the remainder was a mixture of state-owned land and tourism development areas. About three-quarters of the occupations have been reclamations of land previously occupied decades ago by the same villages before they were displaced, often violently, to make way for plantations; the other one-quarter have been for new occupations. This is a positive development that stands in marked contrast to recent government-assisted, massive corporate land grabs to plant oil palm for agrofuel exports, which are generating new land conflicts (Rosset et al., 2006: 221–24).

In Zimbabwe, as many as 11 million hectares have been transferred in recent years in large part due to government-supported occupations by black war veterans of large, white-owned estates. While a lot of controversy exists over how much land went to political cronies, there is a little doubt that a major, world-class transfer of assets to poor people occurred, even if the government participated for the wrong political reasons (Mamdani, 2008). In Brazil, according to the Landless Workers' Movement (MST), by 2002 some 8 million hectares of land have been occupied and settled by some 1 million people newly engaged in farming. Other countries with escalating land occupations include Paraguay, Bolivia, Nicaragua, Argentina, Honduras, Guatemala, Mexico, India, Thailand, South Africa, and others (Rosset et al., 2006: 221–24).

This tactic of land occupation is one of the central tactics in the contemporary struggle for land reform. The MST has set the standard for other landless people's movements around the world. They are noted for both their success in occupying land – as measured by the amount of land occupied, the number of people settled, and a rate of abandonment of the settlements, which remains well below 10 percent of new settlers – as well as for the sophisticated nature of their internal organization. The MST uses a two-step method to move people from extreme poverty into landownership and farming. They begin by reaching out to the most excluded and impoverished segments of Brazilian society, such as landless rural day labourers, urban homeless people, people

with substance abuse problems, unemployed rural slum dwellers, or peasant farmers who have lost their land. Organizers give talks in community centers, churches, and other public forums, and landless families are given the opportunity to sign up for a land occupation.

Step one sees these families move into rural ‘camps’, where they live on the side of highways in shacks made from black plastic, until a suitable estate – typically land left unused by absentee landlords – is found. Families spend at least six months, and sometimes as long as five years, living under the harsh conditions of the camps, with little privacy, enduring heat in the summer and cold in the rainy season. As the MST discovered almost by accident, however, the camps are the key step in forging new people out of those with tremendous personal issues to overcome. Camp discipline that is communally imposed by camp members, prohibits drug use, domestic violence, excessive drinking, and a host of other social ills. All families must help look after each other’s children – who play together – and everyone must cooperate in communal duties. People learn to live cooperatively, and they receive intensive training in literacy, public health, farming, administration of co-ops, and other key skills that can make their future farm communities successful. When people used to occupy land directly, they usually failed to stay more than few months. But when they have first been through an MST camp, more than 90 percent of them stay on their land long term.

Step two is the actual land occupation. It usually takes place at dawn, when security guards and police are asleep, and it involves anywhere from dozens to thousands of families rapidly moving out of their camp onto the estate they will occupy. Crops are planted immediately, communal kitchens, schools, and a health clinic are set up, and defense teams trained in non-violence secure the perimeter against the hired gunmen, thugs, and assorted police forces that the landlord usually calls down upon them. The actual occupation leads to a negotiation with local authorities, the result of which may be the expropriation (with compensation) of the property under Brazil’s constitutional provision requiring the social use of land, or the negotiated exchange of the occupied parcel for a different one of equal value. In some cases security forces have managed to expel the occupiers, who typically return and occupy the parcel again and again until an accommodation is reached.

THE CASE FOR REDISTRIBUTIVE LAND REFORM ⁴

The redistribution of land can fulfill a number of functions in more sustainable models of development. Among them are poverty reduction, economic development, food production, and environmental stewardship. Today, we have a new opportunity to learn the lessons of past reforms and apply them to the practical goals of development. Land reform is back on the agenda, thanks to the grassroots movements, the progressive governments, and the food crisis. Here, we look at the important roles redistributive land reform can play in the move towards more sustainable development.

Land reform and poverty

History shows that the redistribution of land to landless and land-poor rural families can be a very effective way to improve rural welfare. In the outcome of virtually every land reform programme carried out in the Third World since World War II, we can distinguish between what I call 'radical' re-distribution or 'genuine land reform', and 'non-egalitarian' reforms or 'fake land reform'. When quality land was really distributed to the poor, and the power of the rural oligarchy to distort and 'capture' policies broken, real, measurable poverty reduction and improvement in human welfare has invariably been the result. Japan, South Korean, Taiwan, Cuba, and China are all good examples. In contrast, countries with reforms that gave only poor quality land to beneficiaries, and/or failed to alter the rural power structures that work against the poor, have failed to make a major dent in rural poverty or food production.

Successful reforms trigger relatively broad-based economic development. By including the poor in economic development, they build domestic markets to support national economic activity. The often tragic outcome of failed reforms is to condemn the supposed beneficiaries to further marginalization from national economic life, as they frequently assume heavy debts to pay for the poor quality land they receive in remote locations, without credit or access to markets, and in policy environments hostile to small farmers.

More recently, it turns out that people in land reform settlements in Brazil earn more than they did before, and that landless families still do – they eat better, they have greater purchasing power, they have greater access to educational opportunities, and they are more likely to be able to unite their families in one place rather than lose family members to migration. In fact, land reform has become a means to stem the rural-urban migration that is causing Third World cities to grow beyond the capacity of urban economies to provide enough jobs.

Another way of looking at it is in terms of the cost of creating new jobs. Estimates of the cost of creating a job in the commercial sector of Brazil range from 2 to 20 times more than the cost of establishing an unemployed head of household on farm land through agrarian reform. Land reform beneficiaries in Brazil have an annual income equivalent to 3.7 minimum wages, while still landless labourers average only 0.7 of the minimum. Infant mortality among families of beneficiaries has dropped to only half of the national average.

This provides a powerful argument for land reform: to create a small farm economy is not only good for local economic development, but is also more effective social policy rather than driving the poor out of rural areas and into burgeoning cities. Only land reform holds the potential to address chronic underemployment in most Third World countries. Because small farms use more labour – and often less capital – to farm a given unit of area, a small farm model can absorb far more people into gainful activity and reverse the stream of out-migration from rural areas.

Land reform and productivity

In the past, there was a longstanding debate concerning the likely impacts of the redistribution of farm land to the poor, which almost inevitably leads on the average to smaller production units. One concern was that when freed from exploitative sharecropping, rental or labour relationships, the poor would retain a greater proportion of their own production for their own consumption, which is not necessarily a bad thing, but leads to a net decrease in food availability for other consumers. However, this argument has been put to rest by evidence and by the productivity gains that can be achieved by shifting to smaller-scale, more intensive styles of production.

In Brazil, family farm agriculture produces 24 percent of the total national value of production of beef, 24 percent of milk, 58 percent of pork, and 40 percent of poultry and eggs. It also generates 33 percent of cotton, 31 percent of rice, 72 percent of onions, 67 percent of green beans, 97 percent of tobacco, 84 percent of cassava, 49 percent of maize, 32 percent of soya, 46 percent of wheat, 58 percent of bananas, 27 percent of oranges, 47 percent of grapes, 25 percent of coffee, and 10 percent of sugar. In total, family farm agriculture accounts for 40 percent of the total national value of production, while occupying just 30.5 percent of the cultivated land area. They generate fully 76.9 percent of the national employment in agriculture, all while receiving only 25.3 percent of farm credit.

In fact, data shows that small farms almost always produce far more agricultural output per unit area than larger farms and do so, more efficiently. This holds true for both industrial countries and any country in the Third World. This is widely recognized by agricultural economists as the 'inverse relationship between farm size and output'. When I examined the relationship between farm size and total output for 15 countries in the Third World, in all cases, relatively smaller farm sizes were much more productive per unit area – two to ten times more productive – than larger ones (Rosset, 1999). Thus, redistributive land reform is not likely to run at cross-purposes with productivity concerns.

In farming communities dominated by large corporate farms, nearby towns died off. Mechanization meant that fewer local people were employed, and absentee ownership meant that farm families themselves were no longer to be found. In these corporate-farm towns, the income earned in agriculture was drained off into larger cities to support distant enterprises, while in towns surrounded by family farms, the income circulated among local business establishments, generating jobs and community prosperity. Where family farms predominated, there were more local businesses, paved streets and sidewalks, schools, parks, churches, clubs, and newspapers, better services, higher employment, and more civic participation. Studies conducted since Goldschmidt's original work confirms that his findings remain true today.

It is clear that local and regional economic development can benefit from a small farm economy, as can the life and prosperity of rural towns. But what of national

economic development? History has shown us that a relatively equitable, small farmer-based rural economy provides the basis for strong national economic development. This 'farmer road to development' is part of the reason why, for example, the Northern United States early in its history developed more rapidly and evenly than did Latin America, with its inequitable land distribution characterized by huge haciendas and plantations interspersed with poverty-stricken subsistence farmers. In the early decades of the Northern United States (in contrast to the plantation system in the South), independent 'yeoman' farmers formed a vibrant domestic market for manufactured products from urban areas, including farm implements, clothing, and other necessities. This domestic demand fuelled economic growth in the urban areas, and the combination gave rise to broad-based growth.

The post-war experiences of Japan, South Korea, and Taiwan in the capitalist world, and China, Cuba and more recently, Vietnam, in the socialist world, also demonstrate how equitable land distribution fuels economic development. At the end of the Second World War, circumstances including devastation and foreign occupation conspired to create the conditions for 'radical' land reforms in the former countries – while revolutions did the same in the latter – breaking the economic stranglehold of the landholding class over rural economic life. Combined with trade protection to keep farm prices high and targeted investment in rural areas, farm families rapidly achieved a high level of purchasing power, which guaranteed domestic markets for fledging industries.

The post-war economic 'miracles' of these three capitalist countries were each fuelled at the start by internal markets centred in rural areas, long before the advent of the much heralded 'export orientation' policies which later pushed those industries to compete in the global economy. This was a real triumph for 'bubble-up' economics, in which redistribution of productive assets to the poorest strata of society created the economic basis for rapid, relatively inclusive development. While this analysis in no way is meant to suggest that all policies pursued by these countries were positive, or should be blindly replicated, their experience does stand in stark contrast to the failure of 'trickle down' economics to achieve much of anything in the same time period in areas of US dominance, including much of Latin America. More generally, there is now a growing consensus among mainstream development economists, long called for by many in civil society, that inequality in asset distribution impedes economic growth.

A key distinction is between 'transformative' agrarian reforms and others (Sobhan, 1993). In most redistributive reforms, those who actually receive land are at least nominally better off than those who remain landless – unless and until policies inimical to small farm agriculture lead them to lose their land once again. However, certain agrarian reforms have been the key step in allowing entire nations to change development tracks. In these cases countries have 'jumped' from the excluding, downward spiral into poverty and environmental degradation, to the upward spiral of broad-based improvements in living standards producing strong internal markets, which in turn lead to more dynamic

and inclusive economic development – the pattern followed in Japan, South Korea, China, Taiwan, and elsewhere. Comparative analysis reveals what these transformative reforms, those that led to real social transitions, had in common. In brief, the majority of the landless and land poor benefited, the majority of the arable land was affected, the stranglehold of entrenched power structures over rural life and economy was broken, and favourable, enabling economic policies were put in place. A key feature of the more successful reforms²⁷ is that farm families were seen as key actors to be mobilized in national economic development – whereas in failed reforms they have typically been seen as indigents in need of charitable assistance.

Land reform, the environment, and the climate crisis

The benefits of small farm economies extend beyond the economic sphere. Whereas, large industrial-style farms impose a scorched-earth mentality on resource management – no trees, no wildlife, and endless monocultures – small farmers can be very effective stewards of natural resources and the soil. To begin with, small farmers utilize a broad array of resources and have a vested interest in their sustainability. At the same time, their farming systems are diverse, incorporating, and preserving significant functional biodiversity within the farm. By preserving biodiversity, open space and trees, and by reducing land degradation, small farms provide valuable ecosystem services to the larger society.

In the United States, small farmers devote 17 percent of their area to woodlands, compared to only 5 percent on large farms. Small farms maintain nearly twice as much of their land in ‘soil improving uses’, including cover crops and green manures. In the Third World, peasant farmers show a tremendous ability to prevent and even reverse land degradation, including soil erosion. They can and/or do provide important services to society at-large, including sustainable management of critical watersheds, thus preserving hydrological resources, and the in situ conservation, dynamic development and management of the crop, and livestock genetic resources upon which the future food security of humanity depends.

Compared to the ecological wasteland of a modern export plantation, the small-farm landscape contains a myriad of biodiversity. The forested areas from which wild foods, and leaf litter are extracted, the wood lot, the farm itself with intercropping, agroforestry, and large and small livestock, the fish pond, and the backyard garden,

²⁸ all allow for the preservation of hundreds if not thousands of wild and cultivated species. Simultaneously, the commitment of family members to maintaining soil fertility on the family farm means an active interest in long-term sustainability, not found on large farms owned by absentee investors. If we are truly concerned about rural ecosystems, then the preservation and promotion of small, family farm agriculture is a crucial step we must take.

Furthermore, when agroecology and other forms of sustainable peasant agriculture are practiced on smaller farms, food production becomes more resistant to climate

change. These more integrated agroecological farming systems are widely recognized to be more adaptive and resilient to climate change, including droughts, hurricanes, temperature changes, and shifting planting dates (Machín Sosa et al., 2010; Rosset et al., 2011). The higher level of on-farm diversity under agroecology means that if one crop is negatively affected, another one is likely to compensate for it. Mulch and green manures that cover soils protect them from erosion, high temperatures, and conserve moisture. A diversity of varieties make peasant farms more able to adapt to changing conditions than homogenous commercial agriculture (Borron, 2006; Altieri and Koohafkan, 2008; Altieri and Nicholls, 2008; Chappell and LaValle, 2009).

Conclusion: Food sovereignty based on agrarian reform and sustainable peasant agriculture

Only food sovereignty based on genuine agrarian reform, and the defense of land and territory against land grabbing, offers a real alternative to the multiples crises we are facing. Food sovereignty, as I have written elsewhere (Rosset, 2008, 2009a, b) is the only way to effectively protect national food economies from predatory dumping, hoarding, and speculation. Sustainable peasant agriculture as another building block of food sovereignty allows us to survive and even mitigate (La Via Campesina, 2009) the climate crisis. All of these can only be achieved with the kind of paradigm shift that only social movements can bring about.

Notes

1. Sources for much of the information that is not footnoted in the article can be found in Rosset, 2006a.
2. www.viacampesina.org. See also Martínez-Torres and Rosset, 2010.
3. La Via Campesina and People's Food Sovereignty Network, 2006.
4. This section is based on Rosset, 2006a, all data and cases cited can be found there.

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Chapter 10

How to Share Land^{*}

Kelly McCartney

When looking through the lens of collaborative consumption or the mesh, it's easy to see how many of our needs can be met through sharing with others to some lesser or greater degree. Surveying this communally inclined world, we find that our homes, cars, jobs, time, and more can easily be shared. Land is another asset that can and should be shared, one that is in high demand as rising food prices and the desire for healthy food blooms alongside the 'Grow Your Own' movement's current momentum.

In 2009, Landshare was launched in the UK to do just that – share land. As stated on the website, “The concept is simple: to connect people who wish to grow food with landowners willing to donate spare land for cultivation.” A mere two years later, more than 60,000 people have signed up to share some 3,000 acres of land across every region of the country. At the outset, creator Hugh Fearnley-Whittingstall proclaimed it a “food revolution destined to be the next great thing.” The project, and others like it, can be credited with helping solve multiple problems with that one simple concept. Food security, carbon emissions associated with factory farming and food transport, crop diversity, community building, and more find a resolution in Landshare... and land sharing.

With the U.S. boasting its own version of Landshare with a capital L in SharedEarth, collaborative land users had some nice coverage. Then, back in March, the two organizations joined forces to become SharedEarth Globally and make it that much easier to match growers with land owners. Like Fearnley-Whittingstall, SharedEarth founder Adam Dell sees amazing potential for the model: “I think it scales all the way up to I'm gonna be a farmer, and all the way down to I have a fire escape on my building in New York, I'm growing some food and I can use some help. We've got a couple of gardening groups who have signed up. We'd love to get some churches. The Catholic Church is the largest landowner in America. I'd love if churches, synagogues signed up, and said 'We've got land, grow stuff! We'll donate some of the produce to our food bank.' There are lots of iterations this can take.”

He's absolutely right. Matchmaking between the people who own dirt and the people who want to work it comes in many shades. Having started in Seattle, Washington, Urban

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Garden Share now tackles the task in a number of U.S. cities, including Louisville, Kentucky and Atlanta, Georgia. The mission they have chosen to accept – pairing “together eager gardeners with eager gardens. When neighbors come together and co-operatively grow food, dirt flies and good things happen.”

Even further afield, groups like WWOOF and GrowFood connect volunteers with farmers around the world. In exchange for room and board, the workers help out on the farm, learning as they go. But, again, the ultimate goal is much loftier than that. GrowFood’s stated mission is “to help grow a community of 50 million new small-scale organic farmers. That’s how many it will take to break America’s dependency on factory food.” When combined with the various other facets of the movement, the efforts of these groups likely will make an appreciable impact.

At the WWOOFer-hosting Red Damsel Farm just outside of Victoria, British Columbia, the owners have 11.5 capacious acres and not nearly enough time or energy to cultivate them so they’ve teamed up with local land-less farmers. Of their partnering process, proprietor Clare Day said, “It’s been very organic. It started with Barb, a local, very experienced farmer who used to farm this land years ago. From there, friends and friends of friends have come across our path and we have developed the group of farmers from there.

“We have no formal agreements with any of the farmers. We provide fencing, water, and land, and in exchange ask the farmers to steward the land as if it were their own – including no chemicals, and a commitment to add back to the soil by way of mulching, compost, etc. – and for them to share a portion of their crop(s) with us.”

The smaller side of the scale is also incredibly accessible. Many urban areas boast community farms. Some of those cities, such as Detroit and New Orleans, lean on farms as a means to rebuild themselves. Nestled in the heart of San Francisco, the 2.2 acres of Hayes Valley Farm serve multiple urban agriculture-related functions. The farm provides an educational center, a community hub, and more. Booka Alon, one of the HVF coordinators, explained, “Space-sharing is what happens when people get creative about ‘best use’ for underutilized spaces. In our current economic climate, it might also be said, that more people are entertaining the idea of space-sharing, because the means for singular ownership or singular usage isn’t practical or possible, due to financial shortcomings.”

Hayes Valley Farm is open and accessible to everyone in the community: “People come and volunteer their time. If food is ripe and it’s a harvesting day, they are welcome to take home whatever has been harvested. These days, it’s arugula, borage, fava beans, cape gooseberries, and lots of kale, chard, and lettuce greens. For their time, we offer them whatever food is available. They are also encouraged to take home calendula seeds, and seeds of other flowering plants that are maturing and dried.”

HVF hosts volunteer days on Sundays, Wednesdays, and Thursdays for people in the neighborhood looking to play in the dirt. They also educate people, sharing a bounty of wisdom along with the bounty of produce. Alon said, “We also have additional classes for urban farmers who want to know more about seed saving, urban permaculture,

honey beekeeping, and other areas of sustainable energy usage and urban homesteading. We never turn anyone away for lack of funds, and welcome work-trade options for those who would like to participate in ‘getting dirty’ in exchange for the education opportunities.”

It might be obvious to state, but community farming isn’t just for city dwellers. Participating with a local farm can happen pretty much anywhere. To help find a farm near you, [Local Harvest](#) offers a convenient community-supported agriculture (CSA) search tool on their website. Peruse the results, make some calls, and find a farm that welcomes volunteers. In Ojai, California, [Rio Gozo Farm](#) echoes Hayes Valley and offers a common barter with volunteers – come help harvest and get a free box of produce. And, like Red Damsel, they also share their 17 acres with others, including the [Ojai Valley Green Coalition](#). Farmer Elizabeth Del Negro feels that volunteers mean “everything” to a farm. She elaborated, “We can’t do it without our community. Farms require either community or a very large family. They don’t happen by one person alone.”

For their part, the helpers have myriad reasons for pitching in. Eleven-year-old Zane enjoys “learning about different vegetables and when they are ready to be picked. And picking is fun.” For Amber Nelson of Ventura Locavore, it’s all about community: “It’s important to me to be able to look my farmer/food provider in the eye and say thank you. The relationships that have developed as a result of volunteering on the farm are priceless.”

The moral of the story is this – sharing land is simple, fun, and incredibly rewarding. To get started, take one of two very easy routes:

- Join a land share organization – Landshare, SharedEarth, WWOOF, GrowFood, etc.
- Volunteer at a community garden or local farm.

No matter which row you choose to hoe, SharedEarth offers some practical, universally applicable advice to create a garden share plan with your cohorts that outlines what, where, and how much you’ll plant along with cost, labor, and yield splits. Communication is the key, here. Make sure all parties understand all of the various expectations and are in agreement. The site concludes with, “Once you get going, a good rule of (green) thumb (and a good life rule in general) is to respect others, act in kindness, and be mindful of others’ space and knowledge. Gardeners, be mindful of time and space as you enter another person’s home. Land owners, be respectful of the experience and passion of those who are willing to give their time and skill to enrich you life and landscape.”

As do most involved in the push toward a more shareable and sustainable world, SharedEarth’s Adam Dell dreams big: “I think SharedEarth is something that can be big and meaningful in its impact. It could be a global thing. Just imagine if we had 10 million acres of producing farmland. That would produce a lot of oxygen and consume a lot of CO₂. It would generate a lot of interesting stories and a lot of interesting community connections and a lot of time well-spent cultivating the land.”

Part Four

FARM AS AN ECOSYSTEM

Chapter 11

The Story of Soil *

Rob Avis

What is the difference between soil and dirt? Soil is alive. Dirt is dead. A single teaspoon of soil can contain billions of microscopic bacteria, fungi, protozoa and nematodes. A handful of the same soil will contain numerous earthworms, arthropods, and other visible crawling creatures. Healthy soil is a complex community of life and actually supports the most biodiverse ecosystem on the planet.

Modern soil science is demonstrating that these billions of living organisms are continuously at work, creating soil structure, producing nutrients and building defence systems against disease. In fact, it has been shown that the health of the soil community is key to the health of our plants, our food and our bodies.

Why is it then, that much of the food from the conventional agricultural system is grown in dirt? The plants grown in this lifeless soil are dependent on fertilizer and biocide inputs, chemicals which further destroy water quality, soil health and nutritional content.

How did we get here? How do we turn this around? This is the Story of Soil...

Turning and Ploughing Soil

It all started about 10,000 years ago when humans started ploughing the fields in the experiment called agriculture. The settlers noticed that when they ploughed the field their crops would grow faster. Based on this positive feedback it was concluded that ploughing must be constructive and more fields were turned. However, in actual fact the bacteria, fungi and arthropods in the soil are essentially nutrient locked up in biology. For example, bacteria is almost 90% nitrogen. Ploughing the soil was killing the life in the soil resulting in an unregulated jolt of nutrient available to the surrounding plants. Over time, with the death of all soil microbes, the soil is unable to naturally support life and the farmer had to move to more fertile ground. The agricultural pattern emerged: deforest, plough, irrigate, salinate, desertify, move on.

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How the Synthesis of Acid Changed the World

About one hundred and fifty years ago humans discovered how to synthesize sulphuric acid. The synthesis of acid allowed for a major advance in industrial agriculture: the ability to dissolve rock minerals into a water-soluble form. This meant that macro-nutrients such as nitrogen (N), potassium (P) and phosphorus (K) could be added to the soil in a form that could be taken up by plants.

As acid was discovered at around the same time as petroleum, this meant the advent of harder, faster and larger-scale ploughing with the use of water soluble salt-based minerals. Again, what could be wrong with a system that produces so much?

Plants and Their Roots

Plants have two main types of roots: tap roots and hair roots. Tap roots are responsible for hydrating the plant, i.e. drinking water. Soil does not freely feed or give minerals (such as calcium, magnesium, etc) to plants and so in order to get minerals a plant must make a “trade” with the soil biota – this is the primary function of the hair roots. Therefore the hair roots are the mineral traders and create an environment around themselves called the rhizosphere – a habitat for soil biota.

Through the process of photosynthesis plants produce exudates (sugars) and commit up to fifty percent of these sugars to the action of feeding and trading with the biology in the soil. When the plant needs a certain mineral, say calcium, it offers exudates to the biota that can provide calcium. This is a symbiotic process in which the plants support the biota and the biota support the plant.

And so, if you plough soil and kill off the biota and soil microorganisms, how does a plant get minerals? The industrial solution is to feed the minerals to the tap roots, i.e. put water-soluble dissolved minerals in the drinking water, otherwise known as fertilizer. The advent of nitrogen, potassium and phosphorus fertilizer (NPK) meant that we did not need to rely on a bank of soil biology to make our plants grow. We could add macro-nutrients at whatever rate we desired and grow plants faster and quicker than ever before – in increasingly lifeless soil.

Have you ever salted a slug? What happens? The salt creates a large osmotic pressure on the creature’s cell wall and results in death. This analogy can be used to understand what happens to the soil biology when salt-based fertilizer is used (note that all fertilizer is based in mineral salts). So the salting of the land through broad-acre fertilization ensures that the biology is completely dead. As long as we keep applying fertilizer there is no chance for life to return.

Without life in the soil, no natural mineral exchange can occur. Also, with plants being forced to drink mineral soup through the tap root, less energy is devoted to developing an overall healthy root structure. Fertilizer has become an addictive drug. It has eliminated the soil biota, replaced that function in the ecosystem, and now must be continually applied.

Whoever controls the fertilizer market secured their market share the same way as the cocaine dealer.

The Downward Spiral

By the late fifties farmers were using NPK at record levels, tractors were highly advanced and the soils in the world were on a fast track to doom. The use of mono-culture crops, heavy tilling, irrigation and fertilizer was killing the soil and making our plants weak and addicted to chemicals. Monocrops of these obese and sick plants became an all-you-can-eat buffet for pests and the degraded and depleted soils a great opportunity for pioneer species (i.e. weeds).

“No worries!” proclaimed the Chemical Companies, “we’ve got the solution for that too”. Let’s kill these pests and nasty weeds that are causing all the problems – and thus pesticides and herbicides were born.

Without healthy soils to support beneficial fungal population the next problem to emerge for farmers was fungal issues. The “next solution” – apply fungicide!

We are now left with dead, acidic and salted soils that are only good for holding up plants.

Weeds and What they Tell

Carbon is the building block of life. Any soil scientist, gardener or farmer will tell you that a soil with no carbon is a dead soil. Carbon and nitrogen like to bond together at a rate of 30:1 and most gardeners know that mixing too much carbon into (like mulch or straw) will decrease available nitrogen. The reverse is true as well and adding nitrogen (in the form of fertilizer) actually reduces carbon levels in the soil. Without carbon, fungus has no food source and dies. The soil collapses leading to hard packed dirt and anaerobic conditions (no oxygen). What comes next are Nature’s signs of a sick system trying to heal itself: weeds, pests and erosion.

It has been proven that the weeds that grow on the surface of the soil are a response to a condition in the soil. For example, pig weed and thistle grow in soils high in nitrates (i.e. fields that have had a history of fertilizer use), and bracken ferns and blady grass grow in soils deficient in potassium (i.e. soils that have burned). Therefore, most of the agricultural weeds that we spray with herbicides actually have an ecological function. Club root, dandelion, knapweed, chickweed and amaranth all indicate too much nitrogen and anaerobic conditions – they are trying to build the topsoil carbon levels.

Weeds such as these do not divert a lot of the photosynthesis energy into soil biology relationships and instead they produce thousands of seeds and lots of carbon – they are fast carbon pathways. As the carbon in the soil increases, the soil is able to support fungal associates and bacterial populations encouraging the next stage of succession and return to soil health. Fast growing weeds and pest attacks are mechanisms in nature to eliminate monospeciation and increase biodiversity. If we truly wanted to stop the weeds and pests, the only real solution is to first understand why they are there. Weeds give us clues

as to how to repair the soil and how to prescribe techniques to speed up the repair process. For example, if thistles are trying to build soil so that biodiverse life can return to it, we can speed up the soil-building process by adding the right plants and life back into the soil.

Patterns Repeat Themselves

Instead of seeing the pattern that got us here in the first place we tend to trust in the system that misunderstood from the beginning. The countermeasures in industrial agricultural have all been based on too narrow a definition of what is wrong. When a decision is made to cope with the symptoms of the problem, second generation problems are created. It has now come to the point where we've invented and hybridized plants to grow in degraded soil / dirt and genetically modified our food to be tolerant of pesticides, herbicides and fertilizer. However, the use of chemicals is not just stopping the natural succession of the ecosystem, it is turning the clock backward toward death or desert.

I find it particularly interesting that the soil & chemical Ag industry is the same pattern as the human & pharmaceutical industry. Treat the symptoms. Patent the "cures". Profit from the lack of health. I also suspect that the slow death of the healthy soil ecology over the last hundred years of intensive agriculture could be directly correlated to the increase in disease, illness and mineral deficiency in the human species.

There is an old saying from a farmer that I am particularly fond of: "I am sick of growing things that die and killing things that want to live". It is amazing to me how much energy and money we spend in our quest to kill when all nature wants to do is live. Imagine what the world would look like if we invested the billions of dollars that currently go into killing weeds, pests, and fungi on processes that encourage life, and work with rather than against nature. The more you look at the current system the more you realize that our quest for domination over the soil is perpetuating a system of scarcity. What we need more than ever is a new paradigm to support a system of abundance and life.

Lucky for us that new paradigm exists! It is a branch of soil science that is called the Soil Foodweb. Paul Taylor of "Trust Nature" has been an organic farmer for over 30 years and is one of many to show that the use of aerobic compost and compost tea can turn dead degraded dirt into life-giving soil in as little as three years. The cycle of biocides is being replaced with a cycle of life. When we design properties to harvest water which fix the water cycle and apply biology through compost the results are nothing short of miraculous. Nature wants to come back, we just have to help her out a bit. Best of all, permaculture gives us all of the design tools to make this a reality.

If you are interested in more information on soil health, I highly recommend the book: "Teaming with Microbes, A Gardener's Guide to the Soil Food Web", Lowenfels & Lewis. The Soil Foodweb Organization is another great resource.

Chapter 12

Seeing the Garden in the Jungle *

Toby Hemenway

Lately I've been lucky enough to teach permaculture courses on the Big Island of Hawai'i at La'akea Gardens. And at each course an odd thing happens. First, let me point out that La'akea generates all its own solar electricity, collects its water from rooftop catchment, uses composting toilets, recycles greywater, sheet mulches copiously, and has a mature food forest (intercropped with nitrogen-fixing trees, of course) hung so heavily with fruit that in five minutes I can fill a five-gallon bucket, in season, with avocados, citrus, abiu, papayas, or spike-skinned rolínias. And don't get me started on all the different varieties of bananas and timber bamboo.

But regularly I hear new students or visitors say, „I'm disappointed that La'akea isn't doing much permaculture." The first few times that happened, I just stood there with my jaw hanging open, wondering how someone could miss something so obvious. However, I've finally figured out why people feel that way. It's because La'akea doesn't have many garden beds full of vegetables. And food is at the center of most people's concept of permaculture. An obvious garden bursting with tomatoes, lettuce, and other favorite veggies screams „food production!" in a recognizable, comforting way. To the untrained eye, even one in the middle of an off-the-grid, food-forest paradise, no vegetables equals no permaculture. It's a preconception so firmly ingrained that it takes the first few days of a tropical design course to shake it loose. But vegetables – especially familiar temperate ones like broccoli, lettuce, and peas – can be difficult to raise in the tropics. Other foods, such as tubers and tree crops, are much easier and more appropriate to grow.

Novice permaculturists aren't the first to visit the tropics and mistake a lack of garden beds for a lack of food production. Until the late 20th century, western anthropologists studying both ancient and current tropical cultures viewed equatorial agriculture as primitive and inefficient. Archeologists thought the methods were incapable of supporting many people, and so believed Central and South America before Columbus – outside of

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the major civilizations like the Aztec, Maya, and Inca – held only small, scattered villages. Modern anthropologists scouted tropical settlements for crop fields – the supposed hallmark of a sophisticated culture – and, noting them largely absent, pronounced the societies „hunter gatherer, with primitive agriculture.” How ironic that these scientists were making their disdainful judgements while shaded by brilliantly complex food forests crammed with several hundred carefully tended species of multifunctional plants, a system perfectly adapted to permanent settlement in the tropics. It just looks like jungle to the naive eye.

Even those westerners who recognized the fantastic productivity of these tropical homegardens still had nothing good to say about the underlying rotational pattern that maintained fertility in tropical soils, the much maligned slash-and-burn system. I remember, as a grade-schooler, being taught this concept in words that soured my mouth: Ignorant villagers burn a patch of beautiful tropical forest, plant some annual crops, ruin the soil in just a few years of brutish scratching, and then are forced by their own stupidity to move to another section of virgin rain forest and burn it down in turn. The image combined the worst aspects of nomadic rootlessness, plundering of nature, and subhuman consciousness. Oh, the stupid savages!

As is often the case, the truth is far different. Slash-and-burn, technically referred to as swidden-fallow, has undergone a rehabilitation comparable to that of Stalin’s discredited dissidents when perestroika swept Russia. For swidden-fallow agriculture turns out to be a model for sustainable living in both tropical and temperate lands. Far from being a system of burning, depleting the soil, and walking away, it is a careful and complex form of high-yield permanent husbandry that yields diverse resources from a single patch for decades. Few anthropologists had the mindset, the patience, or a grant cycle lengthy enough to notice that the supposedly abandoned plots were anything but.

The word fallow – to rest a piece of land from cultivation – is familiar to most of us. Swidden, a less-encountered word, means a plot temporarily cleared of cover by burning. The details of the system vary across the tropics, so let’s look at a few examples.

Beyond the Three Sisters

The Lacandon, Ketchi, Huastec, and other Maya of Central American practice an intricate sequential agroforestry on plots called milpas that includes the famed trio of corn, beans, and squash. Since the process is a cycle, I must pick an arbitrary beginning point. We’ll start with the clearing of a fallowed plot. The farmers cut down most of the trees on a site, but spare many nitrogen fixers, timber trees, and good firewood species. Then they fire the remaining brush. The burning coats the soil with nutrient-rich ash, and cures the firewood trees, which are cut and later carried home on the return leg of planting visits.

Corn, beans, and squash fill much of the milpa the first two years or more, but after the first harvest, the farmers dig in seedlings of bananas, papayas, guavas, and other fruit trees, and interplant them with manioc, tomatoes, chiles, herbs, spices, other favorite food and

fiber plants, and some native forest seedlings. Nitrogen-fixing and firewood tree seedlings (such as *Gliricidia*, which is both) weave a border around the plot. The three sisters and other annuals cover the remaining ground for a few more seasons, but over the next five to eight years, the fruit-tree canopy closes in, and the farmers stop planting annuals. That activity shifts to a new plot, but meanwhile, back at the milpa . . . new cycles begin. By now most anthropologists have gone home and are missing the rest of the picture.

In some spots, farmers pull out a few non-flowering trees and bring in beehives. They also coppice trees known to stump-sprout (often leguminous) and begin growing firewood or craftwood. The tree fruits attract game animals, which supply meat, skins, and feathers. Cattle, tied to large trees, forage amid the greenery. Some of the other originally spared trees become trellises for vanilla beans and other vines, which yield for 10 to 12 years. Fruit rains down.

About this time, when the canopy is furiously spreading to complete closure, the farmers begin directing the milpa toward its final stage in the cycle, the managed forest. Sometimes they'll choose a particular set of tree species to spare: palms, or timber trees, or certain fruits, and develop a plantation or orchard. But more often they'll nudge the milpa toward a heterogeneous and seemingly haphazard assortment of lightly cultivated trees enriched with useful understory species. This is what is usually called „fallow,” although these managed forests are yielding plenty.

The managed forests of the Huastec Maya in northeastern Mexico are packed with up to 300 plant species, including 81 species for food, 33 for construction materials, 200 with medicinal value, and 65 with other uses (the numbers add up to more than 300 since these are multifunctional plants). In these forests, Maya farmers often create different subpatches that concentrate specific guilds of domestic species (such as coffee guilds) amid a background of natives. And all the while, they are tucking small gardens of bananas, chiles, manioc, and other edibles into any clearings. The managed-forest stage may last for 10 to 30 years. Then the cycle begins anew. Since the whole process is rotational, any given area will hold swiddens and fallows at all different phases. This complexity would understandably delude a cornfield-programmed anthropologist into thinking he was looking at raw jungle.

Food Forests of the Bora

This sort of farming is widespread throughout the tropics. I'll briefly give another example from the Bora Indians of eastern Peru in the Amazon Basin. The Bora clear small plots of forest, one-half to two acres in size, with axes and machetes. Again, they spare valuable timber and other useful trees such as palm and cedar. After drying for a couple of weeks, the fallen plants are burned. Next, the crops go in. The staple is manioc – the Bora cultivate 22 varieties of sweet and bitter manioc. Among the manioc they plant pineapple, corn, rice, peppers, cowpeas, bananas, peanuts, coca, and medicinal herbs. Clustered on higher ground are guava, avocados, cashews, peach palm, breadfruit, and many other fruit

trees less familiar to us. Manioc and other annuals are replanted for several years, but by three years, the canopy cover reaches 30% and the annuals slow down. The fruit trees are beginning to yield.

By the time the swidden is six years old, the trees are crowded, so some are thinned out for timber or firewood. Others are coppiced. A few patches of coca and peanuts remain in deliberate small clearings, but elsewhere the canopy is completely closed. Over the next few years, the swidden is tweaked toward the orchard-fallow phase by selective cutting. For the next decade or two, food comes mostly from large breadfruit, palm, and macambo trees, while other species are used for thatch and timber. The Bora also take game and edible grubs from the maturing forest. Twenty to 40 years after the first clearing, the Bora begin the cycle again.

Both of these systems, and other similar techniques in Indonesia, the Philippines, Africa, and other tropic locales, show an intelligent blending of human stewardship with natural succession. After all, clearing a forest is hard work – why replant annuals every year when you can plant trees and be rewarded over twenty years instead of one? Combined with intensely cultivated dooryard gardens and occasional permanent cropland, the swidden-fallow system offers renewable resources over the long term. It's not time-consuming work, either: People using these practices spend no more than two hours a day tending their plants. With food taken care of, only a couple more hours a day need be spent obtaining life's other necessities, leaving plenty of time for leisure and art. Not a bad life.

Discovery of these immensely productive food forests has forced anthropologists to revise upward their guesses of how densely populated the Americas were before Columbus. And with their eyes now opened, they overturned another myth. We've all been told how terrible the Amazonian soil is: cut down the trees and you're left with nothing. But at least 10% – possibly much more – of the Amazon Basin (an area the size of France) is covered with a rich black earth called terra preta. Terra preta soils hold their nutrients even in tropical downpours, and are rich with soil life. They seem to regenerate themselves, and were used by Amazonian Indians to inoculate less fertile soils, kick-starting nutrient cycles. They also last for many centuries. And terra preta, scientists have finally agreed, is human-made. Using nitrogen-fixing trees, permanent crop cover, deep mulching, manure, and other techniques so familiar to permaculture, the Amazonians built feet-thick soil over much of the basin.

Earth as a Garden

As researchers examine the Amazon more carefully, it appears that huge areas contain not only wild plants, but have been stocked with people-friendly cultivars of useful species. More and more, it looks as if the Amazon, like much of the Americas, was a carefully cultivated garden before the Europeans showed up and abused it into a thicketed wilderness. It appears that our idea of wilderness – black forest so dense you can barely walk, where people „take only photographs and leave only footprints” – is a notion burned

into our psyches during an anomalous blip: the first two centuries following the Mayflower, in which the gardeners who had tended the Americas for millennia were exterminated, leaving the hemisphere to descend into an neglected tangle of „primeval forest.” It’s likely that this so-called intact forest had never existed before, since humans arrived here as soon as the glaciers receded and began tending the entire landmass with fire and digging stick. The first white explorers describe North America’s forests as open enough to drive wagons through. Two centuries later these agroforests had deteriorated to the black tangles immortalized by Whitman and Thoreau.

Wilderness may be merely a European concept imposed on a depopulated and abandoned landscape. The indigenous people of the Americas were master terraformers, using a hard-learned understanding of ecological processes to preserve the fundamental integrity of natural systems while utterly transforming the land into a place where humans belonged and could thrive. They were truly a part of nature, and likely did not make a distinction, as environmentalists do, between land where people belong and land where we do not. I’ll certainly agree that people carrying chainsaws and riding bulldozers don’t belong everywhere. But I’m beginning to think that gardeners, with gentle tools and sensitive spirits, have been and might again be the best planetary land managers the Earth can have.

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Chapter 13

Edible Forest Gardens: an Invitation to Adventure *

David Jacke with Eric Toensmeier

*“Come among the unsown grasses bearing richly,
the oaks heavy with acorns, the sweet roots in unplowed earth...”*

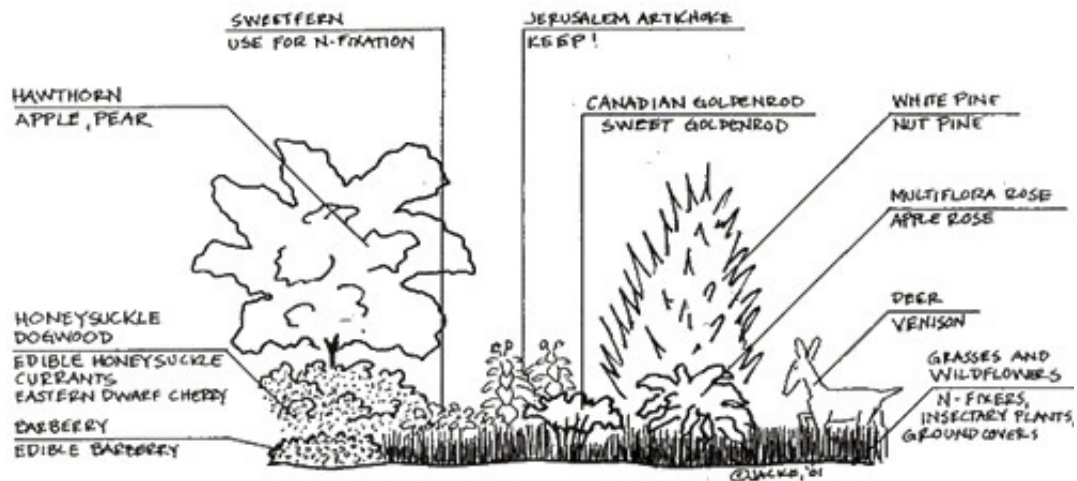
Ursula K. LeGuin, Always Coming Home

Picture yourself in a forest where almost everything around you is food. Mature and maturing fruit and nut trees form an open canopy, and if you look carefully you can see fruits swelling on many branches – pears, apples, persimmons, pecans, chestnuts. The shrubs that fill the gaps in the canopy bear raspberries, blueberries, currants, hazelnuts and other lesser known fruits, flowers and nuts at different times of the year. A diverse assemblage of native wildflowers, wild edibles, herbs, and perennial vegetables thickly covers the ground. You use many of these plants for food or medicine, while others attract beneficial insects, birds and butterflies, act as soil builders or simply help keep out weeds. Here and there vines climb on trees, shrubs or arbors with fruit hanging through the foliage – hardy kiwis, grapes, and passionflower fruits. In sunnier glades large stands of Jerusalem artichokes grow together with groundnut vines. These plants support one another as they store energy in their roots for later harvest and winter storage, their bright yellow and deep violet flowers enjoying the radiant warmth from the sky.

What is an edible forest garden?

An edible forest garden is a *perennial polyculture* of multi-purpose plants – many species growing together (a polyculture), most plants re-growing every year without needing to be re-planted (perennials), each plant contributing to the success of the whole by fulfilling many functions. In other words, an edible ecosystem: a consciously designed community of mutually beneficial plants and animals intended for human food production. Edible forest gardens can provide more than just a wide variety of foodstuffs; the seven F’s apply here: food, fuel, fiber, fodder (food for animals), fertilizer and “farmaceuticals”,

* Excerpted from “Edible Forest Gardens: A Delicious and Practical Ecology”. Revised version, copyright © 2011, David Jacke with Eric Toensmeier. Dave Jacke is the primary author of “Edible Forest Gardens” (www.edibleforestgardens.com). He has been a student of ecology and design since the 1970s, and has run his own ecological design firm – Dynamics Ecological Design – since 1984. Eric Toensmeier has spent twenty years exploring edible and useful plants of the world and their use in perennial agroecosystems (www.perennialolutions.org). He is the author of “Perennial Vegetables” and co-author of “Edible Forest Gardens”.



Mid-Succession Ecological Analogs: old fields usually contain diverse, highly productive species. We can mimic such ecosystems by including existing useful species and by substituting useful species with similar niches in the place of less useful species. The same principle applies to every stage of succession. Survey your existing flora, find out what you can use, and figure out what you can substitute that has more direct human uses. The Ecological Analog process is one of the more direct ways to design forest gardens like the ecosystem we want to model.

as well as fun. A beautiful, lush environment is either a conscious focus of the garden design, or a side-benefit one enjoys.

The forest garden mimics forest ecosystems, those naturally occurring perennial polycultures originally found throughout the humid climates of the world. In much of North America, your garden would soon begin to revert to forest if you were to stop tilling and weeding it. Annual and perennial weeds would first colonize the bare soil. In a few years, shrubs would follow the weeds as the dominant plants. Finally, the *pioneer* trees would move in, and a forest would be born. It can take many decades for this process, called *succession*, to result in a mature forest.

We humans work hard to hold back succession – mowing, weeding, plowing, spraying. If the successional process were the wind, we would be constantly motoring against it. Why not put up a sail and glide along with the land’s natural tendency to become forest? Edible forest gardening is about expanding the horizons of our food gardening across the full range of the successional sequence, from field to forest, and everything in between.

Besides the direct human uses, it is critical to design the forest garden for self-renewing self-fertilizing self-maintenance. Most plants used in forest gardens are self-renewing perennials or self-sowing annuals. Continuously mulched and otherwise undisturbed soil allows a healthy and diverse soil community to develop. Including plants that can fix nitrogen, accumulate subsurface soil minerals, act as a source of mulch, or a combination of these functions also improves soil fertility. Some species provide food or habitat for *insectivorous* birds, or predatory and parasitic insects that devour pests, reducing and at least potentially eliminating the need for pest and disease management work. Selecting and locating plants based on their suitability for the site’s soil conditions and microclimate,

the amount of labor they require, their ecological roles and their ultimate size helps reduce the amount of maintenance they need and increase their yield. By mimicking the way nature does her work, we can reduce the work we do to get our sustenance to mulching, some pruning, occasional weeding, and minimal pest and disease management depending on the crops you grow. Oh, and then there's the harvesting!

Essentially, edible forest gardening is the art and science of putting plants together in woodland-like patterns that forge mutually beneficial relationships, creating a food production system that is more than the sum of its parts. The idea is that by growing fruits, nuts, vegetables, herbs, mushrooms and other useful plants and animals in a way that mimics natural forest ecosystems you can create a beautiful, diverse, high yield system that is largely self-maintained.

Gardening LIKE the forest vs. gardening IN the forest

There are many ways to garden IN the forest. These include the restoration of natural woodlands, ecological forestry, agroforestry, and the creation of primarily aesthetic woodland gardens. These and other forms of gardening IN the forest are not what we are talking about. Edible forest gardening is not necessarily gardening IN the forest. It is gardening LIKE the forest.

Gardening LIKE the forest involves forming a deep understanding of the dynamics, patterns and principles that govern the structure and function of healthy, naturally occurring forest ecosystems. We then adapt this knowledge to mimic the structures and functions that meet our needs and help the garden ecosystem to meet its own. We use the forest as a design metaphor, a model of structure and function, while we adapt the design to focus on meeting human needs in a small space. We then participate in the evolution of an ecosystem in our back yards that can teach us about ecology and ourselves as we eat our way through it.

While you can transform an existing piece of woodland into an edible forest garden and have it work well, we don't necessarily recommend it. In many ways it's better to start from scratch in an area currently free of trees. That way you can improve soil conditions before planting, and then create a canopy of highly productive plants where all the sun is, with additional bonus yields from the lower, shadier layers. When you use existing woods, the opportunities for high total system yields decrease unless you kill trees first or happen to be lucky enough to have persimmons, walnuts, hickories or other crop trees in the canopy already.

The most well-known aspect of mimicry in forest gardening is the creation of multiple layers of vegetation in the garden similar to the layers of vegetation in healthy forests. However, vegetation layers are only one of the five physical architectural elements we must work with to create a forest garden. We must also understand the functions, and mimic the structures, of the soil horizons and the density, patterning and diversity of forest vegetation. For example, ecological research has shown that natural ecosystems exhibiting what we call

“lumpy texture” tend to have larger and more diverse bird populations and higher levels of predatory insects in the canopy.¹ When we create orchards with the trees evenly spaced, all the same size, age and species, with no shrubs, and a monotonous understory, we create smooth split pea soup texture. This reduces predator diversity and abundance, increases our work load, and pushes us towards chemical controls of one kind or another.

In addition to physical architecture, ecosystems exhibit “social structure” and structures of change through time (AKA successional patterns). These also offer opportunities for reduced maintenance and increased yields if we pay attention and design well. Social structure includes the design and husbanding of the food webs both above and below ground, as well as associations of plants and animals called guilds that partition resources and create webs of cooperation and interdependence. The increasingly sophisticated science of soil food webs is demonstrating exciting results such as the near elimination of the need for fertilizer in some systems, and radical reductions in diseases and pests simply by supplying the resources and conditions necessary for all the elements of a healthy soil food web to thrive. Resource partitioning guilds in particular are essential to the design of high yield polycultures. When we understand the root patterns of different plant species, for example, we can mix and match associates that will use different parts of the soil profile. This allows us to pack individual plants closer together without increasing competition between them, while actually increasing the volume of soil resources the system as a whole uses. Such an arrangement has the highest chance of creating a polyculture that yields more per unit area than the same number of crop plants grown in monoculture.

What all of this means is that when we forest garden we design and garden not only with plants, but with insects, birds, microorganisms and all the other life forms with whom we share our home. We work and garden not as master and servants, but as co-participants in the play of life. The greater our understanding of our partners in this endeavor, the greater our ability to work consciously with them to create harmonious garden patterns. Basically, it comes down to this: don’t plant trees, plant ecologies!

The Garden of Eden: it sounds great, but is it practical?

Eric and I like to think of edible forest gardening as recreating the Garden of Eden, and from the description at the beginning of this article, it sounds as if it is. Is such an abundant, low maintenance food garden really possible?

A few lessons from a little history

Though ancient in many ways, the notion of edible forest gardening is relatively new to modern western culture and especially to the modern North American continent. The people of tropical Africa, Asia, and Latin America have a long tradition of using a multi-storied agriculture integrating trees, shrubs, livestock, and herbaceous crops. They grow fodder trees in pastures that provide windbreaks, livestock forage and shade. Some of these trees also improve the soil by fixing nitrogen from the air and putting it into the soil.

Alley cropping systems combine rows of nitrogen-fixing and food trees with strips of annual crops like corn and potatoes. The multi-storied „food forest” systems used in many parts of the tropics mimic the rainforest, growing such crops as coconut, oil palms, bananas, coffee, pineapples and ginger. Village and home-scale tropical forest gardens have existed in Java since at least the 10th century, and comprise 15% to 50% of village cultivated lands.² Forest gardens work in tropical climates, and have for a long time.

There is also strong evidence that similar systems were in place in cooler climates hundreds of years ago. For example, some species of temperate forest trees are able to sprout from the stump and regrow vigorously after being cut down. These stump sprouts, called *coppice* (“**cop** – iss”), are used as fuel, fiber, fodder or mulch, depending on the species. The coppice forestry systems of medieval Britain and other parts of Europe were the core of integrated systems of land use and building construction wherein logs, poles, saplings and brush were all used as structural materials. Coppice plots also provided critical habitat for wild game mammals and birds, as well as abundant semi-wild foods and medicinal plants that formed an essential part of the Medieval diet. Several continuously coppiced “stools”, or stumps, in Britain have been proven to be *500 to 800 years old*, demonstrating that coppicing can dramatically prolong a tree’s life span.³ These very stable, sustainable agroforestry systems existed for hundreds of years before declining and being almost totally lost during the industrial revolution. In addition, the more we learn about the culture and agriculture of the Indians of eastern North America, the more we understand the sophistication of their forest management strategies. Clearly, the record shows that forest garden-like systems have been viable and practical in temperate climates. Isn’t it possible for us to do far better now if we put our hearts and minds to it?

A small but growing number of people in the cold climates of the world have been developing these ideas for the current era. J. Russell Smith’s seminal 1950 work *Tree Crops: A Permanent Agriculture* first sparked interest in the potential of agroforestry in temperate as well as tropical and sub-tropical climates throughout the world. However, tropical countries and large scale tree crop systems received most of the resulting research attention.

Robert Hart got things going for backyard folks with his inspirational book *Forest Gardening*⁴, first published in Britain in 1991. Hart’s vision of temperate climate forest gardening was the result of his work with tropical agroforestry systems⁵, his Gandhian beliefs and his backyard experiments. His forest garden in Shropshire, England is an incredibly beautiful testament to his vision, and the oldest known temperate climate forest garden in the world (started in 1981). Patrick Whitefield followed Hart’s book with his more practical *How to Make a Forest Garden*⁶, a solid book with a British focus. These two pieces, combined with Bill Mollison and David Holmgren’s works on permaculture (“permanent culture”)⁷, have sparked widespread interest in and planting of forest gardens throughout Britain. These gardens all demonstrate the potential of edible forest gardens, if not the actual benefits.

Edible forest gardens have been slower to spread in North America. Few people have heard of the idea, so the examples are fewer and farther between – but they exist. Forest gardeners have planted in the maritime climate of coastal Washington state, at 7,000 feet in the cold, dry Colorado Rockies, in the hot, humid city of Greensboro, North Carolina, and in chilly southern New Hampshire, all with at least some success.

Forest gardens are viable in small urban yards and large parks, on suburban lots, or in a corner of a rural farm. We have seen examples ranging from a 2 acre rural research garden to a jungle of food plants on a quarter acre lot, to a heavily planted 30 x 50 foot embankment behind an urban housing project. Smaller versions are definitely possible: though it might stretch the word “forest” rather far, the same principles and ideas still apply. Despite the name “forest garden” it is best if your site has good sun, but, of course, if your land is shady and wooded you can use the ideas, information and plants of forest gardening.

Spanning the gamut: examples of forest gardens

Forest gardens can come in a multitude of sizes, shapes and habitats, from rural to urban, from open shrubland or woodland to dense forest. Let’s explore some of the possible permutations so that you can have some pictures in your minds’ eye. We intend what follows to be suggestive rather than prescriptive or comprehensive. Our book will contain many more images, patterns and examples of forest garden design.

Forest garden in the woods

If you already have a woodland on your property, you can inventory it, and then add to and subtract from the existing plant community. The results can vary from minimal change in the structure of the existing woods with the main task the under planting of perennial vegetables and medicinals, to adding to the woody understory with shrubs and shade-tolerant trees, to making openings and planting a successional sequence that will refill the gap(s) you make with useful species from the canopy on down. Such a planting scheme will vary from wild, essentially unmanaged, higher risk plantings to semi-wild, partially managed plantings, to highly maintained gardens-in-the-woods, depending on goals, site preparation, species selection, and existing vegetation character. An understanding of the dynamics of gaps in mature forest succession will be helpful in managing some such systems. In these kinds of cases, we strongly urge the use of primarily native species to support and restore native ecosystem integrity, if not only native species if they will meet the design goals or the site is relatively free of exotic plants.

Woods edge forest garden

An abrupt line usually marks the edge between forest and field in most cultivated landscapes: woods with tall trees stop immediately at the edge of a mown or cultivated area, with little or no transitional vegetation. In most natural landscapes, broad areas of transition characterize the edges between significantly different habitats such as field and

forest. These “edge zones” usually contain a variety of microclimates in a small space, and this typically creates highly productive and highly diverse ecosystems – a phenomenon known as the “edge effect”. We can use such edges to advantage by planting both in the woods and in the field to create broad areas of transition with a diversity of useful species.

“Instant succession” forest gardens

When presented with an open field or lawn in which to plant your edible forest garden, you can design the garden as an “instant succession”.⁸ In an instant succession you design the garden at each stage of its development from perennial herbs, to shrubs and herbs, to young trees, to “climax forest”, and then plant all the species for every stage of succession at once. You must start by designing the climax stage first, and then design backwards in time step-by-step towards the present, fitting all the shorter-lived, sun-loving plants for the earlier stages around the longer-lived plants for the later stages. Such a dense planting should need minimal maintenance for many years as long as you plant enough groundcovers and sun-loving plants for the first years and put all the longer term plants at reasonable spacings. Instant successions require a large initial investment of time, money and information. They also need a lot more hands-on research to determine how they work best, but they are also quite fun and interesting. If you have a large space to convert to forest garden, then you must be ambitious to undertake this strategy in an all-at-once manner. See “Nuclei That Merge” below for another way to fill a large space with forest garden.

The suburban landscape mimic

Urban and suburban dwellers with aesthetic concerns can still create a forest garden, even in their front yard. In this situation, the aesthetic goals will have more influence on the garden design than is likely in any other circumstance, so that plant selections will be made with this criterion in mind. Many edible and otherwise useful plants are quite beautiful. The forest garden can fit into a range of aesthetic styles from formal to informal, and edible plants can work as screening, groundcovers, and fit into a variety of color and texture schemes.

Micro-forest gardens and nuclei that merge

Even if you have a very tiny space in which to plant, say in an urban yard or even a rooftop somewhere, you can still plant a forest garden. Though it might stretch the word “forest” to the breaking point, you can apply the same principles to a small space with as few as two or three semi-dwarf trees and associated plants that fill a 30 foot circle or a 15 by 45 foot rectangle. For larger spaces, you can use a pattern such as this to create forest garden nuclei that quickly achieve self-maintenance and then grow outward to eventually merge. This mimics the overall development pattern of many plant communities during succession. It can be a great way to grow your own nursery stock, reduce the up-front labor and investment, and adapt over time to the realities of which plants do well, and which don’t, on your particular site.

Large scale forest garden

Eric and I know of forest gardens that range in size from 30 feet by 50 feet to over 2 acres. Once you get over, say, a one-half acre size, and if you want to establish the canopy layer all at once, some broad scale techniques may come in handy. At the Agroforestry Research Trust in Devon, England, Martin Crawford has established a model forest garden that demonstrates one of these techniques. Planting all of the trees for the canopy first and at about the same time, Martin had young trees standing in a grassy field. One year, Martin killed the grass in an 8 foot wide strip using heavy, black woven polyester sheeting as a mulch. The next year he moved the black poly to the neighboring 8 foot strip, and planted the killed zone heavily with aggressive groundcover plants chosen for a variety of functions, but primarily to fill the ground plane with vegetation other than grass. Each year he continued this process. As the converted ground area grew, the pace of conversion could increase since more stock was available to divide. In the meantime, Martin planted his shrub crops across the 2 acres in clusters under the trees and within the already converted ground layer using the sheet mulch technique. Over a few years, this enabled Martin to convert the herbaceous understory to sun-loving and semi-shade tolerant species that improve the soil and attract beneficial insects, as well as providing useful products for consumption and sale. As the trees grow and cast deeper and deeper shade, Martin will convert the ground layer into more shade tolerant edibles and ground covers. The result is a large forest garden with a dense ground layer and growing canopy and shrub layers over a few short years.

An invitation to adventure

As a “new” idea, many of the practical considerations of forest gardening have yet to be worked out in complete detail, especially for North America. Only a few of the species grown by British forest gardeners will adapt well to North American climates and soils. Many native North American plants have good forest gardening potential, particularly wild edibles, medicinals and beneficial insect attracting plants, but are relatively untested in such systems. There is strong positive evidence, including much farming, gardening and ecological information spread across many different references, places and people. Eric and I have seen a number of good on-the-ground examples and undertaken enough attempts to create these gardens ourselves to know that it can work, and that it can work better than anyone has yet achieved. With clear thinking and more knowledge, especially more accessible information about the ecology of useful plants, Eric and I feel sure that the edible forest garden idea will be of interest to and within reach of many people throughout the temperate world. But there is still much to learn, and this is where you come in.

We invite you to join in a lifetime of quiet adventure. Ecological systems at their essence operate on relatively simple principles, yet have endlessly fascinating intricacies. Many delicious and useful plants stand ready for use in forest gardens, and many more exist with great potential for selection and development. We know much about the basics

of edible forest garden design and management, but there is still so much more to learn. It seems we have many lifetimes worth of creative interest and fulfilling enjoyment ahead.

We seek to learn from our own wetlands, fields, thickets, and forests the ways living things have adapted to our climate and land, and to mimic these systems with productive agricultural ecosystems. The goal is to create mutually beneficial communities of multi-purpose plants for our own sustenance, and thereby to include ourselves in the natural system. We seek to recreate the Garden of Eden, and, as Bill Mollison says, “why not?”

A SAMPLING OF EDIBLE FOREST GARDEN PLANTS

Trees

| | | |
|------------|--|---|
| Walnuts | <i>Juglans</i> species | Nuts, timber. |
| Hickories | <i>Carya</i> species | Nuts, timber. |
| Chestnuts | <i>Castanea</i> spp. & hybrids | Nuts, timber. |
| Mulberries | <i>Morus alba</i> , <i>M. rubra</i> | Fruit, coppice. |
| Persimmons | <i>Diospyros virginiana</i> , <i>D. kaki</i> | Fruit. |
| Nut Pines | <i>Pinus edulis</i> , <i>P. cembra</i> , <i>P. pumila</i> , <i>P. flexilis</i> , etc. | Nuts, windbreaks. |
| Pawpaw | <i>Asimina triloba</i> | Highly nutritious fruit, part-shade. |

Shrubs

| | | |
|----------------|------------------------------|---------------------------------------|
| American Plum | <i>Prunus americana</i> | Fruit, thicket-forming. |
| Chickasaw Plum | <i>Prunus angustifolia</i> | Fruit, thicket-forming. |
| Saskatoon | <i>Amelanchier alnifolia</i> | Fruit, comm. varieties available. |
| Hazelnuts | <i>Corylus</i> species | Nuts, thicket-forming, some trees. |
| Currants | <i>Ribes</i> species | Fruit, can fruit in part-shade. |

Vines

| | | |
|--------------------------|--|--|
| Hardy Kiwis | <i>Actinidia arguta</i> , <i>A. kolomikta</i> | High vitamin C fruit, woody. |
| Maypop, Passionflower | <i>Passiflora incarnata</i> | Great flowers, tasty fruit, herbaceous. |

Perennial Herbs

| | | |
|--------|---|---|
| Onions | <i>Allium cernuum</i> , <i>A.</i> <i>tricoccum</i> , <i>A. cepa</i> , etc. | Delicious greens, bulbs, pest control, some quite shade tolerant. |
|--------|---|---|

| | | |
|-----------------------|-----------------------------------|---|
| Wild Cabbage | <i>Brassica oleracea</i> | Perennial kale, tree collards, per. broccoli! |
| Sea Kale | <i>Crambe maritima</i> | Blanched shoots, delicious flower buds. |
| Turkish Rocket | <i>Bunias orientalis</i> | Mustardy leaves, shade tolerant. |
| Nettles | <i>Urtica dioica</i> | Spring greens, nutrient accumulator. |
| Wood Nettle | <i>Laportea canadensis</i> | Native, spring greens, shade, also stings! |
| Sweet Cicely | <i>Myrrhis odorata</i> | Sweet, anisey foliage, flowers, seeds, shade tol., attracts beneficial insects. |
| Mountain Sorrel | <i>Oxyria digyna</i> | Good flavor, native, sun or shade. |
| Buckler-leaved Sorrel | <i>Rumex scutatus</i> | Tasty, good clumping groundcover. |
| Good King Henry | <i>Chenopodium bonus-henricus</i> | Spinach flavor leaves, asparagus-like shoots, shade tolerant. |

Easy to Grow Fungi

| | | |
|-----------------|-----------------------------------|---|
| Shiitake | <i>Lentinula edodes</i> | Oak log dwelling, tasty, medicinal. |
| Kuritake | <i>Hypholoma sublateritium</i> | Logs, sawdust, stumps, tasty, native. |
| Shaggy Mane | <i>Coprinus comatus</i> | Hardwood chips (mulch), tasty, native. |
| Reishi | <i>Ganoderma</i> species | Stumps, logs, native, tasty, medicinal. |
| King Stropharia | <i>Stropharia rugoso-annulata</i> | Hardwood chips, straw, soil, compost, mulch, tasty, native. |

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www.soilfoodweb.com ESSENTIAL info on soil food webs & how to manage them! Good links, too.

www.tandjenterprises.com Sell BioVAM mycorrhizal fungi inoculant, good info and test results.

www.mycorrhizae.com Mycorrhizal Applications, Inc., sells VAM & ecto-mycorrhizal inoculants.

www.nutgrowing.org Northern Nut Growers Association: excellent info and links!

www.nafex.org North American Fruit Explorers, excellent group doing good R&D on unusual plants.

www.agroforestry.co.uk Agroforestry Research Trust website, go there or be square!

Chapter 14

Is Sustainable Agriculture an Oxymoron? *

Toby Hemenway

Jared Diamond calls it “the worst mistake in the history of the human race.”¹ Bill Mollison says that it can “destroy whole landscapes.”² Are they describing nuclear energy? Suburbia? Coal mining? No. They are talking about agriculture. The problem is not simply that farming in its current industrial manifestation is destroying topsoil and biodiversity. Agriculture in any form is inherently unsustainable. At its doorstep can also be laid the basis of our culture’s split between humans and nature, much disease and poor health, and the origins of dominator hierarchies and the police state. Those are big claims, so let’s explore them.

Permaculture, although it encompasses many disciplines, orbits most fundamentally around food. Anthropologists, too, agree that food defines culture more than our two other physical needs of shelter and reproduction. A single home-building stint provides a place to live for decades. A brief sexual encounter can result in children. But food must be gotten every day, usually several times a day. Until very recently, all human beings spent much of their time obtaining food, and the different ways of doing that drove cultures down very divergent paths.

Anthropologist Yehudi Cohen³ and many subsequent scholars break human cultures into five categories based on how they get food. These five are foragers (or hunter-gatherers), horticulturists, agriculturists, pastoralists, and industrial cultures. Knowing which category a people falls into allows you to predict many attributes of that group. For example, foragers tend to be animist/pantheist, living in a world rich with spirit and in which all beings and many objects are ascribed a status equal to their own in value and meaning. Foragers live in small bands and tribes. Some foragers may be better than others at certain skills, like tool making or medicine, but almost none have exclusive specialties and everyone helps gather food. Though there may be chiefs and shamans, hierarchies are nearly flat and all members have access to the leaders. A skirmish causing two or three deaths is a major war. Most of a forager’s calories come from meat or fish, supplemented with fruit, nuts, and some wild grain and tubers.⁴ It’s rare that a forager will overexploit his environment, as the linkage is so tight that destruction of a resource one season means starvation the next. Populations tend to peak at low numbers and stabilize.

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The First Growth Economy

Agriculturists, in contrast, worship gods whose message usually is that humans are chosen beings holding dominion, or at least stewardship, over creation. This human/nature divide makes ecological degradation not only inevitable but a sign of progress.

While the forager mainstays of meat and wild food rot quickly, domesticated grain, a hallmark innovation of agriculture, allows storage, hoarding, and surplus. Food growing also evens out the seasonal shortages that keep forager populations low.

Having fields to tend and surpluses to store encouraged early farming peoples to stay in one place. Grain also needs processing, and as equipment for threshing and winnowing grew complex and large, the trend toward sedentism accelerated.⁵

Grains provide more calories, or energy, per weight than lean meat. Meat protein is easily transformed into body structure – one reason why foragers tend to be taller than farmers – but turning protein into energy exacts a high metabolic cost and is inefficient.⁶ Starches and sugars, the main components of plants, are much more easily converted into calories than protein, and calories are the main limiting factor in reproduction. A shift from meat-based to carbohydrate-based calories means that given equal amounts of protein, a group getting its calories mostly from plants will reproduce much faster than one getting its calories from meat. It's one reason farming cultures have higher birth rates than foragers.

Also, farming loosens the linkage between ecological damage and food supply. If foragers decimate the local antelope herd, it means starvation and a low birth rate for the hunters. If the hunters move or die off, the antelope herd will rebound quickly. But when a forest is cleared for crops, the loss of biodiversity translates into more food for people. Soil begins to deplete immediately but that won't be noticed for many years. When the soil is finally ruined, which is the fate of nearly all agricultural soils, it will stunt ecological recovery for decades. But while the soil is steadily eroding, crops will support a growing village.

All these factors – storable food, surplus, calories from carbohydrates, and slow feedback from degrading ecosystems – lead inevitably to rising populations in farming cultures. It's no coincidence, then, that farmers are also conquerors. A growing population needs more land. Depleted farmland forces a population to take over virgin soil. In comparison, forager cultures are usually very site specific: they know the habits of particular species and have a culture built around a certain place. They rarely conquer new lands, as new terrain and its different species would alter the culture's knowledge, stories, and traditions. But expansion is built into agricultural societies. Wheat and other grains can grow almost anywhere, so farming, compared to foraging, requires less of a sense of place.

Even if we note these structural problems with agriculture, the shift from foraging at first glance seems worth it because – so we are taught – agriculture allows us the leisure to develop art, scholarship, and all the other luxuries of a sophisticated culture. This myth

still persists even though for 40 years anthropologists have compiled clear evidence to the contrary. A skilled gatherer can amass enough wild maize in three and a half hours to feed herself for ten days. One hour of labor can yield a kilogram of wild einkorn wheat.⁷ Foragers have plenty of leisure for non-survival pleasures. The art in the caves at Altamira and Lascaux, and other early examples are proof that agriculture is not necessary for a complex culture to develop. In fact, forager cultures are far more diverse in their arts, religions, and technologies than agrarian cultures, which tend to be fairly similar.³ And as we know, industrial society allows the least diversity of all, not tolerating any but a single global culture.

A Life of Leisure

We're also taught that foragers' lives are "nasty, brutish, and short," in Hobbes's famous characterization. But burial sites at Dickson Mounds, an archaeological site in Illinois that spans a shift from foraging to maize farming, show that farmers there had 50% more tooth problems typical of malnutrition, four times the anemia, and an increase in spine degeneration indicative of a life of hard labor, compared to their forager forebears at the site.⁸ Lifespan decreased from an average of 26 years at birth for foragers to 19 for farmers. In prehistoric Turkey and Greece, heights of foragers averaged 5'-9" in men and 5'-5" in women, and plummeted five inches after the shift to agriculture¹. The Turkish foragers' stature is not yet equaled by their descendants. In virtually all known examples, foragers had better teeth and less disease than subsequent farming cultures at the same site. Thus the easy calories of agriculture were gained at the cost of good nutrition and health.

We think of hunter-gatherers as grimly weathering frequent famine, but agriculturists fare worse there, too. Foragers, with lower population densities, a much more diverse food supply, and greater mobility, can find some food in nearly any conditions. But even affluent farmers regularly experience famine. The great historian Fernand Braudel⁹ shows that even comparatively wealthy and cultured France suffered country-wide famines 10 times in the tenth century, 26 in the eleventh, 2 in the twelfth, 4 in the fourteenth, 7 in the fifteenth, 13 in the sixteenth, 11 in the seventeenth, and 16 in the eighteenth century. This does not include the countless local famines that occurred in addition to the widespread ones. Agriculture did not become a reliable source of food until fossil fuels gave us the massive energy subsidies needed to avoid shortfalls. When farming can no longer be subsidized by petrochemicals, famine will once again be a regular visitor.

Agriculture needs more and more fuel to supply the population growth it causes. Foragers can reap as many as 40 calories of food energy for every calorie they expend in gathering. They don't need to collect and spread fertilizer, irrigate, terrace, or drain fields, all of which count against the energy gotten from food. But ever since crops were domesticated, the amount of energy needed to grow food has steadily increased. A simple iron plow requires that millions of calories be burned for digging, moving, and smelting ore. Before oil, one plow's forging meant that a dozen trees or more were cut, hauled,

and converted to charcoal for the smithy. Though the leverage that a plow yields over its life may earn back those calories as human food, all that energy is robbed from the ecosystem and spent by humans.

Farming before oil also depended on animal labor, demanding additional acreage for feed and pasture and compounding the conversion of ecosystem into people. Agriculture's caloric yield dipped into the negative centuries ago, and the return on energy has continued to degrade until we now use an average of 4 to 10 calories for each calorie of food energy.

So agriculture doesn't just require cropland. It needs inputs from vast additional acreages for fertilizer, animal feed, fuel and ore for smelting tools, and so on. Farming must always drain energy and diversity from the land surrounding cultivation, degrading more and more wilderness.

Wilderness is a nuisance for agriculturists, a source of pest animals and insects, as well as land that's just "going to waste." It will constantly be destroyed. Combine this with farming's surplus of calories and its need for large families for labor, and the birth rate will rise geometrically. Under this brutal calculus of population growth and land hunger, Earth's ecosystems will increasingly and inexorably be converted into human food and food-producing tools.

Forager cultures have a built-in check on population, since the plants and animals they depend on cannot be over-harvested without immediate harm. But agriculture has no similar structural constraint on over-exploitation of resources. Quite the opposite is true. If one farmer leaves land fallow, the first neighbor to farm it gains an advantage. Agriculture leads to both a food race and population explosion. (I cannot help but wonder if eating high on the food chain via meat, since it will reduce population, is ultimately a more responsible act than eating low on the food chain with grains, which will promote larger populations. At some point humans need to get the message to slow their breeding.)

We can pass laws to stop some of the harm agriculture does, but these rules will reduce harvests. As soon as food gets tight, the laws will be repealed. There are no structural constraints on agriculture's ecologically damaging tendencies.

All this means that agriculture is fundamentally unsustainable.

The damage done by agriculture is social and political as well. A surplus, rare and ephemeral for foragers, is a principal goal of agriculture. A surplus must be stored, which requires technology and materials to build storage, people to guard it, and a hierarchical organization to centralize the storage and decide how it will be distributed. It also offers a target for local power struggles and theft by neighboring groups, increasing the scale of wars. With agriculture, power thus begins its concentration into fewer and fewer hands. He who controls the surplus controls the group. Personal freedom erodes naturally under agriculture.

The endpoint of Cohen's cultural continuum is industrial society. Industrialism is really a gloss on agriculture, since industry is dependent on farming to provide low-cost raw materials that can be "value-added," a place to externalize pollution and other costs,

and a source of cheap labor. Industrial cultures have enormous ecological footprints, low birth rates, and high labor costs, the result of lavishing huge quantities of resources – education, complex infrastructure, layers of government and legal structures, and so on – upon each person. This level of complexity cannot be maintained from within itself. The energy and resources for it must be siphoned from outlying agricultural regions. Out there lie the simpler cultures, high birth rates, and resulting low labor costs that must subsidize the complexity of industry.

An industrial culture must also externalize costs upon rural places via pollution and export of wastes. Cities ship their waste to rural areas. Industrial cultures subsidize and back tyrannical regimes to keep resource prices and labor costs low. These tendencies explain why, now that the US has shifted from an agrarian base to an industrial one, Americans can no longer afford to consume products made at home and must turn to agrarian countries, such as China and Mexico, or despotic regimes, such as Saudi Arabia's, for low-cost inputs. The Third World is where the First World externalizes the overwhelming burden of maintaining the complexity of industrialism. But at some point there will be no place left to externalize to.

Horticulture to the Rescue

As I mentioned, Cohen locates another form of culture between foraging and agriculture. These are the horticulturists, who use simple methods to raise useful plants and animals. Horticulture in this sense is difficult to define precisely, because most foragers tend plants to some degree, most horticulturists gather wild food, and at some point between digging stick and plow a people must be called agriculturists. Many anthropologists agree that horticulture usually involves a fallow period, while agriculture overcomes this need through crop rotation, external fertilizers, or other techniques. Agriculture is also on a larger scale. Simply put, horticulturists are gardeners rather than farmers.

Horticulturists rarely organize above the tribe or small village level. Although they are sometimes influenced by the monotheism, sky gods, and messianic messages of their agricultural neighbors, horticulturists usually retain a belief in earth spirits and regard the Earth as a living being. Most horticultural societies are far more egalitarian than agriculturists, lacking despots, armies, and centralized control hierarchies.

Horticulture is the most efficient method known for obtaining food, measured by return on energy invested. Agriculture can be thought of as an intensification of horticulture, using more labor, land, capital, and technology. This means that agriculture, as noted, usually consumes more calories of work and resources than can be produced in food, and so is on the wrong side of the point of diminishing returns. That's a good definition of unsustainability, while horticulture is probably on the positive side of the curve. Godesky¹⁰ believes this is how horticulture can be distinguished from agriculture. It may take several millennia, as we are learning, but agriculture will eventually deplete planetary ecosystems, and horticulture might not.

Horticulturists use polycultures, tree crops, perennials, and limited tillage, and have an intimate relationship with diverse species of plants and animals. This sounds like permaculture, doesn't it? Permaculture, in its promotion of horticultural ideals over those of agriculture, may offer a road back to sustainability. Horticulture has structural constraints against large population, hoarding of surplus, and centralized command and control structures. Agriculture inevitably leads to all of those.

A Steep Price

We gave up inherently good health as well as immense personal freedoms when we embraced agriculture. I once thought of achievements such as the Hammurabic Code, Magna Carta, and Bill of Rights as mileposts on humanity's road to a just and free society. But I'm beginning to view them as ever larger and more desperate dams to hold back the swelling tide of abuses of human rights and the centralization of power that are inherent in agricultural and industrial societies. Agriculture results, always, in concentration of power by the elite. That is the inevitable result of the large storable surplus that is at the heart of agriculture.

It is no accident that permaculture's third ethic wrestles with the problem of surplus. Many permaculturists have come to understand that Mollison's simple injunction to share the surplus barely scratches the surface of the difficulty. This is why his early formulation has often been modified into a slightly less problematic "return the surplus" or "reinvest the surplus," but the fact that these versions have not yet stabilized into a commonly held phrasing as have the other two ethics, "Care for the Earth" and "Care for People," tells me that permaculturists have not truly come to grips with the problem of surplus.

The issue may not be to figure out how to deal with surplus. We may need to create a culture in which surplus, and the fear and greed that make it desirable, are no longer the structural results of our cultural practices. Jared Diamond may be right, and agriculture and the abuses it fosters may turn out to be a ten-millennium-long misstep on the path to a mature humanity. Permaculture may be more than just a tool for sustainability. The horticultural way of life that it embraces may offer the road to human freedom, health, and a just society.

Acknowledgement

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Chapter 15

Permaculture: Your Way To Sustainable Living *

Geoff Lawton

Permaculture is a design science that applies design to the way humanity needs to supply itself with its requirement to live sustainably and in a way that actually enhances the environment. So, the principles of permaculture turn the footprint of humanity into the most beneficial footprint on earth rather than the most damaging footprint. *And that's how nature works.*

Permaculture's principles come from nature itself. So the principles of natural systems and ecosystems are the teachers of the principles of permaculture and in nature. There's a continuous sort of balance in life, and all our traditional and symbols of heritage, symbolise balance.

So, we can be very certain that as presently damaging as we are, we can be equally beneficial. So the damaging part is that we are in the consequence of trying to create a civilised world, which we appear to be actually destroying. In other words, civilisation appears to be the most damaging thing, the most resource depleting and the most pollutant, consequential activity. True civilisation would be something that created abundance and a fair, equal, safe and positive future. So permaculture is very much based in positivism and oriented around solutions. It deals very much with the connectivity between all the disciplines that we require to understand so that we can create that potentially very important world that we know is possible.

Permaculture creates positive economies, positive social systems and very well designed human habitats of not just architecture but villages and towns and human settlements. As well as the way we provide our food and our clean water and endlessly diversifying and enriching environment.

Disciplines of Permaculture

Permaculture is a system that is co-operative – the co-operation of elements. We harmonise with natural systems, and we use those as our guide to actually laying down the framework for how we should assemble the relevant knowledge of humanity in a useful,

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useable form. It's like creating a wardrobe where all the knowledge that's required for a sustainable world can be assembled in a very easily used way. And that deals with very much with co-operative principles and beneficial connections. So permaculture is very much about connecting disciplines together, it's a system that is based in connectivity really. It's more about the connections, than it is the disciplines themselves of knowledge.

I'm very interested in how meaningful action changes your sense of time. Time quality is something that is of immeasurable value and most of us today have a lack of available time, our time is poor in quality and it lacks density. Our time is diluted and very low in quality, whereas I'd rather experience a life of very high-density time and very high quality. And I think most people would, they just need to come to terms with that and take a bit of a brave action to make a commitment. And I think that most people would rather have a positive future to look forward to and for the children of future generations.

If people are creating more co-operative and tolerant communities, they are probably doing the right thing. If resources keep gathering around you, you're probably doing the right thing. If a lot of those resources are people who are also involved in a good intention of creating a sustainable world, you're probably doing the right thing. If people are more content with less in the form of conventional financial systems and are more interested in clean air, clean water, clean food, sensible houses, warmth and friendship and community, they're probably doing the right thing.

Most of these communities are themed around sustainability and therefore, they have to have that as their intention. Some communities glue together with other systems like beliefs, belief systems, or religions of particular practises but really, I think all the good ones are coming together around the intention for a sustainable future. Permaculture can do that for you in the form of a local community group.

We haven't really gotten the beautiful tapestry of community that we once had. In fact, we don't even have the fabric that the tapestry was once woven onto. You can't weave a tapestry until you have the fabric and you need to have a reweaving of the fabric of community and that means co-operation, tolerance and a shared intention that you would like to see some sort of sustainable future.

Local Poly-cultural Action

Local poly-cultural action is an identification of the resources of your bio-region and the needs to create the livings of primary production, the processing of primary production, services and the arts. Those are the four main livings that we engage in.

How and what we produce from the land identifies our bio-region; and that's never been more potentially diverse than it is now. Our gardens and our landscapes are potentially eight hundred times more diverse than they were in the Middle Ages.

Those primary productive produced elements are processed and evaluated many times over. With one product alone, it can be processed more than once and then how people service each other's needs in the local community and then of course we always need the

arts because the arts are a great way of transferring the sciences. Science and art is really one thing. Art is the science of survival and science is the art of survival and before we got sort of confused with the present academic system that was how we transferred knowledge in a very anchoring way.

Ancient tribal cultures express themselves in all the arts through storytelling, song, poetry, paintings, artwork, dance, or theatre. It's the transfer of knowledge through anchoring information with enjoyable emotions. It really is a link of knowledge and we've all experienced it. For example, most of our nursery rhymes have hidden messages.

A lot of it is really just the methodology, not the actual messages. Permaculture has changed and enriched the lives of those around the world because people have been incredibly stimulated and excited by permaculture. People say it's infectious, and the most exciting thing they have ever engaged in. You take a good permaculture design certificate course and you end up with a heavily infected dose of permaculture and you leave so infected that you infect other people, and so it ripples out.

Through permaculture, people recognise that life has a meaning and they can see the rational; they can legitimise and rationalise why it makes absolute common sense. Then, fear starts to dissipate and drop away and as you make more and more commitments you have less and less fear of all the things you should be doing and what you could be doing because you realise what it is that you can do.

Then, people start to function more efficiently because they realise what it is they can do.

The big difference between permaculture and a lot of the other systems that elaborate principles continuously is that permaculture specialises in directives to act. So it converts principles into directives to act.

Permaculture actually examines the ecology and the environment, emulates those principles and then says this is the way you interact with it and you improve the environment and nature. It is active and interactive; it's an evolution in human thinking.

People all over the world have emulated and interacted with each other through permaculture. At the moment, we're having, a big fundraiser for Chile because we have a Permaculture Research Institute in Chile where they have just had the earthquake. In fact, just a few days before the earthquake I was teaching with Skype, and just a few days later the earthquake hit them. They went into action to help the government and the people of Chile to recover and develop and rebuild in a more sustainable way. There's also big action coming in from Turkey, where our PRI Turkey is really taking off. I'm getting more and more Turkish students coming over and then going back to train their own people. We're also working in Haiti and Canada. So they're using permaculture in a sustainable action.

Permaculture is very much an endemic Australian system and it's probably our most beneficial export because it's potentially going to cushion the industrial juggernaut that seems as if it's almost impossible to actually stop, but at least we can cushion the impact of an eminent crash.

The Eminent Crash

You may be wondering what the eminent crash is. Well it's quite obvious that we are actually running out of resources en masse, but we are particularly running out of the liquid fuels and the fossil fuels. There's also an obvious food shortage because the world's not produced any more food since 2000. The amount of food produced globally, increased yearly up until the year 2000 and then it hit a peak. Population didn't slow down, so there's less food all the time for more people and that's why you are getting more and more interest everywhere in the world for community gardens and local food security. That's happening everywhere in Australia and around the first and third world.

People are realising they are going to have to bring food production back into population, and into urban and perimeter urban situations. We have a serious water crisis because there is very little pure water left and most water is polluted. We've also got a climate that's going into crisis not just warming, but it's actually spiking in all directions. It's losing its moderating elements because there's more and more of the environment being taken down. More and more forests are coming down, which affects our ecosystem, and ecosystems are full of life and life is full of energy. This is the stored energy of the sun. Forests are the most efficient absorbers of the sun's energy. If you don't have the absorbing mechanism it goes into the climate and we get an incredibly erratic climate. All of this is affecting our soil erosion that in turn affects our food supply.

There is also a fossil fuel crisis, which is creating a financial crisis. We know that if the price of oil spikes to a certain level, the global economy collapses. These are all huge clusters of crisis. So, sooner or later an accumulation of crises like these has to cause a dramatic effect. It would be better if we could design our way out of this rather than try and struggle out of some kind of horrible collapse of civilisation.

Permaculture and Farmers

Farmers are in absolute strife at the moment and it's getting worse. There are less and less people on the land all the time and there are more and more people in factories. The average young person sits in front of a screen for forty to sixty hours a week. Farmers also do this and they don't look at the soil anymore or the sky so much and gauge the life in their systems. Rather, they read weather systems on a computer; they read the instructions on a machine and the instructions on the packets of chemicals and genetically engineered seed.

Most of their knowledge is coming from outside rather than from inside, so that their farms become eco-systemic systems, rather than monocultural, factory, industrial systems. As Rudolph Steiner said in the nineteen twenties in the famous lectures, "The farm needs to be an eco-system to itself." Until your farm is actually creating soil, as well as surplus produce, it will never be sustainable. It's a very simple gauge. You cannot be destroying the soil and producing surplus produce for the economy for very long. Farmers need to keep

a keen eye on their quality and quantity of soil, and to do that you have to have an eco-systemic system.

Some of the modern systems of soil biology stimulus are a good silver bullet to get you back on track. We use those a lot. They've been very popular. And then there are things like the oxygenated compost tea systems, where we're breeding soil organisms en masse and with very rapid, highly oxygenated liquids so that we can bring the soil life back in a very short amount of time. But they are not designed by themselves; you have to then have a good design to follow it up. So, we can give you a fast recovery system and then you need to be able to design an ecology-supported farm.

Some farmers are choosing to change and some are just simply leaving the farm. The last Landcare Conference I spoke for was attended by only five percent of farmers. This was after seventy four percent of farmers said they would like to know more on how to sustainably manage land.

The Landcare conference organizers are outside contractors, and not connected directly to land. However, I am connected to the land and I do live streaming where you can see me. This is how my students talk to me around the world now. They actually take the laptop out into the garden and say, "Is this cover crop thick enough? What do you think of the design of this solar system? What do you think this? Do you think this compost toilet system is going to work? They actually show it to me live stream or they put it up on YouTube.

A lot of our systems have been very successful where people are in great need, in aid areas but also in the first world. So, the Landcare conference organizers found us and said, "Well, you seem to be getting a result, would you be prepared to talk to the Landcare conference and explain how you're coming up with successful systems?"

Many people should be asking the question: What area of land would we need to supply the world with the same nutrition that it presently requires, using permaculture principles?

Realise that I didn't say food, instead I said nutrition. There is a big difference between food and nutrition because our present food lacks nutritional density. For example, our wheat is one- twelfth the nutrition of the original wheat but sixteen times more productive over the area. We eat enormous amounts of food for very small amounts of nutrition, which kind of wears our bodies out.

So, to answer that question ... it's about two to three percent of the present area that we use with industrial agriculture – two percent in equivalent area. So in other words, urban and perimeter urban agriculture with some rangeland and community forestry, would supply all of our needs. Most of the agricultural land could just go back to wilderness. Agriculture in its present form would probably be illegal – any land practice that degrades the environment and causes soil erosion would be illegal.

The only things that create soil en masse are eco-system processes. You can create a lot of soil in a concentrated area with lots of organic matter, mulches and compost – on the waste products of humanity – but you can't do it over a large area. So all the large area

farms that aren't producing soil will have to become illegal. Most people wouldn't have a clue about that. They wouldn't even realize that's the case. They'd probably find that a very contentious statement. But I am afraid it's true.

What Can You Do Now?

The message of permaculture is also very important for children to hear. Children really look forward to a positive message. They get told too much bad news. Older people as well take on the message very easily because they look back over their life and they say, "We could have done this; this could have been worthwhile." It's the middle-aged people that are the really hard ones to get this message to because they just haven't got time to listen.

So, since the children are the ones that we can work with the most readily and easily, we must work with the schools to get the message out through books. If you look on our website and the books for sale, one of the great books is called "Outdoor classrooms". The author, Janet Millington, is one of my students and a permaculture teacher. Students of mine have become teachers who have created students, who've become teachers, who've created students, who've become teachers and so on. We've got a self-breeding system, where we breed our own teachers. On the Sunshine Coast, on one of the permaculture teacher's one-day courses, they had over eighty teachers from eighty different schools turn up.

Teachers actually find that when you teach kids this and you get a bit of a system going outside, it can become a land-based system. You can find that the kids that are more connected to the soil, or the ones that you thought had Attention Deficiency Disorder actually didn't have it. They just needed to be grounded with a few natural processes, and eat a bit of raw food that's nice and healthy and enzyme rich. All of the lessons of the classroom are outside as well as inside and those kids' behaviour moderates quite dramatically. Teachers rather like that; it makes their job easier.

There have been reports written into the education department about this and I can see a future where permaculture will be in all schools and almost in all lessons. There aren't any lessons taught in schools that couldn't include permaculture as part of the lesson, in every subject.

It would be useful for anybody to take an 'Introduction to Permaculture' course or if they are really serious, or take a permaculture design certificate course so they can just start looking at the basic ethics. All traditional cultures base themselves in ethics and permaculture is a movement that begins with an ethic. The ethics are quite simple and they are synthesized down to three but they come from about fourteen to eighteen traditional ethics that have been used around the world. They are: Care for the earth and all it's living and non-living systems, care of people and supplying the needs of people in a sustainable way and a fair share and return of surplus to earth-care and people-care.

You can see that ethics govern the way we behave and the way we design systems. They give you a direction to act. So, get a bit of information, start to contact local groups and local people, share knowledge with them, and see what you can do to lessen your footprint.

Part Five

SUSTAINABLE ECONOMY

Chapter 16

The Flaw of Western Economies^{*}

Marcin Gerwin

Let's imagine a green and responsible consumer. Let's call him George. George lives in a sleepy town, near the center and the park where he often goes for a walk with his dog. George built his house with his friends two years ago. It is a very small house, only 320 square feet and it was made with cob – clay mixed with straw and aggregate. The clay for construction was extracted from George's land behind the house – now you can see a nice pond there with water lilies. George was fortunate enough to find some recycled timber for the roof from the old garage that his neighbors were demolishing. He considered making a turf roof with wild flowers and herbs, but eventually he decided that a slate roof will be more practical because he will be able to collect rainwater from it and use it for watering his garden during warm summer days.

George buys his food at a local farmers' market. All food that is sold there is organic and comes from farms within a 50 mile radius and George is happy to know that very little fuel is used to transport the food he purchases. Furthermore, he buys only raw, unpackaged food, which he brings home in his own bag. He doesn't eat meat or fish. He knows that it takes a lot of land to feed the animals, and "after all" he tells his mom smiling "a cow is a human being too". He drinks milk, however, and enjoys scrambled eggs on a Sunday morning. Well, not exactly all his food comes from the market. He buys bread and rolls in the nearby bakery. He tried baking bread on his own, but eventually he concluded that it takes too much energy to bake a single loaf of bread for him alone and that it would be more energy-efficient to buy it from the bakery. Nevertheless, it was his New Year's resolution to buy local produce only. George is concerned about the amount of fuel that is used for transporting food and he decided to go radical on this one. It was tough at the beginning as he likes to drink tea and coffee, and he loves bananas. He substituted regular coffee with a barley and rye "coffee" and instead of tea he drinks mint or chamomile infusions. Unfortunately, bananas are gone from his table for good, but he discovered new vegetables such as yacon and salsify, so he doesn't miss them that much.

George doesn't have a car. He goes to work on a bicycle and if it's too far for a bicycle he takes a bus or a train. Even when he is going abroad, which was three times in his life,

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he prefers to take a train rather than an airplane. His electric energy consumption is very low. In his home he installed a solar PV module for 140 Watts and batteries. That's not much, but sufficient to power 3 lamps, a radio and a small fridge. George doesn't have a TV, dishwasher or a computer. Some of his friends say that his lifestyle is a bit primitive, but he doesn't mind.

George has many books on his shelves, but when he discovered that many of them were available in a public library he stopped buying them. Once a month he buys his favorite magazine, but recently he even began reading newspapers in the library. His house contains very little furniture, just a simple, wooden table with chairs and a wardrobe. His sleeping mattress is laid directly on the clay floor. Inside his wardrobe there are only a few worn out shirts and new pair of trousers he got for Christmas. George has only two pairs of shoes and some rubber boots for working in a garden.

George doesn't have a bath tub, only a shower. He has a smart shower head that reduces the usage of water by almost 60%. But George is most proud of his compost toilet that he designed himself. It fits nicely in the corner of his bathroom and is not smelly at all! The compost is used to fertilize a small elephant grass plantation that he shares with his friends. The elephant grass is cut every year and is used to heat their homes in winter.

George works in a small shop that makes artisan cheese. They make cheddar, gouda and valdeon cheese wrapped in Sycamore leaves. All their produce is sold in two local shops. George doesn't earn a lot of money, but it is enough for his modest needs. He pays his medical and dental care insurance and he can easily afford going to the movies every Saturday. He meets with his friends after work (he works only 6 hours a day), they play guitar and sing. He goes hiking in the summer and rides a bicycle along the river. George lives a happy and stress-free life.

What if we all lived like George?

Now, let's take this a step further. Let's imagine that all people in North America, Europe and Japan decided to reduce their levels of consumption and consume only as much as George. What happens?

The massive destruction of the Amazon rainforest stopped. The market for soya and timber shrunk so much that it was no longer profitable to cut down vast areas of the forest. The existing soya farms were forced to compete for the remaining customers in China and India. In Canada and Scandinavia the number of trees cut down within a year has decreased significantly. In Democratic Republic of Congo, however, the rainforest is still cut down to make way for roads to mines sponsored by China which had no intention of abandoning its consumer lifestyle. Nevertheless, in many parts of the world the pressure on the natural forest was reduced enough to remove some birds and mammals from the red list of endangered species.

Positive change was quickly noted in the oceans. The population of fish species started to grow. Cod numbers increased in Baltic Sea and at the coasts of Canada. Also, with

adoption of organic farming methods, water in the rivers became less polluted and more fish were able to live there. Life even came back to the Louisiana coast where agricultural runoff borne by the Mississippi River had created a 7000 square-mile dead zone in the Gulf of Mexico.

The levels of air pollution in the cities has changed so much that the air is almost as clean as in the countryside. The level of carbon dioxide has decreased for the first time since the 19th century and scientist began to be more optimistic about human impact on climate change. Oil consumption was reduced so much that one barrel costs only 18 USD.

Now let's go back to George. How is he? George lost his job. The artisan cheese turned out to be too expensive for the new consumers and his boss decided to cut personnel. Everyday George cues in a long line waiting for warm soup and 2 slices of bread distributed by the government aid agency. He sold his bike, guitar and solar panels to buy food. He eats the soup and shares the bread with his dog. George's friends lost their jobs too. His parents don't have a job, his aunt lost her job. Actually almost everyone that George knows lost their jobs. He meets them all waiting in the long, long line to get warm soup.

How did it happen? People stopped buying cars and decided to use public transport, so within one year all car factories were closed. Hundreds of thousands of workers were fired in Europe, USA and Japan. All car repair shops, tire making companies, car washing facilities and almost all gas stations were closed. Bicycle making companies recorded record profits but they couldn't offer new jobs for the workers from the car factories, because they invested in new technologies and now all bicycle parts are made by machines.

Book publishers declared bankruptcy. With people reading books mostly in libraries they were not able to make enough profit. The quantity of books they were able to sell was too low. Along with publishers, bookstores were also forced to close their businesses. Ethical consumers understood that a million daily copies of a newspaper had a tremendous impact on forests. So, people quit buying them as well. As a consequence, journalists and editors lost their jobs. Printers lost their jobs. Producers of ink and printing equipment also lost their jobs. Producers of paper lost their jobs.

Hard times came for the construction industry. People are building small homes, which means that the producers of concrete, paints, windows, doors and roof tiles sell less products. With lower sales they were forced to cut down jobs. Millions of jobs for unqualified workers were no longer available.

The same happened in the clothes industry. Cotton farmers lost their jobs, factory workers in China, Bangladesh and India lost their jobs as well. Small farmers growing coffee, tea and cocoa in the tropics were shocked when the importers told them that they cannot afford to buy their produce. Millions of them lost their source of income.

The stock markets experienced a crisis that was never seen in their history. "The Great Depression Was a Joke" read the headlines. "Record Losses on Wall Street", "Another Bank Goes Down", "Sustainability is Killing Us". But that was only in the first few weeks. Later on the newspapers went bankrupt. The repercussions were felt around the whole world. From

Brazil and Argentina to Saudi Arabia and Sri Lanka. The credit crunch was now a pleasant memory of the past – a ‘crisis’ the bankers only wished to experience.

At a government level the situation was equally dramatic. The national budget’s revenue decreased by more than a half! There was not enough money for salaries for school teachers, for doctors, for nurses, for policemen, for the administration and for the army. Not only was construction of new roads stopped, but there was also not enough funds to maintain the existing roads.

At first workers went on strike and protested loudly in front of the president’s office. They burned tires and waved flags of their unions. But soon they understood. There was not enough money in the budget to pay them. The protests were in vain.

The heads of all EU countries, the president of USA and the prime minister of Japan appeared everyday on TV and in the radio. They begged their citizens to consume more. “Please” they said “please, you must go shopping or our countries will perish.”

The point is that the economic model of Western societies relies on consumption. Excessive consumption provides economic development, it provides jobs. The more people consume, the more jobs are created. When people consume less, jobs are lost. There is a famous quote from the retail analyst Victor Lebow who helped to create a vision for the economic reform in the US after World War II:

Our enormously productive economy (...) demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfaction, our ego satisfaction, in consumption (...) we need things consumed, burned up, replaced and discarded at an ever-accelerating rate.

Think about disposable Gillette razors. Would it be such a good business if you could sharpen the blade once a while, rather than buy the whole new product over and over again?

I’m not saying that we shouldn’t reduce our levels on consumption. We must. The natural resources on our planet are used at an unsustainable rate. Too many forests are cut down, too many fish caught, too many soils are degraded, too many species are endangered with extinction – and too many people are appearing on our planet every year. My point is that if we wish to provide a livelihood for every person on this planet, it won’t be enough to promote sustainable levels of consumption. Our current economic model was designed for excessive consumption. Consumption is its engine. Honestly speaking, greed is its engine. If we wish to have a sustainable future we must change the whole economic model, culture and introduce true democratic political systems – or else we will be waiting with George for food handouts.

So, what can we do?

Certainly, it is completely unrealistic that all citizens change their consumption patterns at once in the way that George did. But with a predicted population of 9.2 billion people in 2050 we cannot expect that it will be possible for everyone to have a car, a two-

storey house in the suburbs and a large piece of meat for breakfast and lunch. Solutions like zero-waste production, recycling, renewable energy, water and energy efficiency, organic agriculture, preventive medicine and many others are the foundations of sustainability. But where will the jobs come from?

To answer this, let's look into a something different for a while. Have you ever wondered if there is a country where people enjoy a good life and they keep their consumption within the limits of their local environment? According to the „Happy Planet Index“, published by the New Economics Foundation, the no. 1 place like this is Vanuatu – an archipelago of islands on the western Pacific. What makes life so good there? People live in traditional communities with close social ties. They fish, and grow food in their gardens. Some of the food is also gathered from the wild. The land is fertile and a close spiritual contact with the land is a vital part of local culture. The life is slow-paced and people are content with what they have. Andrew Harding, a BBC reporter, came to the remote Pentecost Island to investigate their lives. “There is no hunger here, no unemployment, no tax, no police, no crime or conflict to speak of,” he says. “It may not be a paradise, but you can see why people here want to keep the outside world at arm's length.”

Norman Shackley, chair of the British Friends of Vanuatu and a former resident of the islands, recalls meeting a young man who had just returned to his home island after studying at Nottingham University. „I asked him what he was going to do with his life now” says Norman Shackley, “He just pointed at his fishing rod and said ‘this’. He could have been one of the top earners in Vanuatu if he wanted, but he was contented with his simple life and didn't want anything else.”

Happiness is not dependent on geography, however. We can live a happy life in Poland, USA, Japan or Ukraine. We can live a happy life – and one that doesn't destroy the natural environment that supports us. What we need for this are: good community relations, secure livelihoods and close contact with nature. As David Korten points out “We (all) want tasty nutritious food uncontaminated with toxins. We want healthy, happy children, loving families, and a caring community with a beautiful healthy natural environment. We want meaningful work, a living wage, and security in our old age.” Since we know all this then are our governments working hard to achieve this aim? No. They are working hard to increase the gross domestic product (GDP). And what that has got to do with anything? According to the International Monetary Fund Vanuatu is on their list of countries sorted by GDP – and is ranked at 170. That's below Zimbabwe....

Money is a practical thing. It can be used to facilitate exchange of goods. On the Vanuatu islands people use pig tusks for this purpose. There are even 14 banks storing pig tusks in their vaults. However, their livelihoods are not dependent on money. As Jean Pierre John from the Metoma island in the north of Vanuatu answered when asked what is the secret of their happiness: „Not having to worry about money.”

People tend to forget that money is not a real good. You cannot satisfy hunger eating a 100 USD bill or even a pound of coins. The true value is in the goods for which it can be exchanged: in vegetables, fruits, clothes, building materials, tools etc. We can have these

things without the use of money. We can grow food, gather wood in the forest, dig clay and make pots, weave fabrics and sow clothes. We can even make our own ketchup.

In traditional local economies people can be independent and self-sufficient. Their livelihoods are not dependent on distant stock exchange markets, on unaccountable governments, on the European Commission in Brussels (an undemocratically elected institution, superior to member countries, often imposing policies that do not have social approval). These local economies existed also in Europe, not that long ago. We can still create local economies where people will be able to live off the land with a very little or no need for money.

Let's go back to George. He has just finished eating his bean soup and now he is able to think more clearly. "Why wait for someone to give us job?" he says to his friend Lucy. "We will grow our own food!"

"Where?" asks Lucy. "In your backyard? There is not enough space. Maybe enough for basil and thyme, but forget maize or wheat."

"There is plenty of land near the river." George replies. "There are hundreds of acres of grasslands, I was riding there on my bicycle."

"Possibly, but do you have money to buy it?"

"We don't need to own it. We will use it and care for it. Come on Lucy," George gets up. "We need seeds and tools, and a wheelbarrow. Let's go and find some."

A year later the grasslands by the river were transformed into rich vegetable gardens and vast fields of wheat, barley, rye, maize and oats. George has a right to use 2 acres of land where he planted pumpkins, squash, eggplants, tomatoes, radishes, cucumbers, potatoes, lettuce, broad beans, sunflower, currants, strawberries as well as fruit trees and nuts. He hopes to have a small forest garden there too. The project that he started was not about owning the land, but about land stewardship. They were very fortunate that the grasslands belonged to the county, or, in other words, to them. So, George organized a meeting in the city hall where people of his community decided how to provide access to this land in a just way. They set up a composting co-operative and a seeds exchange network. To extend the growing season they needed materials to build the greenhouses, so they decided to sell an old warehouse that belonged to the county. The city mayor was hesitant at first about the new way of arranging things, but he checked the constitution and it was expressed clearly, that people govern the state either directly or by their representatives. "So now they are governing it directly," he concluded.

The food crisis in the city was over. People were able to satisfy their basic needs on their own and in autumn they were celebrating a bumper harvest. George still doesn't have enough money to buy the solar panels he had before, but he has got an olive oil lamp. With his friends he built an oil press and they don't need to worry about the lighting. George is also back in cheese manufacturing. He is back working in the shop part-time. People cannot afford to buy a lot of cheese, so the owner decided to accept vegetables and herbs in exchange for the cheddars they make. In winter they plan to launch a local currency to facilitate exchange of locally produced goods and services.

It may seem backward to suggest that people should farm instead of working in a space station. Nevertheless, in the world where resources are scarce and populations climb fast it is a time-tested solution (thousands of years of practice in all parts of the world) which will enable them to become economically independent and to have a meaningful life.

In the Western culture progress is defined as going from vinyl records to CDs, then to DVDs and finally to Blue-ray Discs. We used to have black and white TV-sets, now we've got High Definition television. That's called progress. People get used to new technologies so fast that they think about them as indispensable parts of their lives. Can you believe that people could actually live without the internet? But that was only 20 years ago! Life must have been so hard back then... Oh no! 20 years ago? There were no cell phones either! To get out of this technological race is considered backward. Or perhaps... this is progress?

When governments try to tackle unemployment they encourage new investments, construction of new factories and generally they do their best to maximize the growth of GDP. More roads, more cars, more consumer goods, more services. In the Western economy, to create new jobs you must increase consumption. New technologies must be constantly invented, fashion changed, cars replaced, office equipment broken down and new needs created. But if the consumption slows down, this will no longer be the option. People will be out of a job for good, with very little hope for change.

The global economy can be more green, use less water and use much less energy. There is no doubt about it, the technologies are ready to be implemented. However, if we consume less then for some people there will be no jobs within the global economic system. Yet, there are opportunities waiting for them in the locally self-sufficient economies.

To create sustainable local economies we should start with ethics. Bad values got us into this mess in the first place. It is not a lack of technology that caused pollution of the rivers. Chevron Texaco used to dump 163 millions liters of toxic wastewater per day directly into the streams of the Ecuadorian Amazon. There was technology available to re-inject the wastewater deep underground. But they wanted to save 3 USD per barrel. Now the whole area of Lago Agrio is poisoned and people are suffering from contamination related diseases. It would have never happened if the values of corporate executives were those of caring for nature, helping one another and interconnectedness with the land.

The ethics for an environmentally-friendly lifestyle are simply exemplified in permaculture. They are: care of the earth, care of people and setting limits to consumption. Permaculture gives emphasis to working with nature, rather than against it, cooperation, caring for soil, water, plants and animals. Based upon these values we can use principles and techniques of permaculture to design gardens, villages or urban communities.

However, even the most appropriate ecological techniques will not do much help if we don't have the land to start with. Access to land can be provided by land trusts, by local communities directly or in other ways that people find practical. In the land stewardship project that George started the right to use the land was granted in exchange for the care for soil and environment. No pesticides usage was allowed, neither use of industrial farming

systems. His community is like the administrator of the land rather than the owner. It grants its members the right to use a certain piece of land, on the condition that it will not become eroded or poisoned. The right to use this land can be passed to the next generation, but if the farmer degrades the land, he or she can lose the right to use it.

In Madagascar the government introduced an innovative program of reforestation where a community that plants trees and cares for them for 3 years can become the owner of reforested land. In Madagascar there are hundreds of thousands of hectares of abandoned lands which can be restored and used by the growing population. The restored lands can be used as a sustainable source of food, fuelwood and timber. Even the most severely degraded lands can be restored, as Geoff Lawton proved by establishing a garden in a desert in Jordan.

Then, if we really think about creating sustainable livelihoods for all people on our planet, not just for our closest relatives or people who happen to live within the borders of the same country, we should allow migration to the places where the land is available. There are countries which are already overpopulated to the extent that they can no longer feed themselves and must rely on imported food. A prime example of this is Japan, which now imports 70 percent of its grain. There are also countries where land is unequally distributed. In Paraguay, for example, 1 percent of the population owns around 70 percent of the agricultural land. In this case farmlands should be re-allocated, in a democratic way.

Our political systems need some improvements as well. True democracy means that people can make decisions regarding their own lives. However, in most cases decisions are made by people's representatives and too often they don't keep their promises, lack skills, vision, they represent interests of their parties or business elites rather than the people and they are not accountable. We can organize the political system in a different way. It all starts on the local level, in the municipality. Citizens meet to discuss the daily issues affecting their lives and take decision regarding the budget, local taxation, land use permits etc. The mayor and local administration are employed to put their decisions into practice. In other words, people are like stakeholders of a company and the mayor is like a CEO. When the CEO of a private company doesn't perform his duties well, he gets fired. In the same way citizens should be able to change the mayor or any other member of local administration. It is the citizens who pay their salaries. Administration must be accountable! Their job is to serve people, not the other way around.

One of the pioneers of the modern participatory democracy is the city of Porto Alegre in Brazil. Since 1989 the citizenry hold meetings where they decide on the priorities that decide how the public money is spent. Gianpaolo Baiocchi writes: "Citizens took over many functions usually reserved for bureaucrats: setting city-wide spending priorities, planning investments, and reviewing payrolls, not to mention setting the rules for the participatory budgeting process itself and monitoring its outcomes. Because since the 1990s Brazilian cities have assumed responsibility for most social-service provision and infrastructure

investments, citizens are able to exert significant control over transportation, education, public health, and public works.” Among the benefits of direct participation in decision making are improved community ties and stronger involvement in the city life. Citizens are often able to choose projects to be funded better than officials as they know what they need, be it sanitation, water supply or a new housing. Research shows that participatory budgeting leads to lower poverty rates and improved education. And above all – community empowerment.

Don't you think it's a little odd that people cannot decide on what their tax money is spent on? The concept of taxation in democratic countries is to collect money that will be used to improve the quality of life of the communities. Yet, taxpayers have almost no say in the allocation of their money. True, they can choose the representative who will spend the money for them, and, if he or she turns out to be irresponsible, they can wait 4 years for another election and choose someone different. Well, it doesn't seem very effective. Imagine a company where a manager must wait 4 years to dismiss an employee. It's even worse – the manager must pay salary and benefits for all these years and do what his employee tells him to do. Isn't it strange?

Consequently, people at the local level should be able to decide on nationwide issues. Why not? They meet, discuss, consult with experts, then vote in their own municipalities. Then votes in the whole country are counted and a decision is made. It's called democracy.

The Transition initiatives that are spreading across the UK and other parts of the world is democracy in action. Participatory democracy doesn't need a special law to be enforced. Formal regulations may be useful, but they are not obligatory. All it takes is that the mayor of the city accepts the recommendations decided upon by the local community. And when the mayor doesn't want to listen? Then the local community can dismiss him or her and choose somebody else. The important benefit of the Transition initiatives is that thanks to regular meetings they provide a rich social life and stronger social ties. People living in one city can get to know each other better and work together in many ways.

Our current global economy was not designed to enhance community life. Its aim is to maximize profits. It depends on excessive consumption to provide jobs. We can make it greener, we can improve resource efficiency, energy efficiency, water productivity, we can recycle materials, use biodegradable plastics etc. But still, we need the consumer lifestyle to power it. Yet, the consumer lifestyle is not the way of the human being.... We don't need all that stuff to be happy. Life can be simple, fun and meaningful with less gadgets, less cars, less stuff. To achieve that we need to create locally self-sufficient economies and to renew democracy.

Chapter 17

Going Local *

Helena Norberg-Hodge

Today, the planet is on fire with global warming, toxic pollution and species extinction, with fundamentalism, terrorism and fear. The dominant media tell us that WE are to blame: our greed is the cause, and we as individuals must change our consumer habits. However, if we try to deal with these crises individually, we won't get very far. We need to stand back and look at the bigger picture. It then becomes obvious that the driving force behind our crises is a corporate-led globalization. Despite the apparent enormity of making changes to our economic system, isolating this root cause can be very empowering. Rather than confront an overwhelming list of seemingly isolated symptoms, we can begin to discern the disease itself. In so doing it also becomes apparent that joining hands with others is a key to reversing environmental and social breakdown.

The most powerful solutions involve a fundamental change in direction – towards localizing rather than globalising economic activity. In fact, „going local” may be the single most effective thing we can do. Localisation is essentially a process of de-centralisation – shifting economic activity back into the hands of local businesses instead of concentrating it in fewer and fewer mega-corporations. Food is a clear example of the multi-layered benefits of localisation.

Since food is something everyone, everywhere, needs every day, a shift from global food to local food would have a great and immediate impact, socially, economically and environmentally. Local food is, simply, food produced for local and regional consumption. For that reason, ‘food miles’ are relatively small, which greatly reduces fossil fuel use and pollution. There are other environmental benefits as well. While global markets demand monocultural production – which systematically eliminates all but the cash crop from the land – local markets give farmers an incentive to diversify, which creates many niches on the farm for wild plant and animal species. Moreover, diversified farms cannot accommodate the heavy machinery used in monocultures, thereby eliminating a major cause of soil erosion. Diversification also lends itself better to organic methods, since crops are far less susceptible to pest infestations.

Local food systems have economic benefits, too, since most of the money spent on food goes to the farmer, not corporate middlemen. Small diversified farms can help

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reinvigorate entire rural economies, since they employ far more people per acre than large monocultures. Wages paid to farm workers benefit local economies and communities far more than money paid for heavy equipment and the fuel to run it: the latter is almost immediately siphoned off to equipment manufacturers and oil companies, while wages paid to workers are spent locally.

Local food is usually far fresher – and therefore more nutritious – than global food. It also needs fewer preservatives or other additives. Farmers can grow varieties that are best suited to local climate and soils, allowing flavour and nutrition to take precedence over transportability, shelf life and the whims of global markets. Animal husbandry can be integrated with crop production, providing healthier, more humane conditions for animals and a non-chemical source of fertility.

Food security worldwide would increase if people depended more on local foods. Instead of being concentrated in a handful of corporations, control over food would be dispersed and decentralised. If developing countries were encouraged to use their labour and their best agricultural land for local needs rather than growing luxury crops for Northern markets, the rate of endemic hunger could be eliminated.

Studies carried out all over the world show that small-scale, diversified farms have a higher total output per unit of land than large-scale monocultures. Global food is also very costly, though most of those costs do not show up in its supermarket price. Instead, a large portion of what we pay for global food comes out of our taxes – to fund research into pesticides and biotechnology, to subsidise the transport, communications and energy infrastructures the system requires, and to pay for the foreign aid that pulls Third World economies into the destructive global system. We pay in other ways for the environmental costs of global food and we will still be paying for generations to come.

When we buy local food, we can actually pay less because we are not paying for excessive transport, wasteful packaging, advertising, and chemical additives – only for fresh, healthy and nutritious food. Most of our food dollar isn't going to bloated corporate agribusinesses, but to nearby farmers and small shopkeepers, enabling them to charge less while still earning more than if they were tied to the global system.

The benefits of localisation are not limited to food, as we can see from the wide range of local initiatives and trends springing up around the world. Increasing numbers of doctors and patients are rejecting the commercialised medical mainstream in favour of more preventative and holistic approaches, often making use of local herbs and traditional methods. Many architects are finding inspiration in vernacular building styles, and are employing more local, natural materials in their work. Millions of farmers are switching to organic practices, and dietary preferences among consumers are shifting away from processed foods with artificial colourings, flavourings, and preservatives, towards fresher foods in their natural state.

Community-supported projects like local media outlets – radio, television, art and journals like this one – help reconnect people to each other and learn about their

surroundings. Small businesses provide meaningful employment and keep money circulating in the local economy. Spaces for people to gather and socialise help to revitalise community and a sense of belonging. In this age of escalating ecological crises, localisation is a key to reducing waste and pollution and conserving our precious resources.

Yet for these grassroots efforts to succeed, they need to be accompanied by policy changes at the national and international level. It is necessary to pressure governments into what I call a „Breakaway Strategy” forming an international alliance of nations to leave the WTO and formulate policies that would protect the environment and human rights. These policies would move society away from dependence on a few monopolies and promote small scale on a large scale, allowing space for more local economies to flourish and spread. Through localisation we open ourselves up to a world of richness and diversity. We can thus achieve true sustainability and well-being for ourselves, our communities and the planet.

Chapter 18

The Story of a New Economy *

David Korten

Some years ago the Filipino activist-philosopher Nicanor Perlas shared an insight with me that has since been a foundation of my work. Each of the three institutional sectors – business, government, and civil society – has its distinctive power competence. Business commands the power of money. Government commands the coercive power of the police and military. Civil society commands the power of authentic moral values communicated through authentic cultural stories. Moral authority ultimately trumps the power of money and guns. Therefore, civil society holds the ultimate power advantage.

This simple frame helped me see the extent to which the global citizen resistance against the corporate misuse of multilateral trade agreements was a contest between competing stories – one fabricated to serve the interests of Empire; the other an authentic story born of the experience and aspirations of ordinary people. According to the story fabricated and promoted by Wall Street’s PR machine:

The use of multilateral trade agreements to eliminate national borders as barriers to the free flow of trade and investment is bringing universal peace, prosperity, and democracy to all the world’s peoples and nations.

Wow, that sounds wonderful. But even in the early 1990’s it was becoming evident that the reality was quite different.

A group of some 50 citizen activist-leaders from around the world began meeting in 1994 to share their actual experience with these agreements. They found a consistent pattern of results wholly contrary to the corporate story, broke the silence, and spread the real story:

Multilateral trade agreements are freeing global corporations from restrictions on their ability to exploit workers, ignore community interests, circumvent democracy, pollute the environment, and expropriate the resources of poor countries, with devastating consequences for people, community, democracy, and nature.

Just as fabricated stories are an instrument of social control, authentic stories are an instrument of liberation. Although corporations controlled the money and the media,

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the civil society story trumped the corporate story, because it was true to what people were actually experiencing. The awakening of public consciousness changed the political context of corporate-sponsored multilateral trade negotiations and brought them to a near standstill.

A similar process is now playing out. The fabricated story that there is no alternative to the existing Wall Street system is being challenged by the New Economy story that it is possible to create a world of strong communities and living economies. People across the United States and the world are organizing to make the new story a reality in the places where they live.

The New Economy story that we humans are capable of creating a vibrant, peaceful, cooperative world bursting with life resonates deep within the soul of all but the deeply psychologically damaged. Once that connection is made between a possible human future and the soul's deepest yearning, the lies of Wall Street advertisers and propagandists are exposed and trance is broken. We are liberated to take responsibility for our future and get on with living the world of our shared human dream into being.

New Economy messages are spreading through countless conversations to challenge the false claims of the fabricated stories of the old economy culture that:

- It is our inherent human nature to be individualistic, materialistic, greedy, competitive, and violent.
- We live on an open frontier of endless resources that are free for the taking to grow the economy.
- Money is wealth, money defines the value of life, making money is our highest human calling, and everything related to money is best left to the market.
- Government is the problem and unregulated markets are the solution.

The truth is that:

- The human brain is wired to support creativity, cooperation, and life in community. That is our nature. The prevalence of materialism, greed, competition, and violence common in modern society is a symptom of severe cultural and institutional dysfunction.
- We humans inhabit a wondrous but finite living planet with a self-organizing biosphere to which we must adapt our lives and economies.
- Life, not money, is the true measure of value; money's only legitimate use is in life's service. An obsession with making money is a sign of psychological and social dysfunction.
- Markets are essential to the function of a healthy democratic society. Their proper function, however, depends on proper rules implemented by democratic governments under the watchful eye of a strong and dynamic civil society.

Story power is the ultimate power. Authentic stories liberate the human consciousness, build immunity to cultural manipulation, and give us the courage and insight to create a world of peace and prosperity for all.

Appendix 1

Rare Forests and Food Insecurity *

Martina Petrù

As the world's fourth largest island, located in the Indian Ocean just about 400 km from the eastern coast of Africa, it's not surprising that Madagascar is one of the most biologically diverse places on Earth. The island was largely forested until approximately 2000 years ago, when the first humans came from distant Borneo, and later from Eastern and Southern Africa, Arabia and Europe to settle here. Over the past two millennia, it's believed more than 90 percent of the forests¹ have been turned into fields and settlements. Today, with one of the world's fastest growing populations, the Malagasy people are now more than ever dependent on their fragile natural resources and biodiversity for survival².

The spiny forest is like no other forest on Earth and is among the last remaining extensive forests on Madagascar. Satellite images show that over the last 20 years the spiny forest is also the most threatened forest on Madagascar. Harboring plant endemism at the highest level on Madagascar- with 48 percent of the species and 95 percent of the genera unique to the southwest, the forest is a unique and vital community asset.

Ranobe: An Oasis in the Dry Territory

At the heart of this unique forest is the region named Ranobe. The name means 'big waters' in the Malagasy language, after the emergence of a series of shallow lakes, surfacing unexpectedly in a small pocket of this dry spiny forest. The lakes around Ranobe create a distinct micro-climate flourishing with unmatched heterogeneity of insects, plants, birds, amphibians and reptiles, within the 6.6 million hectare spiny forest. Preliminary findings of ancient pottery shards along with the bones of now extinct fauna in the fields surrounding these lakes indicate that people came here around the 9th century (and perhaps earlier) to cultivate the fertile alluvial soils.

In recent decades, the river that once flooded the low fields around the lakes has been dammed and as the climate becomes drier, rainy seasons have become shorter and less predictable, making agricultural cultivation increasingly difficult. Rather than their

* First published by Permaculture Research Institute of Australia (www.permaculture.org.au) in December 2010. Martina Petrù is a co-founder of Ho Avy which works for sustainable and participatory development in the south-west of Madagascar. She holds a Ph.D. in plant ecology from University of Tübingen, Germany.

traditional farming livelihoods³, locals are left with few choices other than to plunder this one-of-a-kind forest to feed their families and the ever growing charcoal demand in the provincial capital, Toliara.

The rate of deforestation and the absence of any alternative to charcoal seriously compromise the Ranobe forests, lakes, wildlife and way of life for almost no benefit to the people. Deforestation continues at an alarming rate in this arid region of Madagascar, widely impacting species survival and leading to significant biodiversity losses. At the same time, if what remains is able to be conserved, the Ranobe forest harbors unprecedented diversity and suggests a high potential for future species discoveries.

The Masikoro: Farmers of the Southwest

People who settled in the Ranobe region are predominantly Masikoro⁴, an ethnic group of inland cultivators and cattle herders, likely having roots back to East Africa, living on the outskirts of the forests.

Traditionally, the Masikoro cultivate rice (*vary*) on the shallow lake edges and surrounding fertile alluvial soils where water gets redirected by a system of manually dug channels to low pockets in the landscape. This results in a variety of interesting phenomena. One remarkable species that frequents the rice fields is weedy *Azolla spp.* *Azolla* is a small-leaf floating fern, which contains in its leaves a system of blue-green algae *Anabaena azollae* and a bacteria *Arthrobacter sp.* that fixes nitrogen, adding naturally organic fertilizer to the rice fields⁵.

On the banks of the Lake Ranobe, people have cultivated fruit plants for generations. Amongst these are bananas, papayas, guavas, citrus and mango trees, planted in narrow belts between the lake and the village. On the drier soils further from the lake shore where ground water levels are still high (1-2 m), they grow sugar cane (*fitsiki*). Historically, cotton has also been cultivated here.

Maize (*tsako*), manioc (*balahazo*), sweet potatoes (*bele*), several kinds of beans (*tsara maso*, *luijdi*, *cabaro*), squash (*taboara*), and melons (*voamanga*) are grown in mixed cultures on drier land where forest once stood. All crops are rain-fed and yields have underperformed under the recent drought conditions. During these times, when food production isn't enough for survival, people respond with further slashing and burning forest areas to produce charcoal, sell it, and buy food and crop seeds to cultivate the burned land. However it never works out in their favor or the favor of the forest.

The Masikoro keep animals including cattle (local zebu), goats, pigs, chicken, ducks and turkeys. They also fish in the lake and opportunistically hunt for wild pigs, birds and mouse lemurs in the forest. They go to the forest to collect honey from wild bee hives in the crown of the majestic baobab trees, along with medicinal plants, edible fruits (e.g. *lamoty*, *ampeny*, *hazomafio*), seeds (baobab, andramahy), and very tasty wild yams (*Dioscorea spp.*), known as *babo* and *balo*.

Ho Avy: An organization designed for Ranobe

Intrigued by spiraling poverty and environmental degradation, our organization, Ho Avy (meaning: ‘The Future or What’s to come’ in the Malagasy language), began scouting the forest and meeting the people in Ranobe since 2007.

Our mission was clear: to safeguard biodiversity and enhance local livelihoods through the grassroots empowerment of communities and more sustainable use of available resources. Recognizing the opportunities for locally suitable improvements in the traditional farming methods and connecting current practices to more integrated techniques, Ho Avy has begun to harness the tremendous potential of this bright and sometimes described as ‘photo shopped’ region, developing our base into the landscape and setting up amongst many things, a diverse permaculture demonstration site.

We aim to diversify and improve food abundance and access to clean drinking water (the latter a tremendous confidence building opportunity with the majority of the inhabitants of Ranobe). Beginning step by step, Ho Avy has introduced to Ranobe a system of rice intensification SRI ⁶, which originated in Madagascar in the early 1980s and has since demonstrated increased yields (50-100 percent), healthier soil and plants supported by greater root growth and the nurturing of soil microbial abundance and diversity, in 40 different countries. In Ranobe, this method has been adopted quickly and enthusiastically, has demonstrated some increase of yields, but is yet to be tested for improvements.

Another important intervention with the villagers has been the introduction of agroforestry; using combination planting of fruit trees and other native plants and useful trees on their land. This includes cultivation of the *Moringa oleifera* ^{7,8}, a rapidly resprouting tree that was adopted in the local diet for its nutritious green leaves, flower and young fruits. Till now, Ho Avy and our local partners have planted well over 10,000 trees, including nearly 40 native species and more than 25 species of fruit and multipurpose fast-growing trees, in the last two years on edges of forest, in agroforestry polyculture plots and in live fences/hedges. These efforts, i.e. planting target indigenous species on disturbed forest edges and reforesting in belts, aim to assist ecological forest recovery. We aim to create ‘ecotones’ (transitional habitats) favoring wildlife colonization and assisting seed dispersal. The local people in Ranobe are open to tree planting and introducing new crops to diversify their traditional farming, but patience and continual involvement is required to evaluate yields and progress. In community meetings, the villagers have told us, “Slowly, our lives have been improving and we are ready to go on.”

In exchange for sustainable development interventions offering alternative livelihoods, we closely collaborate with the community association FIMPAHARA (an association of farmers dedicated to propagating and planting trees and protecting the forest) along with an ever growing contingency of the Ranobe village. Ho Avy has secured the authorization necessary to establish the first community managed forest reserve in the Spiny Forest. This will optimize our potential to create ecotone corridors (conserving biodiversity),

agroforestry polycultures (diversifying and creating agriculture abundance) and direct forest conservation incentive opportunities (guides, forest guardians, reforestation research monitors) to the local people further enhancing their livelihoods.

Becoming the 'bread basket' of the region

Ranobe, due to its oasis character in the arid region, has vast potential to become one of the most productive farmlands in Southwestern Madagascar. The opportunity exists to become the leading area for food self-sufficiency in the region. Ho Avy's long-term goal is self-sustainability through improved livelihoods and long-term community involvement in forest research and monitoring.

We count on the awareness and participation by local people in these efforts: raising the potential for new opportunities and developing a sense of ownership over forest health linked to agricultural productivity, promoting conservation and restoration, and improving crop production. With these target concerns, Ranobe has the potential to be a pioneering model and a strong example to inspire other communities, where it might be reproduced and adopted. Potentially an interesting trade can open between the coastal (fishing) and inland (farming) villages. Furthermore, the surplus farming products can be brought to the nearest villages and towns, replacing the current imported items. Literally, the Ranobe region can become the bread, or rice and fruit basket of the region.

Notes

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Appendix 2

Maasai v. Investors in Ngorongoro, Tanzania *

Jane Lonsdale

Ngorongoro district in Tanzania, home to the famous Ngorongoro crater and bordering the Serengeti national park, must surely be one of the most beautiful landscapes on earth. Maybe this explains its hotly contested land disputes. Everyone seems to want a piece of it, but those in danger of being left without are the indigenous Maasai tribe, often used as a lucrative Tanzanian tourism symbol. For now, they are just about hanging onto their land amidst numerous attempted land grabs. The question is, are they ready and able to defend it?

In the midst of current global debates on land grabs by biofuels and agribusiness corporations, driven by record food and fuel prices, it's easy to overlook the more run of the mill land grabs by hunting companies and mining corporations. In the name of investment, these can leave thousands without homes and livelihoods, and with no alternative on offer. In this one district, home to about 170,000 people, there are currently no less than six natural resource conflicts and three ongoing court cases.

During a peak in the land crises, an eviction took place in July 2009 leaving nearly 2000 people homeless. Two of the most infamous land conflicts are with Emirates hunting company Ortello Business Corporation and American-owned Thomson Safaris Ltd. Ngorongoro resources are further complicated by the needs of the natural wildlife and ecosystems, including the iconic annual wildebeest migration, with which the Maasai have been co-existing for centuries in the often harsh and drought-prone lands.

Aside from the land grabs by companies, proposed legislation to introduce a wildlife corridor in Ngorongoro district could result in around 20,000 people being evicted from 8 villages and massive cuts to the prime cattle grazing lands together with reduced access to water resources. If the plans go ahead, only one sixth of the district's land will remain for the pastoralists, who make up 80% of the Ngorongoro population, and this land would be in the particularly drought-prone plains, where the wildebeest deliver and raise their young from December to March, thus preventing pastoralists' access for this period and leaving behind bare pastures for the livestock. Excellent [briefs by local NGO](#) Tanzania Natural Resource Forum provide the full low-down on the recent history, current situation and possible policy options.

* First published in [From Poverty to Power](#) blog in July 2011. Jane Lonsdale is Governance Programme Co-ordinator for Oxfam in Tanzania (JLonsdale@oxfam.org.uk).

You might think that in the face of such seemingly insurmountable pressures from so many directions, the people would just give up and accept eviction. Instead, the Maasai are beginning to stand up for their rights and seek the support of their fellow (non-pastoralist) Tanzanians. Women are at the forefront, even though they are traditionally marginalised and silent in pastoralist cultures. Following the evictions in July 2009, 600 Maasai women marched to the local government offices to hand in over 1800 political party membership cards – theirs and their neighbours’ – in protest. Communities recently came out in their thousands to attend village assembly meetings where they voiced their views in no uncertain terms.

The clearest sign that things are changing is the behaviour of the local councillors. Previously acting against the wishes of the communities they were elected to serve, they are now supporting communities, speaking out in favour of protecting the rights of the residents, and acting as a united body, together with local civil society organisations, to withstand significant pressure from above.

This hasn’t been easy; the people have had to fight hard for the opportunity to hold village meetings and express their views. Local CSOs have been harassed and arrested for their role in helping residents raise their voices. When the councillors first attempted to give their views in public through a press conference, they received so much pressure and intimidation to keep the issues quiet that they abandoned the idea. Yet with the support and backing of their communities the councillors tried again a couple of months later and succeeded.

The people remain in limbo over their future; according to one elder from Ololosokwan village, known as Yohana: ‘how can we think of bettering ourselves when we are too worried about the proposed wildlife corridor, if we lose our land we will give up on life’.

Activism has triggered wider change. The plea by local CSOs for support has led to regional and national CSOs starting to work together. The communities are now actively seeking knowledge and information on the laws and policies affecting them in an effort to take control of their situation. And the Ngorongoro women, encouraged by their actions to speak out, have started to stand for leadership positions, with the first woman councillor elected in her own right in 2010.

These actions may not seem particularly remarkable to those used to the levels of active citizenship to be found in regions such as Latin America. But in Tanzania, coming from a recent history of state socialism and a culture of deference to authority, these small acts of courage represent one example of people beginning to realise their rights and standing firm to defend them. Time will tell whether the people can protect their land and continue to earn their livelihoods on their own terms.

Appendix 3

Initiatives in the Visegrad Group Countries for Sustainable Agriculture and Food Sovereignty

edited by Polish Green Network

Initiatives to promote food sovereignty, sustainable agriculture and responsible consumption have been on the rise in Europe, gaining increasing number of supporters. However, much still remains to be done in the field of building consumer and citizen awareness. It is essential to reliably present the existing dependencies and links between developed and developing countries in the areas of food production and distribution, as well as the causes of the degradation of family agriculture in various parts of the world and its consequences – hunger and poverty. A lot of attention and engagement are also needed to promote sustainable local food production and consumption, as well as the right to participatory democracy. Furthermore, consumers in rich countries have to be made aware of the impact of their consumption patterns on the situation of the communities in developing countries. In this context, it is important to initiate and strengthen national and international cooperation among civil society actors, in particular non-governmental, farmer, and consumer organizations, working on these issues.

Among an increasing number of European organizations, also Polish Green Network (*Polska Zielona Sieć* – PZS) and its partners undertake such activities, especially through the programmes: *Kupuj Odpowiedzialnie!* (Buy Responsibly!) and *Akcja dla Globalnego Południa* (Action for the Global South). Special prominence to these issues is given through the PZS campaign called WYŻYWIĆ ŚWIAT (FEED THE WORLD). As a part of this campaign, a cooperation was initiated with organizations from the Visegrad Group countries – the Czech Republic, Slovakia, and Hungary – which carry out various activities to promote sustainable agriculture, food sovereignty, responsible consumption, and fair trade movement. Let us briefly look at some of the initiatives run by these organizations.

SUSTAINABLE AGRICULTURE IN SLOVAKIA

The question of how to promote and implement sustainable alternatives in daily life led in 2005 to the establishment of the Slovakian non-governmental organization called *Centrum pre trvalo-udržateľné alternatívy* – CEPTA (Centre for Sustainable Alternatives). Its mission is to gradually implement more sustainable solutions at the local, regional, and global level in a way which minimizes the negative effects of human activity on the

environment, and takes into consideration within the decision-making process both the present needs and the rights of future generations. With regard to agricultural and food issues, CEPTA has been focused especially on such topics as the Common Agricultural Policy in the European Union, food quality in relation to using pesticides, and direct food sales by farms. CEPTA cooperates with other non-governmental organizations (NGOs) on various themes, including monitoring environmental protection issues during national, regional or local elections. The organization also runs educational activities for children, youth, and adults during, for example, Earth Days, Car-Free Days, Organic Farming Days, and Climate Days.

Slovak agriculture faces many different structural and environmental problems also present in other countries of the Visegrad Group. Among some of the most important issues are:

- rural abandonment, resulting in a decreasing number of family farms, caused by a lack of work possibilities and social services in rural areas (the highest rate of unemployment is in the countryside);
- inadequate food self-sufficiency – Slovakia imports more than 50% of food that could be produced locally;
- agriculture is the biggest source of water pollution, as well as a chief cause of soil erosion and biodiversity loss in Slovakia;
- most food is contaminated during the production process, e.g. by nitrates – fertilizers and pesticides residues – which harm consumers' health.

CEPTA and its partners have been undertaking steps to improve the situation through various initiatives. Two major ones are the Agro-eko forum, a platform of 19 Slovak NGOs promoting sustainable agriculture, forestry and rural development at the national level, and a local food community in Zvolen, which connects producers and consumers at the local and regional level.

Engagement at the national level

The *Agro-eko forum* (AEF), coordinated by CEPTA, was created at the end of 2004. The interests of the AEF members cover a broad spectrum of issues: nature protection (e.g. Bird Life Slovakia); organic farming (e.g. EKOTREND – Association for Organic Farming in Slovakia); animal welfare (e.g. Sloboda Zvierat); sustainable forests (e.g. FSC Slovakia); as well as local systems and rural development (e.g. eco-village Zaježová). There are several reasons why such a national coalition was created. First of all, working as a group, CEPTA and other organizations have become an important partner for the Ministry for Agriculture, Environment and Rural Development as well as other institutions, which is of key importance for national policy-making process. The *Agro-eko forum* has become a full member of the Monitoring Committee for Rural Development Program for 2004-2006 and 2007-2013. This program divides up most of the EU's agricultural subsidies and thus can be an effective steering tool for directing agricultural policy at the national as well

as the EU level. The Monitoring Committee is the only institution that involves different stakeholders, and decides on the implementation, changes, monitoring, and reporting of the Rural Development Program at the national level in Slovakia. Secondly, working within the AEF permits for more coordinated media work. Finally, it creates a communication channel that both better voices common NGO interests around national policies and influences politicians on the issue of sustainable development. A sign of the growing recognition and importance of the *Agro-eko forum* is the fact that in July 2010 it was asked to prepare the first draft of the new Slovak national agriculture policy.

Engagement at the local level

Local food community, created by CEPTA in 2009 in Zvolen, reflects the need to go against current globalization trends, which result in low-quality, cheap food that is environmentally, ecologically, and socially expensive. At the beginning, a small group of about 15 consumers was formed – these were mostly young families who take their responsibilities to nature and their children’s health seriously. They were accompanied by 3 producers who offer regional farm products. After one year, without any advertising, the community grew to 50 consumer families and 7 producers. Annually, community consumers receive more than one ton of healthy vegetables, fruit, milk products, eggs, and meat coming from different local/regional farms. Such a solution supports the local economy and strengthens farms’ financial stability. The local food community from Zvolen is a member of the European URGENCI network, promoting community supported agriculture (CSA) through solutions such as box schemes, which are widely known in most western European countries. This sector of local food production and consumption is expected to grow in all countries of the Visegrad Group, also in terms of profitability, as demand far outstrips supply.

An interesting and an innovative way of providing sustainable agriculture is AGROKRUH – a system invented by Slovak farmer Jan Šlinský, and designed for sustainable vegetable production on family farms. In order to grow vegetables using AGROKRUH, you neither need a tractor nor other heavy machinery, which cause soil compaction. The system was designed in a way that fulfils the requirements for minimal energy consumption while cultivating different vegetables in optimal ecological, economical, and social conditions. Such a farm, located next to the village of Hrubý Šúr in south-western Slovakia, grows vegetables for about 60 families. It is a family farm, economically profitable for one farmer family. The farming area is divided into 15 round parcels (circles), each one 36 m in diameter with an area of 1,072 m² (altogether the area is 1.6 hectares). An area of this size can be managed by one well-skilled farmer with some seasonal help, e.g. from family members. The AGROKRUH system utilizes an iron frame as a carrier unit for different instruments used for soil preparation, seeding, watering, etc. The frame is fixed in the middle of the circle, where it gets electricity and water for irrigation. This combination allows for the automation of various cultivation activities including: spading/tillage, disintegration,

sheeting, dragging the soil, fertilizing, watering, preparing the parcel for manual work, etc. The frame can be easily moved to another circle after work is completed in a current one. For a farm with 15 circles, it is optimal to have 5 frames that can work simultaneously in different places. Crop rotation on the farm is based on 48 different vegetable species, strawberries, and phacelia, as well as up to 200 different herbal, flower, and everlasting species growing in 'free' areas between circles. All vegetables are grown using the farm's own seeds. Neither artificial or chemical fertilizers nor pesticides are used. Instead, the farmer uses various green fertilizers, vermicompost, and fertile teas from different herbs, such as nettle. Farm vegetables are available for direct sales to registered members of local community. According to an agreement with the farmer, members can visit the farm to see how the vegetables are grown and help with different practices. The demand is six times higher than the current farm potential. One of the factors leading to the success of such businesses is the direct relationship between farmers and consumers, which strengthens the local economy and the community.

AGRICULTURAL BIODIVERSITY PROTECTION IN HUNGARY

The Carpathian Basin has excellent environmental conditions for farming, which have resulted in a long history of unique farming traditions for Hungarian agriculture. However, "depeasantization" during the communist regime in Hungary after World War II, as well as globalisation with the appearance of multinational companies during the transition period in the 1990s, resulted in the prevalence of latifundia accompanied by a critical decrease in the number of small-scale farmers. The country's EU accession in 2004 led to strong competition with other EU member states, further increasing the difficulties faced by small-scale family farmers. In response to this, civil society organisations in Hungary have started to focus on food sovereignty as an essential topic for the Hungarian agriculture, and have recognised the importance of reconnecting farmers and consumers, as well as supporting sustainable agriculture.

Szövetség az Élő Tiszáért

In 2006, the Hungarian organisation *Szövetség az Élő Tiszáért* – SZÖVET (Alliance for the Living Tisza), with representatives from all groups of society, was formed in the village of Nagykörű (north-eastern Hungary). Its aim is to advocate for the interests of local communities living along the Tisza River. Its main tasks include the creation and implementation of a comprehensive work programme to improve conditions of small-scale environmentally friendly family farming, thus raising the quality of living conditions for the local population. SZÖVET supports fresh, chemical-free, low external input food production, and strives towards the preservation of the local cultural heritage. The organization promotes the use of local and traditional plant varieties in Hungary. A local example in Nagykörű is the "sour cherry", planted here in the second half of the nineteenth century as the most suitable variety given local climate conditions. The organization aims

to preserve and promote the region's ecological values, the diversity of local fruit and vegetable varieties in old orchards, forests, and remnants of the floodplains. In addition, SZÖVET focuses on the re-establishment of traditional floodplain landscape management along the Tisza River. Floodplain landscape management is based on the controlled inflow and abatement of floodwaters to and from a floodplain. With this form of landscape management, excess water arriving with the flood is utilized and preserved for drier periods.

Another important aspect of SZÖVET's work is promoting direct marketing of local food products. The activities began in 2008 with a campaign called "Save sour cherry!" at the "Komjádi" market in Budapest. The main aim of the campaign was to draw attention to unfair fruit prices during seasonal supply peaks. The unexpected success of the action (16 tons of sour cherry sold) proved that there was a large interest in local products. Today the organization regularly buys fruits and vegetables from farmers to sell them at Budapest food markets. It is a preeminent help for small-scale farmers, because alone they are unable to handle competition from transnational companies, notwithstanding the fact that often they have no technical means or time to deliver products to the city themselves. For farmers, it is important to get fair prices (above the production costs) for their products. The long-term objective is to secure farmers' constant access to direct marketing locally and in the country's capital.

SZÖVET also undertakes activities at the national level, striving for a situation where both farmers and consumers are at the heart of decision-making processes on food issues. A good example of such activities is the advocacy campaign, run in 2009 together with 53 Hungarian civil society organizations, for the modification of the so-called Smallholder Decree issued by the Ministry of Agriculture. The decree put in place obstacles that impede the development of direct marketing and contained unreasonable quantitative and hygienic restrictions on certain product categories, such as processed vegetables, fruits, and fresh meat, as well as on the slaughter of pigs or sheep.

Hungarian orchardist network

The contours of the nationwide movement for the protection of agricultural biodiversity in Hungary are slowly emerging. The agricultural biodiversity suffered heavy losses during the Habsburg Empire in the seventeenth century, then under communist rule, and finally, after the introduction of Common Agricultural Policy following Hungary's accession to the European Union. So far, the Hungarian agricultural biodiversity movement has been largely characterized by unconnected actions of local initiatives. However, some intensification of interactions has started to take place in recent years. Among the main players are national parks, such as Aggtelek and Bükk, both located in north-eastern Hungary, and Örség, in the western part of the country. These parks have commissioned researchers to identify fruit trees in their territories with the aim of listing and protecting local varieties. Several academics, including botanists, ethnobotanists, sociologists, specialists in environmental

issues, and representatives from the Ministry of Environment have also become interested in the issue of agricultural biodiversity, acknowledging that protecting crop biodiversity is as important as the issue of genetically modified organisms (GMO).

However, there is also a more organised network of people passionate about crop biodiversity – they are members of the Hungarian network of fruit growers. The network, still of informal status, consists primarily of young farmers committed to auto-subsistence gardening, amateur gardeners, and associations working for the protection of the environment and biodiversity. Members meet on an annual basis to evaluate past activities and to plan future projects. A network's discussion list has been also established, where fruit trees fans can ask for and share information on pruning techniques and grafting, discuss the exchange of seeds or grafts, publish traditional and new recipes, or inform others about their work in general.

The Ormánság Foundation, created in 1991, played a key role in the establishment of the Hungarian network of fruit growers and continues to be a driving and innovative force for this group. The foundation aims to create general and detailed development plans for the rural area of Ormánság (south-western Hungary). Apart from the economy, infrastructure, and tourism, these plans include solutions to establish sustainable landscape management with a special emphasis on the protection of cultivated biodiversity. The foundation's activities also include listing and describing identified old fruit varieties and maintaining old orchards throughout Hungary and Transylvania (western Romania). The foundation organises regular training on pruning techniques and grafting. Additionally, it distributes information resources promoting local fruit varieties.

The activities for crop biodiversity undertaken by the Ormánság Foundation are rooted in the holistic orchardist concept – so-called “adaptive fruit growing”. This approach views orchards as an integrative part of a particular landscape and ecosystem. This basic observation translates into several principles. Firstly, the rationale and the role of orchards are not purely economic, i.e. production of agricultural goods generating financial profit. Orchard maintenance involves, first of all, a close relationship with the environment and a capacity of observing the evolution of nature in order to accompany this process by adapting to orchards' natural transformations. This harmony is only possible through a regular presence, which can be provided by local communities or new forms of collective organizations (something which distant investors cannot guarantee). Secondly, besides “classic orchard fruits”, such as apples and apple processed products, orchards also offer other “fruits”, such as hay and firewood, whose consumption is not only necessary for the ecological balance of orchards, but also has the potential to strengthen economic independence for farms. Beekeeping, mushroom picking, and vegetable and grain cultivation among fruit trees are other examples of the multiple uses of orchards, benefiting both nature and farmers. Finally, the preservation and use of traditional skills connected with orchard maintenance and fruit processing are closely related to “adaptive fruit growing”.

One of the biggest challenges for the survival and promotion of crop biodiversity as a genuine agricultural alternative is greater farmer and consumer involvement. Several newly passed laws may help facilitate this process. The transposition into national law of the EU directive on the marketing of protected varieties of cereals and vegetables aims at encouraging the distribution of local varieties at risk of genetic erosion. Meanwhile, a new national decree on processing and direct selling of small farm products opens up new opportunities for the development of local food markets in Hungary.

RESPONSIBLE CONSUMPTION IN THE CZECH REPUBLIC

The Czech Republic is a country where agriculture employs relatively few people – 150,000 out of 10.5 million citizens – roughly 1.4% of the population. Farmland area in the Czech Republic has been dramatically decreasing: 15,000 hectares of agricultural land have disappeared since 1995, and with it a big number of people working in the sector. The Czech Republic (the former Czechoslovakia) used to be amongst the most advanced food producing states in Europe. The change came after 1989, when the former Czechoslovakia turned to neoliberal market practices. A lot of then-applied policies hindered the development of agricultural businesses (certain protective laws were no longer applicable, bank loans were difficult to obtain, etc.). Also, after joining the EU, there were further problems down the road with the budget support for farmers being considerably lower in the “new” EU members compared to “old” EU members. The Czech Republic’s government is accused by civil society organizations of neglecting the need to recognize the diversity of agricultural systems, and to balance the market power of giant agricultural corporations in relation to small farmers, both in developing countries as well as in Europe.

Transnational retail chains, offering cheap food and numerous discounts, have been dominating the Czech retail and food markets for the last 20 years. Currently the seven biggest supermarket chains hold more than a 75% market share in the sales of food. As a result, an average citizen believes now that food comes primarily from a supermarket shelf rather than from a garden or a field. Fortunately, this pattern is slowly changing – more and more people are becoming aware of their dependence on retail chains and increasingly concerned about the quality of food sold there. In recent years several local movements have emerged with the aim of supporting other modes of food production and consumption. For example, a new type of marketing emerged in 2009 which promotes organic, locally produced agricultural products, sold directly from farmers or cooperatives to consumers. An example of this is the so-called *bedynky* (baskets) system – a specified quantity of vegetables and fruits, dairy products, herbs, bread and/or meat produced by local farmers is regularly delivered to consumers. Vegetable markets are also on the rise, especially in the capital city, Prague. Recently, milk vending machines have become a popular way to sell fresh milk directly from farmers. This system supports especially small farmers by considerably improving the price they get per one litre of milk (often twice the amount, or more).

To change the status quo of virtually no participation by Czech citizens in the debate about food security and food sovereignty, the Prague Global Policy Institute – Glopolis, has initiated a public debate with NGOs, farmers, and decision makers in the Czech Republic and Europe. Its aim is to raise awareness about the growing problem of food insecurity and poverty faced by the poor in developing countries, triggered by the dominant business approach to agriculture, which too often ignores people and natural environment.

Activities to support fair trade

In recent years in the Czech Republic there has been a growing interest not only in fresh and organic local food, but also in fair trade products. People become aware that the fair trade movement can be an effective way to help marginalized farmers and craftsmen in developing countries break out of the poverty circle. A pioneer fair trade initiative in the Czech Republic was the establishment of an organization called *Jeden svět* (One World) by several protestant parishes in Prague. In 1994, the organization founded its first fair trade shop. Another important step was establishing the first fair trade wholesale outlet by *Ekumenická akademie Praha – EAP* (The Ecumenical Academy Prague) – an independent, non-profit NGO, whose members are churches, NGOs, and individuals. In 2003 EAP became the very first fair trade wholesaler in the post-communist countries. The trading activity turned out successfully and helped to encourage new players to sell fair trade products, since they did not have to worry about import regulations or product certification. The Czech Republic's accession to the European Union simplified the custom's rules and made the import of food products much easier. In 2004, the Academy became one of the three founding members of the Czech Association for Fair Trade (the other two were One World and OnEarth – Society for Fair Trade / *NaZemi – Společnost pro Fair Trade*), an umbrella organization that currently has seven members. In 2009, following a few years of negotiations, the Association signed a contract with the most important fair trade certification authority, Fair Trade Labelling Organisations International (FLO, the owner of the Fairtrade Certification Mark), and became its first partner and the first marketing organization in the post-communist countries. Furthermore, in 2010 EAP became the first Czech member of the World Fair Trade Organisation. The success of the Czech fair trade story is evidenced by increasing turnover, which reached more than €2 million in 2009.

The aforementioned organizations, EAP and OnEarth, carry out a number of educational activities among Czech citizens promoting development education, sustainable development, and the fair trade movement. OnEarth is also involved in the national Fairtrade Towns campaign, promotes fair trade among major commercial stakeholders, and runs three fair trade shops, selling products from all over the world. Another important area of OnEarth's work is monitoring corporate accountability, especially with regard to working conditions in corporate production facilities that produce goods for the Czech market. EAP is a member of the European Network on Debt and Development – EURODAD, as well as a founding member of the Czech Forum for Development Cooperation (FoRS) and Czech anti-poverty campaign (part of the Global Call to Action Against Poverty – GCAP).

POLAND – INITIAL STEPS

An increasing number of farmers and consumers in Poland are becoming aware of the effects of national and European policies that lead to industrialization of agriculture, which creates all sorts of health, social, and environmental dangers. Small farmers are starting to raise their voices in an attempt to regain control of food production and agricultural system. At the same time, consumers become more interested in quality and origin of the food they buy. More and more NGOs are amplifying this trend by promoting traditional and ecological ways of food production as well as encouraging people from all backgrounds to make responsible consumption a way of life. Yet for bigger changes to come, national and European agricultural and food policies must be also reorganized.

Polish activities geared towards food sovereignty are still rather modest, especially if one defines food sovereignty, as does the organization Via Campesina, as a right of communities to self-decide on their food policy issues. Nevertheless, in various regions of Poland there are groups and organizations working towards the reform of laws which would allow greater participation of citizens in decision-making processes at the local level. Deciding, for example, how local municipalities spend their funds can be considered a good start to working for food sovereignty. However, if food sovereignty is to be understood in a broader context – as a return of the food economy to being locally based, and as activities geared towards local communities' independence from outside food supplies – then there has been a growing number of such initiatives in Poland. Time and again there appear new food cooperatives or box schemes, through which organic food is delivered directly from farmers to consumers. To prosper, however, they need to gain more interest from the consumer base.

Among organizations working towards promoting Polish agriculture, one needs to highlight the International Coalition to Protect the Polish Countryside (ICPPC) which undertakes numerous activities to preserve traditional farms and block the introduction of GMO into Polish agriculture. Other examples are the Social Ecological Institute (SIE), with its initiatives for the preservation of agricultural biodiversity, and Indigena Foundation, which works against factory farming.

Food sovereignty is also of key importance for people in poor countries of the Global South. This is why Polish NGOs have been teaming up with other European organizations to work towards European policy coherence with the development of sustainable family farming in developing countries. Without this, communities in Africa, for example, stand no chance of reaching food security, as their local agriculture is being undermined by inappropriate policies implemented by rich countries. Since 2006, representatives from such organizations as Polish Green Network (PZS), Polish Ecological Club (PKE), and Polish Humanitarian Action (PAH) participated in a series of international seminars organized by Collectif AlimenTerre. Invitations to participate were also extended to representatives of farmer organizations from Europe and Africa, consumer movements, and political decision-makers. As a result of the seminars a common position of European

and African NGOs was prepared in the form of “An appeal for coherent European policies”. The document called on the European Union to grant the Global South countries the right to regional integration and to their own agricultural policy which would allow them to achieve food security and to develop sustainable agriculture. Since that time, Polish and European organizations have been tightening their cooperation regarding advocacy for food sovereignty in Europe and in developing countries. The main activity of PZS in this regard is the WYŻYWIĆ ŚWIAT (FEED THE WORLD) campaign, which was started in 2010. The representatives of the campaign participate as observers in sessions of the Joint Parliamentary Assembly of African, Caribbean and Pacific countries (ACP) and EU. During sessions they meet with European and ACP parliamentarians in order to gain their support for solutions and political decisions coherent with development goals and especially with the fight against hunger and malnutrition in the world. To reach the broader public PZS publishes literature on food sovereignty, and organizes many awareness raising activities, such the travelling Festival THE WORLD ON A PLATE. Additionally, PZS implements a thematic programme called Action for the Global South, through which it cooperates with organizations from the Volta region in Ghana to support the development of local agricultural communities (including support for beekeeping, pineapple growing and the production of batik). Another PZS programme, called Buy Responsibly!, aims to educate consumers in the area of responsible consumption. Together with a number of other organizations, PZS is also involved in promoting fair trade and its products, utilizing the platform of the Polish Fair Trade Coalition.

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Appendix 4

Declaration of Nyéléni *

27 February 2007, Sélingué, Mali

We, more than 500 representatives from more than 80 countries, of organizations of peasants/family farmers, artisanal fisherfolk, indigenous peoples, landless peoples, rural workers, migrants, pastoralists, forest communities, women, youth, consumers and environmental and urban movements have gathered together in the village of Nyéléni in Sélingué, Mali to strengthen a global movement for food sovereignty. We are doing this, brick by brick as we live here in huts constructed by hand in the local tradition and eat food that is produced and prepared by the Sélingué community. We give our collective endeavour the name “Nyéléni” as a tribute to and inspiration from a legendary Malian peasant woman who farmed and fed her peoples well.

Most of us are food producers and are ready, able and willing to feed all the world’s peoples. Our heritage as food producers is critical to the future of humanity. This is specially so in the case of women and indigenous peoples who are historical creators of knowledge about food and agriculture. But this heritage and our capacities to produce healthy, good and abundant food are being threatened and undermined by neo-liberalism and global capitalism. Food sovereignty gives us the hope and power to preserve, recover and build on our food producing knowledge and capacity.

Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers and users. Food sovereignty prioritises local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal - fishing, pastoralist-led grazing, and food production, distribution and consumption based on environmental, social and economic sustainability. Food sovereignty promotes transparent trade that guarantees just incomes to all peoples as well as the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage lands, territories, waters,

* Declaration of the Forum for Food Sovereignty *Nyéléni 2007*.

seeds, livestock and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social and economic classes and generations.

In Nyéléni, through numerous debates and interactions, we are deepening our collective understanding of food sovereignty and learning about the realities of the struggles of our respective movements to retain autonomy and regain our powers. We now understand better the tools we need to build our movement and advance our collective vision.

What are we fighting for?

A world where...

...all peoples, nations and states are able to determine their own food producing systems and policies that provide every one of us with good quality, adequate, affordable, healthy and culturally appropriate food;

...there is recognition and respect of women's roles and rights in food production, and representation of women in all decision making bodies;

...all peoples in each of our countries are able to live with dignity, earn a living wage for their labour and have the opportunity to remain in their homes, if they so choose;

...where food sovereignty is considered a basic human right, recognised and implemented by communities, peoples, states and international bodies;

...we are able to conserve and rehabilitate rural environments, fish populations, landscapes and food traditions based on ecologically sustainable management of land, soils, water, seas, seeds, livestock and all other biodiversity;

...we value, recognize and respect our diversity of traditional knowledge, food, language and culture, and the way we organise and express ourselves;

...there is genuine and integral agrarian reform that guarantees peasants full rights to land, defends and recovers the territories of indigenous peoples, ensures fishing communities' access and control over their fishing areas and eco-systems, honours access and control by pastoral communities over pastoral lands and migratory routes, assures decent jobs with fair remuneration and labour rights for all, and a future for young people in the countryside; where agrarian reform revitalises inter-dependence between producers and consumers, ensures community survival, social and economic justice, ecological sustainability, and respect for local autonomy and governance with equal rights for women and men;

...where agrarian reform guarantees rights to territory and self-determination for our peoples;

...we share our lands and territories peacefully and fairly among our peoples, be we peasants, indigenous peoples, artisanal fishers, pastoralists, or others;

...in the case of natural and human-created disasters and conflict-recovery situations, food sovereignty acts as a form of "insurance" that strengthens local recovery efforts and

mitigates negative impacts... where we remember that communities affected by disasters are not helpless, and where strong local organization for self-help is the key to recovery;

...peoples' power to make decisions about their material, natural and spiritual heritage are defended;

...all peoples have the right to defend their territories from the actions of transnational corporations;

What are we fighting against?

Imperialism, neo-liberalism, neo-colonialism and patriarchy, and all systems that impoverish life, resources and eco-systems, and the agents that promote the above such as international financial institutions, the World Trade Organisation, free trade agreements, transnational corporations, and governments that are antagonistic to their peoples;

The dumping of food at prices below the cost of production in the global economy;

The domination of our food and food producing systems by corporations that place profits before people, health and the environment;

Technologies and practices that undercut our future food producing capacities, damage the environment and put our health at risk. These include transgenic crops and animals, terminator technology, industrial aquaculture and destructive fishing practices, the so-called White Revolution of industrial dairy practices, the so-called 'old' and 'new' Green Revolutions, and the "Green Deserts" of industrial bio-fuel monocultures and other plantations;

The privatisation and commodification of food, basic and public services, knowledge, land, water, seeds, livestock and our natural heritage;

Development projects/models and extractive industries that displace people and destroy our environments and natural heritage;

Wars, conflicts, occupations, economic blockades, famines, forced displacement of peoples and confiscation of their lands, and all forces and governments that cause and support these;

Post disaster and conflict reconstruction programmes that destroy our environments and capacities;

The criminalization of all those who struggle to protect and defend our rights; Food aid that disguises dumping, introduces GMOs into local environments and food systems and creates new colonialism patterns;

The internationalisation and globalisation of paternalistic and patriarchal values that marginalise women, and diverse agricultural, indigenous, pastoral and fisher communities around the world;

What can and will we do about it?

Just as we are working with the local community in Sélingué to create a meeting space at Nyéléni, we are committed to building our collective movement for food sovereignty by

forging alliances, supporting each others' struggles and extending our solidarity, strengths, and creativity to peoples all over the world who are committed to food sovereignty. Every struggle, in any part of the world for food sovereignty, is our struggle.

We have arrived at a number of collective actions to share our vision of food sovereignty with all peoples of this world, which are elaborated in our synthesis document. We will implement these actions in our respective local areas and regions, in our own movements and jointly in solidarity with other movements. We will share our vision and action agenda for food sovereignty with others who are not able to be with us here in Nyéléni so that the spirit of Nyéléni permeates across the world and becomes a powerful force to make food sovereignty a reality for peoples all over the world.

Finally, we give our unconditional and unwavering support to the peasant movements of Mali and ROPPA in their demands that food sovereignty become a reality in Mali and by extension in all of Africa.

Now is the time for food sovereignty!