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Counteracting Bio-Engineering and Bio-Piracy: Participatory Conservation of the Genetic Basis of Tomorrow's Food

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[Submitted Paper]

If Vandana Shiva were here she would talk about intellectual property rights, the dangers of bio-engineering and the need to conserve traditional seed varieties. That is what her Foundation in India does. And that is what Permaculturists do. We are well-placed. We are familiar with plant regimes, we have applied skills and strong community links.

During this talk I welcome your questions and answers. Bio-engineering is a controversial topic, it is at the frontier of scientific investigation and invention. There are many boundaries of belief being broken. Our ethical values are challenged. Messing around with the genetic basis of food, university graduates play God. We have the obscenity of petrol and chemical corporations fighting for control of our food, and even for the ownership of human genes. There is little point in languishing in a state of emotionalism and depression which must be our first instinctive reaction. Grassroots galvanisation is the only response that will bring some sense into the picture.

My father, Graham Smith, was a peacemaker at the grassroots level, a Hiroshima Day peace march organiser. As a child I watched, from my pram, my parents painting "Ban the Bomb" under bridges. Last year we had a majority of Australians disapproving the French tests in the Pacific. This brought me to realise that you can achieve social change with small beginnings. I would like to dedicate this speech to the memory of my father.

Access to planting material

Globally, hunger and poverty are on the increase and, according to *The Urban Agriculture Network* that we visited in Washington this year, in Africa and South America urbanisation is increasing at 20% per year.

The media and the environmental movement have largely ignored useful plants. Cabbages, lemon trees, oong choys, durians, yuccas and sapodillas are somehow

poor cousins of ornamentals and wild plants. It is essential that we conserve indigenous plants in wilderness areas and plant them in areas for regeneration and rehabilitation. But by far the most devastation is now occurring in cultivated areas and the nature of the cultivated plant needs thorough and concerted attention. That is one of the main messages of permaculture.

The lack of access to good planting material is a major hindrance in development work. Ali Sharif who is giving a concurrent session has asked me to help him source four cartons of seed for permaculture projects in Latin America. At Seed Savers here in Australia we are inundated with requests for seed from projects, both permaculture and non-permaculture, around the world – one that came in this week from PNG is on our display board in the poster hall. But sending seeds is not enough.

As a result *The Seed Savers' Network* has focussed on Community Seed Bank Training over the last eighteen months starting in the Pacific and Caribbean. This is with a view to creating a Global Permaculture Plant and Seed Network, which I hope to inaugurate at this conference.

Questions of ownership

Because mankind can manipulate genes, they have become more important on a global scale as a resource. Questions of ownership arise and indigenous people's rights, particularly in relation to knowledge of the usage of plants.

The Rio Convention in 1992 determined that at a moment in time at the end of that year, plants in any one country are the property of that country. This created a watershed for members of the international community to declare on which side they stood. It also meant that remuneration for benefits gained from a plant species had to be paid to the government of the source country. It is like proposing a law protecting heritage fruit trees – people will run around cutting down those trees in order to avoid possibly breaking the law in the future.

The whole bio-piracy issue goes further back than four years, but the *Rio Convention on Biodiversity* speeded up bio-prospecting activity, by creating the very legal ground for ownership of plants.

Governments as plant owners

Third World governments are not the best guardians of plant rights. They are usually large and unwieldy, disorganised and often corrupt; they are in any case very often under the sway of the IMF and the World Bank with their structural adjustment programmes to facilitate the prospering of foreign companies and seek, on the agricultural front, solely to increase exports with all the attendant problems of plantation economies: the use of the best land for monocultures and the poisoning of agricultural workers, land and waterways.

There is a notable exception and that is Ethiopia which has had strong laws against anyone prospecting for plants without a government official hired to supervise so that rights can be paid for plants found. Ethiopia by the way is from where coffee originates i.e., the centre of biodiversity for coffee, along with several important African small grains.

Bio-prospecting in botanic gardens

Just in terms of bio-prospecting for medicinal plants and genetic material for breeding programmes for food plants, sometimes termed bio-piracy, developments are that large companies are, with increasing speed, prospecting in the collections of botanic gardens (BGs), which are mega-storehouses of plant biodiversity holding samples of as many as half of the vascular plant species of the world. Almost three quarters of all the world's BGs are in the North.

In their quest to discover new sources of plant-derived drugs, pharmaceutical corporations and biotech firms are now approaching BGs to sell them samples of tropical plant diversity. Buying plant germplasm held in northern BGs may be easier and more convenient than negotiating access with countries of origin in the South, but it is a giant loophole and clear violation of the spirit, if not the law, of the Convention on Biodiversity. Companies involved are Glaxo-Wellcome, Merck, Pfizer, Phytera and Shaman. Chelsea Physick Garden, Royal Botanic Garden at Kew, five botanic gardens in Hawaii, Missouri Botanical Garden conduct extensive collecting expeditions but generally 75% of plant accessions held in BGs are from other BGs by exchange, or bought from public or private sources with little documentation of the original site.

Historical Perspective

Let's take an historical perspective on plant movements from the days of early migrations. We have had movement of plants with every migration. In the Pacific, where we have been working establishing community seed banks this last year, studies of aboriginal introductions reveal the origins of the island people. Columbus arrived in South America with cucumber seeds, and took home chillies, tomatoes and many other useful plants to Europe. BGs were termed acclimatisation gardens where introductions were made so that plantation economies could be established. Plants originating in one country became the dominant crop of the best lands in other countries, such as South East Asia's sugar cane which is grown throughout the tropics, or great amounts of cocoa being produced in Africa and rubber in Malaysia with both originating in Central America.

The next historical era in the movement of plants came with the FAO collecting through the 1960s and 1970s for storing in eleven major genebanks around the world to facilitate breeding for the Green Revolution. Erna Bennett, now a great lobbyist for justice in all this, collected wheat samples in Afghanistan and Turkey, then blew the whistle on the destiny of these and similar collections. Large scale seed companies used them for breeding hybrids that perform well as long as they have large inputs of chemical fertilisers and biocides.

Bio-engineering

We have the spectacle of pig genes that carry the characteristic of fast growth being spliced into cabbages, of the cold resistance of the bottom feeding flounder in the strawberry, of the flashing genes of firefly in tobacco. It seems that anything is possible but:

- What if you are a vegetarian and want to know if you are eating pig as well as cabbage?
- What if you suspect that there will be an increase in allergies in the population at large?
- What if you are concerned that there may be contamination of crops growing nearby?
- What if you just don't support breeding for large scale monoculture food production and distribution systems?

Then you must at least support thorough labelling systems of bio-engineered food.

Global Permaculture plant and seed exchange

So we can see that it is very important what our intent is when we collect and exchange. It must be with the intent that seed flows freely. That may be naive: we may well be infiltrated by agents of corporations. We struggle on with the strong conviction that the more people who know how to save seeds, the more who recognise the difference between varieties, the more we can educate plant connoisseurs, the more the populace sees that connection between the garden and food, then the more informed it will be to resist these onslaughts on our food quality.

In the pre-conference papers and the *Permaculture International Journal* we floated the idea of a *Global Permaculture Plant and Seed Exchange* for the purposes of supplying seeds and other planting material to permaculture projects in the third and fourth world. I would like to talk to anyone interested in discussing how we can go about this global network. We have been working as a first priority this last year on a Pacific Seed Network. We have made modest beginnings in four countries now, that is Australia, Solomon Islands, Cuba and Tonga and there are many permaculture organisations with seed collectors and seed banks and seed networks. I propose that we create some kind of linking mechanism at this conference.

For what it is worth, in June this year, even the FAO's *International Plant Genetic Resources Institute* came up with a *Global Plan of Action* which recognised the need to support farmer-based preservation of seed. The trouble is that little funding has been allocated for this Plan.

My final plea to you is to go home and start organising bioregional and national seed and plant materials networks. We need to be swift, strong and work relentlessly to retain control over the genetic basis of tomorrow's food.