Hope Shand

Why are you saying that 'no patents on life' campaigns don't go far enough these days?

The *"No Patents on Life"* campaigns have been extremely important – and continue to be important – no question. But we think that campaigns to challenge intellectual monopolies have to keep pace with new trends in science and technology and the concentration of corporate power.

Since the 1980s, a growing number of civil society organisations (CSOs) and some governments have denounced life patenting as technically invalid and fundamentally inequitable. We have been arguing that monopoly control over plants, animals and other life forms jeopardises world food security, undermines conservation and use of biological diversity and threatens to increase the economic insecurity of farming communities. Instead of promoting innovation, patents are stifling research, limiting competition and thwarting new discoveries.

What we're seeing now is that industrial corporations are also becoming disenchanted with intellectual property – but for different reasons. The complexity and costs of patents are becoming problematic. The transaction costs are enormous. The legal costs of obtaining a patent are approximately $10,000 in the US, and it typically costs $1.5 million per side to litigate a patent. Start-up biotech companies are budgeting as much for patent litigation as they are for research expenditures. In addition, intellectual property laws are also perceived by corporations as politically unpredictable, because life patenting has become politically contentious. Industry is worried that mounting political opposition to patents could lead to legislative changes that threaten its intellectual property.

Because of this, industry is seeking alternative mechanisms, or *"New Enclosures"*, to secure corporate control over biotechnology and other emerging technologies. After two decades of consolidation, five multinational corporations dominate the field of agricultural biotechnology. Patents become less relevant in oligopolistic markets and when other tools of monopoly are potentially cheaper and more far-reaching. It is these New Enclosures that we need to tackle now.

What do these New Enclosures look like?

We have identified three categories that relate to agriculture. The first is biological monopolies on genetic material. The best-known examples of New Enclosure mechanisms are the controversial genetic use restriction technologies (GURTs), better known as Terminator and Traitor technologies. GURTs involve the use of genetic switches, triggered by the application of external chemicals, to control a plant's genetic traits. Terminator plants are genetically modified to switch on or off the trait for seed sterility. Seeds harvested from Terminator crops will not germinate if re-planted the following season. The technology aims to prevent farmers from saving seed from their harvest, thus forcing them to return to the commercial seed market every year. The difference here is that patents are a legal mechanism to prevent farmers from saving and re-planting proprietary seed. If they reach the market, Terminator seeds would offer a biological mechanism to eliminate farmer seed-saving. For corporations, seed sterilisation offers a stronger and more far-reaching monopoly than intellectual property because, unlike patents, Terminator technology would not be time-limited, it would

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Among the myriad publications she has produced, Hope is the author of *Human Nature: Agricultural Biodiversity and Farm-Based Food Security (1998)* and co-author of *The Ownership of Life: When Patents and Values Clash (1997).*

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offer no exemption for researchers, no provision for compulsory licensing and no need for lawyers.

What other types of New Enclosures are there?

Remote sensing and surveillance is another area. Earth observation satellites are already being used by governments, civil society and industry to collect images and information about human activities and the natural environment. While these technologies have the potential to promote transparency and benefit agriculture, they also threaten to diminish the rights of farmers and farm communities. Remote sensing and biodetectors are already being used by corporations and governments to enforce proprietary rights and regulatory compliance; and to identify, monitor and control germplasm, territory and labour.

So it's like Big Brother literally watching you?

There are various ways of monitoring – one is looking at images of what is going on. This technology is now very precise and the images have better than 1-metre resolution. The Argentine government has talked of plans to use this kind of satellite imagery to monitor farmers' crops in an effort to halt tax evasion. The idea is to figure out how many hectares a farmer has sown and check to see if his declared crop yields are consistent with the average for the region. The National Seed Institute (INASE) has also proposed using satellite surveillance to stop illegal seed trading.

Another way is using sensors that monitor all kinds of information from climatic conditions to a farmer's business transactions. The Tasmanian government has set up a Global Positioning Satellite System (GPS) to establish a comprehensive mapping and numbering system for all Tasmanian farms. This system began as an *"identity preservation"* system to regulate legally-licensed opium poppy fields produced by Tasmanian Alkaloids, and was so successful that they decided to expand it state-wide. The idea is that seed, fertiliser and spray regimes are recorded for future reference, and the downstream buyer can scrutinise a detailed history of the farmers' suppliers. There are obvious benefits for buyers in verifying and tracking production practices from seedling to supermarket. The same technology offers unprecedented opportunities for industrial food processors and retailers to determine who will farm, how, and under what conditions.

The third class of New Enclosures you refer to are legal contracts. Why are these more threatening to farmers than patents?

Increasingly, the seed industry provides proprietary seed to farmers under contractual agreements that prohibit the farmer from saving, re-using or selling any of the harvested crop as seed. Seed industry giants routinely use technology user agreements when they sell genetically modified (GM) seed. The contracts not only restrict the use of harvested seed, they go far beyond intellectual property by dictating conditions for using seed and related inputs, establishing limits for liability and legal recourse, and even conditions for post-harvest marketing (see box).

How does nanotechnology fit into the picture?

Genetic engineering enabled scientists to break the species barrier. Nanotechnology takes it a step further – shattering the boundary between living and non-living matter. *"Nanotechnology"* refers to the manipulation of atoms and molecules to make new products. At the nano-scale, where objects are measured in billionths of meters, the distinction between living and non-living blurs. The raw materials for nanotechnology are the chemical elements of the Periodic Table, the building blocks of all matter – both living and non-living. Nanotech companies are already engineering novel materials that may have entirely new properties never before identified in nature. And there is huge investment in it. Worldwide, public and private sector nanotechnology funding is already between $5-$6 billion a year.

Atomic-level manufacturing provides new opportunities for sweeping monopoly control over both animate and inanimate matter. Patenting at the nano-scale offers the potential to monopolise the basic elements that make life possible. Again, that's why we think it's important to expand efforts to resist intellectual monopolies beyond 'no patents on life.'

Nanotech concerns seem far removed from most farmers' realities, particularly in the South. Why should they worry?

Both present and future applications of nanotechnology pose profound implications for trade, labour requirements and industrial production processes – including agriculture. Some materials and manufacturing processes will no longer be dependent on geography, labour or raw materials. Nanotechnology could render some natural resources obsolete – with especially serious disruptions for economies in the South. The world's major tyre producers, for example, are experimenting with the use of nanoparticles as additives in automobile tyres to make them stronger and more wear-resistant. Researchers are also designing new nanomaterials that are stronger and lighter and could be substituted for natural rubber. If nano-designed tyres require little or no rubber in the future, it could have devastating impacts

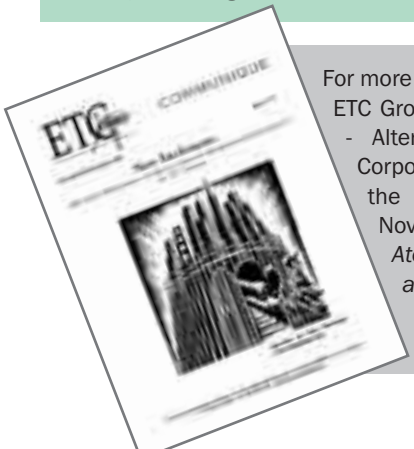
Legal contracts – worse than patents

Technology use agreements force farmers to shoulder a huge burden of responsibility in return for the privilege of growing GM crops:

- ***Liability Limits:*** Farmers who sign Monsanto's 2001 technology agreement must accept the company's Exclusive Limited Warranty, which severely limits Monsanto's liability for any and all losses, injury or damages that result from the use or handling of a product containing Monsanto's gene technology.
- ***Right of Venue:*** Right of venue clauses allow the seed company to force breach of contract disputes arising from technology agreements to be settled exclusively in court jurisdictions that are generally more favorable to the corporation, and typically make defense against infringement charges more costly to the farmer.
- ***Dictate Farming Conditions:*** Monsanto's 2001 technology agreement for Roundup Ready GM crops states that the producer has responsibility for ensuring that pollen from his or her GM crop does not trespass on a neighbour's crop. This means that growers of GM crops are exposing themselves to potentially huge financial risks by signing gene technology agreements.
- ***Post-Harvest Liability:*** A farmer who signs Pioneer's contract for both YieldGard and LibertyLink gene technology *"agrees to keep the harvested grain from these hybrids out of European grain export channels."* Monsanto's 2001 agreement on RoundUp Ready crops has similar provisions. Dwight Aakre, North Dakota State University economist, warns farmers, *"Signing that agreement means you accept a risk that you have very little control over. If a ship load of grain arrives at one of these export markets, is tested and found to contain unapproved genetics and the source can be traced back to your farm, what is your responsibility?"*

In North America, Monsanto has aggressively monitored and prosecuted seed-saving farmers with the help of private investigators. The company has filed more than 475 lawsuits against farmers for patent infringement and violation of technology user agreements – (the exact number is not known). Monsanto's GM seed technology accounted for more than 90% of the total world area planted in GM seed in 2002, and the company is showing its determination to hold all farmers to the terms of its technology user agreement, whether or not they signed it.

Recently we've been seeing a new and dangerous model emerging in Argentina where the government has proposed to levy taxes on soybean farmers to collect royalty payments for Monsanto (see p 3). Argentina is offering to police the patent system for Monsanto! This is corporate welfare, and another example of New Enclosures. Monsanto won't even need patents if governments are willing to collect royalties for them.



For more information on New Enclosures, see ETC Group's publications: "New Enclosures - Alternative Mechanisms to Enhance Corporate Monopoly and BioSerfdom in the 21st Century", *ETC Communiqué*, November 2001; *The Big Down: Atomtech – Technologies Converging at the Nano-scale*," January, 2003; "Oligopoly, Inc.," *ETC Communiqué*, November/December 2003.

for rubber producers and plantation workers worldwide. Malaysia and Thailand are currently the world's top producers of natural rubber.

In Chiang Mai, Thailand, researchers at the Fast Neutron Research Facility are using nanotechnology to modify rice. These are nuclear physicists who are blasting nitrogen atoms into rice cells to stimulate re-arrangement of the rice DNA. Their goal is to modify genetic characteristics and produce a fragrant rice with short stems that is not light sensitive. Ironically, the physicists who are doing the work say that they are hoping to avoid the controversy surrounding GMOs!

Where is the battleground to fight New Enclosures? What can people do?

New Enclosures threaten to erode the rights of farmers and workers, undermine national sovereignty, and promote corporate consolidation. Efforts to resist and reform intellectual property must not be limited to campaigns against the patenting of life, because nanotechnology is positioning the world's largest companies to seek patent claims on the building blocks of the entire natural world.

New Enclosures must be carefully monitored, analysed and independently regulated. Action is needed at all levels – from local communities and national governments to intergovernmental bodies. We're already seeing farmers' and civil society organisations resisting and challenging corporate contracts and bioserfdom. We've seen that civil society partners around the world and farmers' organisations can quickly grasp the issues and threats posed by nanotechnology once they're informed – they've seen it all before. The UN also needs to be involved because we must regain the capacity to monitor and regulate the activities of transnational enterprises, and these operate beyond the boundaries of any single country. We have also proposed setting up a new body with the mandate to evaluate, accept or reject new technologies and their products through an International Convention on the Evaluation of New Technologies.