



The Future of Food: What Will Our Children Eat?

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So let me begin my talk with yet another reminder of the tragedy out there that has given rise to the need for conferences like this one—the tragedy that reminds us of the urgent need for us to think through these issues together, whatever political orientation we may have. Under **our** watch, almost 1 in 6 people on our planet now have empty, aching stomachs every night. The overwhelming majority of these people are women and children. The majority are babies, toddlers, pre-teens and adolescents, with dreams like our own kids, who will not only have trouble falling asleep but trouble learning, trouble working, and trouble growing into healthy and engaged citizens! Last fall and in our film Friday we saw their parents take to the streets to demand this most fundamental of rights – the right to food. Their protest and this new benchmark of 1 billion people without enough to eat appears to have moved our global leaders off their comfortable... chairs. This July they reversed that dramatic twenty year decline in spending on smallholder agriculture that Sammy mentioned (down by at least 40%), pledging to spend between \$15 to \$20 billion over the next three years. We are uncertain if this represents much new money and next to the \$8.7 trillion injected into the global financial sector since January 2009, the investment pales. But let's stay with the positive for a moment and be thankful for the increase in funds and attention. Kudos to Canada as well for its planned doubling of its "food security" spending.

The key question that we have been struggling with this weekend of course is **how** these funds will be spent? To answer the question: what will these children -- our children-- eat today and into the future, we have to ask hard questions about our food system today and decide on the one we want for the future. We discussed and critiqued, heatedly at times, two scenarios.

Scenario One: We continue the logic and strategies of post World War Two developers, placing a great deal of energy, resources and faith in the development of ever new technologies – what some of us might call silver bullets and other innovative technologies that focus heavily on the idea of increasing YIELDS and efficiencies. We'll keep transporting large quantities of food across oceans and continents – although climate change is forcing us to question that one, and in the short-term at least, we'll maintain our decades-long romance with water-thirsty monoculture and its rows and rows of improved seeds that, on the landscapes I visit in Asia, Africa and Latin America, need more and more expensive fixes to produce well. In a similar vein (pun intended), we'll inject more and more expensive genetically modified seeds into this system, possibly useful, but, a huge untested gamble that has, in some instances proven disastrous, the failed Bt cotton production in parts of India an all too dreadful example. And we'll up the ante still more by investing in even more expensive nanotech food production, taking food production not only out of the hands of individual producers but out of mother nature's hands as well, atom by atom.

Or...

Scenario Two: We will tap into our imaginations and ingenuity to move forward in different ways, using strategies that work with nature not against it. We will learn from our past mistakes and take a closer look, once and for all, at the entire food production system – from farm to fork, or chopstick, or fingers, depending on where you are in the world, and from citizen to legislature. Most particularly we will at long

last value and support those small-scale producers who are actually keeping the majority of us fed worldwide. Pat's figure yesterday of the 85% of the food we consume today coming from close-circuit markets is from a wonderful new book by Jan van der Ploegh called the *New Peasantries*. It has extensive peer reviewed data about the contributions of small holder farmers – in the Global South and North -- including, what for me were surprising figures, like the fact that only 6% of all the rice produced is traded internationally.

Having stood at the mike a few times this weekend, my perspective is clearly no secret. I want to argue passionately for the second scenario, having seen what small farmers can do and teach us for almost half of my life, a particular highlight being the year I spent with Bolivian farmers in the center of origin for our beloved spud! Unfortunately, when it comes to strategies to improve our system, the international community's response has, with some exception, had an all too familiar ring.

The Ad hoc Advisory Group to the Madrid High Level Conference on Food Security last January concluded, for example, that "the lack of improved inputs is the single most important factor in the continued poor yields in smallholder farming." This message seemed to echo that of the President of the Alliance for a new Green Revolution in Africa or AGRA when he spoke about this matter last November. Using the example of smallholder farmers in Ghana – where by the way, it is cheaper to buy a bag of frozen European chicken parts that a fresh, local one -- he insisted that they [Ghanaian farmers] "must significantly increase their use of improved seeds and other modern inputs to increase their yields and incomes".

The smartest way to deal with the food crisis, it would seem, is the Western way. Did any of you catch Margaret Wente's July 18th *Globe and Mail* piece about the "naivety of organic agriculture supporters" and Africa's "primitive farming practices". She said "we could increase the global food supply by 80% just by bringing the rest of the world up to the standards of modern agriculture." Easier said than done, Ms. Wente, even if that **were** true.

This "deficit" development thinking –the idea that they lack and we have to fill the void -- is, dare I say it, and here is my thesis: a simplistic, ethnocentric recipe for change, tired thinking that is part of the problem, not the solution. In the next fifteen minutes or so, I hope to convince you that another, more promising and respectful path forward is possible.

Let me begin with an abridged version of my Bolivia experience just under a decade ago...

Close your eyes for a moment and imagine the Andean highlands of western South America. They are imposing, at times merciless, filled with arched-backed ridges, sculpted rock faces, bright patches of green, purple, red and gold at harvest, and ribbon-thin roads connecting villages of adobe. Their beauty can take your breath away (the altitude too, for that matter!); but their splendor reaches beyond a commanding appearance. Their indigenous residents can lay claim to one of the world's greatest shares of cultivated plants (Zimmerer 1996:10) and more particularly to the centre of origin and diversity for potatoes, the world's fourth most important food crop (FAO 1995:4).

For a host of very complex reasons, these potato farmers were not doing particularly well in the year 2000. Ironically, part of the problem – the focus of my research-- was that the development assistance they were receiving was steadily eroding the inherent strengths of their indigenous systems. Institutions and NGOs, from the political right **and left**, had failed, to varying degrees, to take seriously their very different worldviews and knowledge. Most particularly they ignored centuries-old resilience strategies that enabled survival in places where the natural world usually has the upper hand, the conservation of the area's plant genetic resources being one of the most fundamental.

For those of you less familiar with the concept of resilience, it comes from our ecologist friends. Essentially, a resilient system will not allow stresses and shocks to dismantle its basic functions and integrity (Levin et al 1998:224). To be resilient, therefore, a community must have the stuff it takes to “withstand shocks and surprises, and if damaged, to rebuild itself” (Swedish Ministry of the Environment 2002:147). So my colleagues and I at USC Canada think that it is a pretty important concept.

At the core of the land management and food production systems I studied in Bolivia was another pretty important concept and practice -- ecological complementarity. Some of you may know it as *doble domicilio* or dual landholdings. Farmers produce their food at different altitudes, growing several varieties of root, bean and certain cereal crops in the highlands, and corn, wheat and fruit crops in the valleys. This multiplicity of lands, spaced between highland and valley ecosystems and generally within a few days hike, serves both as an adaptation to high levels of climatic risk and as an effective method of generating wealth (Murra 1984). It is a very strategic approach to food security since “the long term security of any population is based not on its average level of production and consumption, but on the way in which it is able to weather periods of maximum scarcity” (Netting in Burchard 1976:403)

There are several other dynamic and complementary components within this system including one especially clever, collaborative land-management strategy called *manta*. Each family has its own *manta* field for food production. They get to keep and exchange or sell the produce; but the community determines the crop cultivated each year as well as the rotation cycle and fallowing period, oversight that not only benefits the commons, but within its supply management mechanism, the community economy as well.

This ecological complementarity – resilience par excellence in my books – was unfortunately not well understood or appreciated by the development workers supporting these farmers. To the contrary, dual landholding was considered a nuisance. So producers were encouraged to stay put, intensify production, and adopt Green Revolution potatoes.

It didn't seem to matter terribly that these introduced potatoes would need a costly dose of fertilizer, pesticides and insecticides to grow well on their semi-arid high mountain hillsides. Nor was the extra time and fuel needed to cook them considered. They also ignored the fact that the water content of these new potatoes was much higher, with protein, antioxidant and minerals levels significantly lower. Compared to the pockmarked, odd shaped local potatoes, these foreign interlopers were handsome with few blemishes so they would do well in markets seeking uniform quality control and had shapes that fed easily into... French Fry machines.

Fortunately, most families held on to at least a handful of their favourite local varieties. But the commercial potential of faster growing and higher yielding potatoes was too attractive to pass up. Many farmers planted most of their potato fields with the introduced tubers, abandoning or neglecting up to 60% percent of the varieties that their ancestors had nurtured over generations. One NGO worker told me this story. In one season, his mother abandoned the approximately twenty varieties in her native collection in favour of the introduced variety he brought home with his university diploma. Commercial potato monoculture took hold, but with a vengeance, as you will see.

The competitive nature of market conditions also seems to have been overlooked by the well intentioned development experts. In those first few years, the new potatoes performed well. The supply increased but surprise, surprise, the price per kilo dropped. So, to make-up for lower unit prices farmers had to produce more. To produce more on semi-arid soils, they needed more synthetic inputs. To purchase

more inputs they needed credit. To pay back the credit, they needed more volume. Do you see the pattern here? Farming shifted from ensuring enough surplus production to obtain a modest level of disposable income to one of trying desperately to make credit payments. Following periods were shortened with overused fields and drug-addicted crops making the soils less and less fertile. And the seeds themselves started to deteriorate after year two, as did women's health since they handled chemicals with labels they could not read.

The **trade-off, in short**, did not **pay off**. In the year 2000, the average family farming income among respondents in one of the communities I studied – the one with a twenty year history of development funding -- was approximately \$311 Canadian dollars -- \$25. bucks a month for their backbreaking labour.

It would be unfair to point only an accusing finger for this state of affairs at the development community. But the blind eye to the sophisticated resilience systems that had been in place, meant that the assistance offered neither reaped the economic results anticipated nor curbed the most repeated complaint among farm families in the region: land deterioration and soil infertility. And, "to survive, the group needs not only to produce its means of subsistence, but to reproduce the conditions that allow survival" (Carr 1977). The biodiversity that remained within these communities had been maintained in spite of rather than because of outsiders sent to help. It was not, I concluded, what the small holder farmers lacked that merited endorsement and a helping hand, but what they already had– highly threatened but sophisticated ecosystem management and resilience strategies.

Now I wish my Bolivia story was an exception. Unfortunately, small scale farmers around the world continue to be bombarded with designer seeds and chemicals to solve their problems. There is a substantive body of evidence that tells this same story of failed good intention. Let me highlight some key findings (see Food First Policy Brief No.12: Ten Reason, Oct. 2006):

- The green revolution contributed to the concentration of land and resources, ultimately favouring a minority of economically privileged farmers. (Maybe we should call it a *Blue* Revolution!)
- In bad years, under more challenging conditions, the introduced seeds produced less than local varieties and over time did not perform well on the less favourable landscapes where the poor live -- the hard lesson my Bolivian friends learned!.
- While yield increases in rice and wheat rose an impressive 32% and 51%, the crop genetic diversity that is critical to livelihood security plummeted in GR areas, as did the knowledge about their conservation and use. Genetic uniformity, of course, makes us terribly vulnerable, as my great-great McGuire grandparents learned when forced to leave their Irish homeland for Canada in 1847.
- And increased yields do not necessarily lead to food self-sufficiency. In 1995, 200 million Indians were food insecure – malnourished or starving—yet the country exported \$625 million worth of wheat and flour and 5 million metric tons of rice. (Patel 2004).

Without addressing structural inequities in the market and political systems, approaches relying on high input technologies will inevitably fail those on the margins of power and privilege. The growing hunger in Africa is in large part due to the increased impoverishment of the very rural peoples who once grew food. They are no longer able to farm thanks in no small measure to forces beyond their control:

- The forced privatization of food crop marketing boards that, although in need of reform, had once guaranteed African farmers minimum prices and held food reserves for emergencies.
- Free trade agreements that have made it easier for private traders to import subsidized food from the U.S. and the E.U. Remember the frozen chicken example from Ghana.

Here's another dilly...

- The average European cow receives two and a half US dollars a day in subsidies from the European Union, while about three quarters of African people earn and live on less than \$2. a day. (Nik Gowing, BBC World Debate, 2007).

So before we rush to blame corrupt African leaders for all of that continent's problems, let's take a hard look at the international trade rules their countries are forced to navigate and ask: who benefits from that trade regime and how do we balance the economic gains for some with the social, cultural and environmental costs for many?

Finally, let us please put to rest the idea that with climate change breathing down our necks, we have no choice but to engineer ourselves out of the perfect storm brewing out there. Given the mess we are in, does more of the same logic really make sense? And there are thousands of examples of successful and ecologically sound smallholder farms that have years of adaptation experience to help us build a better system. Their crops – the ones that rural communities rely on most—rice, beans, maize, cassava, potatoes, millet, and sorghum —have seen increased yields, some by several fold, even on landscapes with full blown climate extremes. One major study involving 17 African countries found that agroecological approaches had increased cereal yields by between 50% and 100% (Pretty 2004). The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) that Harriet told us about, funded by the biggies, including the World Bank and several UN Food agencies, linked the *organic* and biodiverse practices of small-scale producers to sustainable and impressive yields. And let not kids ourselves. They aren't successful because there are simply organic. They work because they consider the entire ecosystem, including the social and cultural needs of the human communities within them.

Near the daunting Sahara, where food is grown on soils like sand and drought or flash floods are common, I have seen farmers both feed their families well and earn income. They were using local, natural materials and agricultural biodiversity strategies, including the establishment of seed banks as insurance for tougher times, and community gardens to diversify diets. They had some help – USC Canada's Seed of Survival Program -- a program that builds on farmer-led ingenuity but also works with agronomists and researchers. Yes, for the record, these agroecological approaches aren't anti-science, hippy romance, backward, nostalgic, static, or the work of Luddites. USC, for example, has three pure scientists and two social scientists on our team, all with doctorates– but please don't hold that against us!

During my most recent return to Bolivia last March to review our agro-ecology program there, I saw further proof in the pudding. In fields 4000 meters above sea level, the local potato varieties had bright green, healthy leaves. Their introduced cousins from the state research station had blackened leaves that drooped lifelessly onto the soil. The severe frost that struck the area earlier that week had evidently been too much for the new kids on the block. Thankfully, the farmers didn't get all their potato seeds from the same basket!

I would like to end now with a final quick story about a Honduran farmer that I have come to admire enormously and let him, in a manner of speaking, have the last word.

Luis Alonso Pacheco is a farmer and community leader in a Honduran community called Yoro. Luis and his companeros have to make do with demanding hillside farming since the more favourable valley lands were scooped up for plantations. With CIDA support and that of two universities (including Guelph thanks to Sally Humphries), USC Canada teamed up with Don Luis and his fellow farmers after Hurricane

Mitch devastated their communities. Our local partner, FIPAH, established innovative farmer-researcher teams, called CIALs, to rebuild the area's plant genetic resources. Don Luis heads one of these teams.

As Don Luis puts it, "we do work on yield, of course, but we don't compromise our soils or biodiversity in the process". His CIAL assesses the desirability of crop types and varieties based on a broad range of characteristics including hardiness within their soil types, water needs, manure needs, adaptability, medicinal value, cooking time, taste and nutritional value, spiritual uses, storability, and market profitability. They also do participatory selection and breeding to identify kinds particularly suited to today's weather extremes. And they consider the entire ecosystem that can make or break their experience, planting trees and local shrubs, conserving water, integrating animals, managing the watershed, and working with other farm groups on policy frameworks to enhance their food sovereignty – the right to save their seeds, grow their own healthy food and control their food production systems. (By the way, in a poll that Nanos research conducted on food issues, one in seven Canadians said that they would like the farmers who grow our food to have more influence on the food system.)

Back to Honduras, I am happy to report that within less than a decade since Mitch, participating farms are flourishing. Don Luis and his companeros have also managed to develop hardier varieties of corn and beans based on local landraces that are much more suited to hurricane prone landscapes. He had the opportunity to present this research to a large meso-America conference of plant breeders and won the top prize in the innovative research competition—quite a feat given the number of PhDs in the room.

At a United Nations meeting this past June, Don Luis spoke about the role farmers like him have long played in conserving our planet plant genetic diversity. But he also stressed that in light of social and climatic changes, they welcomed a strengthening of traditional knowledge systems with new ideas and techniques. In essence, he called for the blending of the best of both knowledge systems beginning however with the recognition of the contributions of "small farmers and their communities".

What should we feed our children today and into our tomorrows? "Just" food – grown with farmers caring hands based on time-tested strategies to make it nutritious and wholesome. Small holder producers read their landscapes like we city folks read a cherished novel. Just imagine what farmers like Don Luis could do with their best practices and innovation if even 10% of that 20 billion were pledged to help them fight world hunger! And if we aren't willing to invest in these careful stewards of the land, then let's at least check our Western assumptions and recipes at our own farm gate.

Thank You.