

Stop Patenting Life!

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(from 'Patenting Life? Stop!')

In this paper I will argue that, even if one accepts that the risks posed by genetically engineered products to human health and the environment are not serious enough to warrant banning them on ethical grounds, there are sufficient ethical grounds for opposing the patenting of living organisms. Over time, the patenting scramble will remove many life forms from the domain of the commons where they have provided many services for humans and other creatures. Under a patenting regime these life forms will now become the private property of Northern transnational corporations. Life will have value only in so far as it generates a profitable return on investment for large companies. The debate is timely because the World Trade Organization planned to monitor how signatories of the WTO were implementing Article 27.3(b) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) at the WTO Ministerial Meeting in Seattle at the end of November 1999. Many feared that a global regime of patenting will fill the coffers of rich Northern Transnational Corporations and further impoverish the poor, especially in the Third World.

Life, which was once considered sacred and a gift from God in almost all the religions and cultures of the world, is now seen as a human invention, a collection of genes and chemicals that can be engineered and bought and sold by a patent holder.

Such a reductionist, mechanistic and materialistic concept of life is at variance with the tenets of all the major religions. The speech attributed to

the North American Indian Chief Seattle bemoaned Western arrogance that thought we could “buy or sell the sky or the warmth of the land”. With patenting, human beings claim to have invented plants and animals and to have exclusive control over them. If the scramble to patent living forms gathers pace across society, it will undoubtedly devalue the meaning of life. Unlike Chief Seattle for whom “every part of the Earth was sacred”, no part of the Earth will be sacred in the future. Furthermore, it could well mean that within a few decades “the entire human genome... (will) be owned by a handful of companies and governments.”ⁱ

Privatizing the Commons

The similarity between what happened with the Enclosure Acts in Britain in the 18th century, and what is happening today with global Trade-Related Intellectual Property legislation, has not been lost on commentators. Pat Roy Mooney points out that the “rich landlords who orchestrated the enclosure movement... argued that the commons must be privatized so that they could take advantage of the new agricultural technologies and feed growing urban populations... In the same way and with the same arguments as the Enclosure Acts used to drive rural societies from their ancestral lands (and rights), TNCs are now pursuing another Enclosure Act – the intellectual property (‘IP’) system – to privatize the intellectual commons and monopolize new technologies based on these commons. The Landlords have become the Mind Lords. In the post-GATT world of new biotechnologies, these are also the Life Lords.”ⁱⁱ

What is happening in the latter part of the 20th century is a new, more invidious form of colonialism. The goal this time is not just to conquer new lands like Vasco da Gama, Columbus, Magellan or Cromwell did, or to lay claim to gold or precious stones – it is to colonize life itself. Many of the agribusiness, pharmaceutical and biotech corporations involved in this enterprise are larger financial entities than the average nation state. They

can bring enormous pressure to bear on politicians on the national and global stage to design a regulatory regime that promotes their products. Since most of the multinationals have their headquarters in the U.S., they have persuaded the U.S. government to write to Third World countries warning them that unless they stop importing generic drugs the U.S. will withhold special trading privileges.ⁱⁱⁱ

The Rationale behind Patenting

The rationale behind patenting is the desire to reward and compensate an individual for time and expense involved in developing an invention. The individual is normally granted monopoly rights over his/her invention for between 17 and 20 years. The patent holder can prevent other people from making, using or selling the invention unless they pay a license fee or royalty on any commercial application derived from the invention.

Three criteria are required in order to obtain a patent on an invention which can be either a material product or a process. It must be **new** or novel; it must involve **a non-obvious inventive step** and, finally, it must **be useful and have a commercial application**.

The first criteria would seem to rule out patenting for living organisms. The geneticist or biotechnologist does not create *de novo* genes, cells or organisms. They identify, isolate and modify these entities, which is a very different operation from creating them. Many people would suggest that the analogy between a chemist patenting the elements of the periodic table and a geneticist patenting genes is appropriate. Jeremy Rifkin states that “no reasonable person would dare suggest that a scientist who isolated, classified and described the properties of hydrogen, helium or oxygen ought to be granted the exclusive right, for twenty years, to claim the substance as a human invention”.^{iv} For this reason patents should not be given for living organisms. Other mechanisms ought to be developed to protect the legitimate financial interests of those who invest in biotechnology products or procedures.

It is important to remember that patent laws were framed in an industrial

context and therefore are more suitable for machines rather than knowledge. One of the first recorded patents was in Venice in 1474. It granted ten years privilege to the inventors of new arts and machines. Though a patent law appears in Britain in 1623, patenting did not really come into force in that country until the 1852 reforms. In the United States, for example, patents were granted on imported technologies without any proof of originality.^v In the intervening centuries patents have been applied for to cover objects, chemicals, designs and processes.

Patenting Laws Differed from Country to Country

Until recent times patenting laws differed from country to country reflecting the way in which different cultures and political systems weighed up the often conflicting claims between compensating the inventor and ensuring that the public benefits from the new product. The pendulum normally tilted in favour of the common good of the nation rather than towards securing the financial interest of the inventor or the corporation. Most Third World countries, for example, refused to recognize patents on food and medicine and other basic products that are deemed basic human needs. When Alexander Fleming invented penicillin at St. Mary's hospital in London in 1928, the British government decided that this drug should not be patented because of the potential value to humankind.^{vi}

Earlier patent agreements began with the Vienna Congress in 1873. This was followed by the Paris Convention of the International Union for the Protection of Industrial Properties. It was signed by 11 countries and was revised in 1911, 1925, 1934, 1958 and 1967. In 1886 the Berne Convention on copyright was signed. It was updated in 1946. The Berne Convention recognised that individual countries had particular needs and priorities and that these would be reflected in national patent legislation. It is worth remembering that in many industrialized countries like France, Germany, Japan, Switzerland, Italy and Sweden, patenting legislation appeared only after the development of their own industries and that even after signing the above conventions individual countries seldom enforced those international agreements.^{vii} The development of the textile industry in the United States in the early 19th century was based on patterns and machines which were

developed in Lancashire. The Japanese textile industry followed this same route in the early 20th century and its much-vaunted economic miracle in the post-World War II period was based on innovative copying. At the end of the 19th century Germany complained about the absence of a patent law in Switzerland and the consequent theft of German intellectual property by Swiss firms, especially in the chemical industry.^{viii}

The first break with these country-specific patent laws took place during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) which was concluded in 1994. Under pressure from its corporate sector the U.S., together with other Northern countries, pushed for 'harmonisation' in the law affecting intellectual property right across the world. It is worth noting that 70 per cent of U.S. export earnings are linked to patented items, from AIDS drugs to Disney, McDonalds and Microsoft. The resulting GATT Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) obligated all GATT signatories to adopt minimum intellectual property standards for plants, animals, micro-organisms and biological material, including genes. Gradually the understanding that patenting applied to only inanimate things and processes began to be eroded. **It is no secret that the giant agribusiness Cargill was largely responsible for drafting the Agreement on Agriculture at the WTO.**^{ix}

The biotech industry, on the other hand, claims that patents are necessary so that innovative, life-saving technologies will be developed. Critics counter that this argument has no historical support. In fact the opposite is the case. Until the middle of the 19th century Switzerland was an agricultural country, poor in natural resources. Because there was no patenting law a small company copied the aniline dyeing process which had been developed and patented in Britain. That company which later was called Ciba developed into a major global enterprise. In 1995 it merged with another Swiss company called Sandoz to form Novartis. Ironically Novartis led the campaign in Europe which allowed companies to patent genes and life.

Companies often call for patents to pay for innovation, but Eric Schiff, a historian of economics, makes the point that no country has contributed "as

many basic inventions in the field as did Switzerland during her patentless period”. These inventions include milk chocolate by Daniel Peter in 1875, chocolat fondant by Rudolf Lindt in 1879 and powdered soup by Julius Maggi in 1886. Holland followed a similar path. In 1870 two Dutch companies Jurgens and Van Den Bergh used a French patented recipe to produce margarine. These later merged with the British company Unilever. This company is vigorously promoting patenting legislation. Similarly Gerard Philips began manufacturing light bulbs invented by Thomas Edison. Schiff argues that on economic grounds it is “difficult to avoid the impression” that the absence of patents “furthered rather than hampered development”.^x

The Cambridge economist Ha-Joon Chang, in his book Kicking Away the Ladder: Development Strategies in Historical Perspective, makes it quite clear that history debunks the free-trade myth. He points out that countries like the United States, Switzerland and Holland became rich on the basis of protectionism and subsidies. Once these countries became rich they began pressurizing poor countries to accept so-called free-trade and all its accoutrements, including a restrictive patenting regime. Ha-Joon Chang maintains that these so-called orthodox policies have killed growth in many Third World countries, especially in Africa and Latin America. In order to stimulate growth the WTO ought to rewrite its rules “*so that developing countries can more actively use tariffs and subsidies for industrial development*”.^{xi}

Furthermore, patents enable companies to create a monopoly on a product, permitting artificially high pricing. As a result, drugs and other procedures will be priced out of reach of poor people. Third World critics of the Northern dominated pharmaceutical industry point out that these corporations spend millions of dollars researching profitable lifestyle drugs like Viagra, but neglect the diseases of the poor like malaria and tuberculosis, to mention just two.

The court case in South Africa where 40 transnational pharmaceutical companies took the South African government to court to prevent the government importing generic drugs which are needed in the fight against

AIDS illustrates the determination of TNCs like giant corporation GlaxoSmithKline to protect their patents at any cost. The usual rationale that the companies give for seeking patents – huge research and development costs – did not pertain in this case since the medication was developed in public institutions and has been leased to a pharmaceutical company. The disparity in costs was staggering. At present ciprofloxacin, which is an essential medicine for AIDS sufferers, costs South Africa's public health sector 52p (sterling) per pill and the country's private health care providers more than £3 per tablet. If the new law is implemented, a generic drug could be imported from India for 4p per pill.^{xii} Obviously, access to generic drugs would be good news for the 37 million people suffering from AIDS in Africa alone.

The court action which was watched with interest around the world turned into a PR disaster for the giant pharmaceuticals. They were made to appear rapacious and greedy, willing to put their profits before the well-being of millions who are suffering from AIDS. This greed was seen again in December 2001 when the Competition Commissioner of the European Union, Mario Monti, fined a number of pharmaceutical and chemical companies 1.5 billion euros for price fixing and acting as a cartel. The Swiss chemical company Hoffman-LaRoche was fined 462 million euros for conspiring to fix vitamin prices. The controlling power of transnational companies can be seen in the fact that this extraordinary scandal did not make the front page or top story in the media. I found the data in The Irish Times financial section.^{xiii}

The double-standard in the North's approach to patented medicine was once again revealed during the anthrax attacks in North America in October 2001. Fearing widespread anthrax attacks on the population of the U.S. and Canada the U.S. considered breaking the Cipro patent and the Canadians actually did break the patent in order to produce sufficient quantities of the drug. Many Third World people ask, "Is the health of white North Americans more important than the health and survival of Africans afflicted with AIDS?" **The U.S. has been pushing the free-trade agenda because**

it benefits its transnational corporations. When their interests are threatened the U.S. becomes very protectionist. The 2002 Farm Bill gives subsidies in the region of \$248.6 billion dollars to corporate agriculture. This subsidy will have a very negative impact on Third World agriculture.

As we saw above the parent companies of some of the most pro-patenting companies in today's world were once against patenting. In the mid-1800s the parent company of what later became Ciba-Geigy Ltd. was fighting any attempt to establish patenting laws in Switzerland. There is a modern ring to their arguments. They claimed that "(p)atent protection forms a stumbling block for the development of trade and industry... The patent system is a playground for plundering patent agents and lawyers."^{xiv}

The Biotech industry boasts that genetically engineered rice could help prevent blindness among poor children. Millions of dollars of public funding went into developing this technology which was hailed as proof that biotechnology will help feed and supplement the diet of the poor who might be lacking in Vitamin A. The researchers Ingo Potrykus and Peter Beyer who developed the transgenic beta-carotene enhanced rice were so afraid of the complexities of patent negotiations that they quickly signed the publicly-funded technology to AstraZeneca (now Syngentia), one of the world's largest agrochemical and biotechnology companies.^{xv} Already there are some 70 patents on the so-called 'golden rice'.

Dolly

This is already happening. The Roslin Institute that cloned Dolly applied for a broad spectrum patent which would give them exclusive rights over all cloned mammals. Almost immediately they mounted a legal challenge against researchers at the University of Hawaii who were attempting to clone cows. Ian Wilmut and Keith Campbell claimed that the researchers in Hawaii used cloning techniques that are covered in their patent on Dolly.^{xvi} Dolly was hailed by many as a new wonder. Few commentators pointed out that it took 277 embryos to create her. Many of the pregnancies failed. Some of the lambs were stillborn or died at birth because they were

unusually large. Then in 2001 we found out that Dolly had arthritis at the relatively young age of 5. Questions are being asked: was it the cloning process that gave her a genetic defect?

In February 2002 it was reported that researchers in Japan discovered that cloned mice die prematurely. Scientists at the National Institute of Infectious Diseases in Tokyo cloned 12 mice and compared them with a control group that had been born through natural mating. In the initial period there was little difference between the cloned and 'natural' mice. Each group seemed healthy and put on weight. But within one year significant differences began to emerge between the control group and the cloned mice. A flaw in the mice's immune system meant that they were unable to fight off normal diseases. By the 311th day the first cloned mice died. By the 800th day 10 had died. This meant that 83 percent of the cloned mice had died as against 3 or 23 percent of the control group. This experiment raises serious issues about the health and longevity of cloned animals.^{xvii}

Diamond vs. Chakrabarty

The decisive change in the push to patent living organisms began in the early 1970s. In 1971 Ananda Chakrabarty, a microbiologist working for General Electric, used genetic engineering techniques to develop a microbe that would help clean up oil spillage by devouring oil. Both the researcher and the company applied to the U.S. Patent and Trademark Office (PTO) for a patent on the genetically engineered microbe. The Patent Office refused the application on the grounds that life-forms could not be patented. Chakrabarty appealed to the Court of Customs and Patent Appeals (CCPA). To everyone's surprise the CCPA in a narrow three-to-two judgement reversed the PTO decision and granted a patent for the oil-consuming microbe. The judgment made it very clear that the rubicon, between the animate and inanimate nature, had been crossed. It stated that, "*the fact that the mico-organisms are ... alive ... (is) without legal significance*".^{xviii}

The saga did not end there. The Patent Office challenged the CCPA's decision in the U.S. Supreme Court. Before hearing the case the Court

advised the CCPA to examine a recent Supreme Court decision in the Parker v. Flook case which stated that “*the courts) must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress*”.^{xix} Despite this caution the CCPA continued to uphold the patent. As a consequence the Supreme Court was forced to address the issue whether life could be patented or not in 1980.

Given the Court’s stance in the Flook case most observers expected that the patent application would be refused. This did not happen. In June 1980 the U.S. Supreme Court decided by a five-to-four majority that life was patentable. The ruling stated that the “relevant distinction was not between living and inanimate things”, but whether living products could be seen as “human-made inventions”.

In their judgement the Justices argued that the larger question, namely, whether life might be patented, should now be addressed by appropriate legislation in the U.S. Congress. This never happened so the Chakrabarty judgement opened the floodgates for patent applications on living beings.

One could not exaggerate the momentous nature of this decision. It constitutes a break with the way most cultures have viewed life down through the ages. The philosophical, ethical and legal bases on which the decision was reached is at variance with most of the cultural and religious traditions of the planet. Most cultures and ethical traditions make a clear distinction between living and inanimate realities. The Harvard biologist Edward O. Wilson would go much further in bonding humans with the rest of animate creation. In his book Biophilia he argues that during our evolutionary development we were hard-wired genetically to bond with other species in the living world. In the Prologue he used a powerful metaphor from the living world to illustrate the powerful attraction of other life forms: *(we) learn to distinguish life from the inanimate and move towards it like moths to the porch light.*^{xx} Nothing, and, certainly not the commercial demands of transnational corporations, should be allowed to blur or eliminate that vital distinction between life and non-life.

Furthermore, patents are derived from concepts of individual innovation

and ownership, which is foreign to many cultures where sharing of community resources and the free exchange of seeds and knowledge are promoted as crucial values. The concept of individual property rights to either resources or knowledge is alien to many indigenous people. In a patent dominated world it is easy to forget that European and U.S. agriculture was developed from plants and genetic resources freely imported from other countries. If justice means anything they should repay their 'genetic debt' to the world.^{xxi}

The simple fact is that Chakrabarty did not create 'his' bacterium. As Key Dismukes, a former director of the Committee on Vision of the National Academy of Science in the U.S. observed, he "merely intervened in the normal processes by which strains of bacteria exchange genetic information to produce a new strain with an altered metabolic pattern. 'His' bacterium lives and reproduces itself under the forces that guide all cellular life."^{xxii}

Andrew Kimbrell believes that the U.S. Supreme Court's decision has "transformed the status of the biotic community from a common heritage of the earth to the private preserve of researchers and industry". He points out that the ruling has "set the stage for increasing competition among multinationals as they vie for ownership and control of the planet's gene pool, patenting everything that lives, breathes, and moves".^{xxiii}

It is worth mentioning that this is not the first time that the judiciary had put the interests of the corporations ahead of those of the ordinary citizens. Fr Thomas Berry, a leading Catholic thinker on environmental issues, insists that "from the beginning of the 19th century the legal profession and the judiciary in America bonded with the entrepreneurs and their commercial ventures, even at this early period, against the ordinary citizen, the workers and the farmers".^{xxiv} He goes on to quote from a book written by Morton Horwitz, who is professor of American Legal History at Harvard Law School. In his book The Transformation of American Law 1780-1860, Horwitz writes that "by the end of the 19th century the legal system had been reshaped to the advantage of men of commerce and industry at the expense of farmers, workers, consumers and other less powerful groups within society".^{xxv}

Patenting life certainly benefits the corporations and not the general public, either in the First or Third World. Within a few short years many genetically modified organisms including viruses, plants and animals have been patented in the U.S. The genes that are perceived to 'cause' many common illnesses either have been patented or have had applications lodged for the patent. Already Duke University has taken out a patent on the Alzheimer's gene which they have licensed to Blaxo. The National Institute of Health has applied for a patent on the Parkinson's disease gene. Myriad Genetics, which is now owned by Novartis, has applied for a patent on a cardiovascular disease gene. Patent 5,633,161 on the melanoma gene is owned by Millennium Pharmaceuticals. Even a gene associated with obesity has now been patented by Millennium Pharmaceuticals and licensed to Hoffmann-LaRoche. These and a host of other patents will now be enforced in Europe since the Directive on the Legal Protection of Biotechnological Inventions was passed by the European Parliament on May 12, 1998.

The EU Council of Ministers approved the Directive in autumn 1998. Fortunately, the Dutch Government filed a nullity suit at the European Court of Justice against the Directive. Italy has also joined with the Dutch in oppositions to the Directive. The Dutch challenge is based on a number of reasons, among them the fact that it violates the basic rights of citizens by creating dependencies between patients and single companies (patent holders).

The Italian Government recognized that patents on living organisms are morally objectionable to many people. Patenting promotes the view that life is a mere commodity. Most cultures and religions find this repugnant, especially when it includes human life.

Despite these challenges the corporate world felt that it had a tough legal patent framework in place in the U.S. and Europe. As a result the number of applications for patents jumped astronomically from 150,000 per year in the late 1980s to 275,000 today. In October 2000 there were patent applications on 126,672 human gene sequences. By February 2001 the

figure had jumped a further 38 per cent to 175,624. The people who gain most from all of this are Northerners. For example, of the 26,000 patents applications filed to the African Intellectual Property Organisation, only 31 came from residents in Africa.^{xxvi}

The Bible and Patenting Life

The U.S. Supreme Court's view of life also differs radically from the way life is understood, revered and cherished in the Judeo-Christian tradition. The first line of the Bible insists that everything was created by a living God: "In the beginning God created the heavens and the earth" (Gen. 1:1). The text is very clear that all living beings, including human beings, are creatures of God.

Human beings have a special place in creation, as representatives or viceroys of God (Gen.1:26). They show their dependence on God in the way they relate to God, to each other and to the earth. In the initial covenant between God and humanity (Gen. 1:28-31) humans were not allowed to eat flesh (Gen. 1:29). Even after the flood, when Noah was allowed to kill animals for food, there is a prohibition on consuming the animal's blood (Gen. 9:3-4). Blood, in the ancient Near-East was considered to be the seat of life. The Old Testament scholar Gerhard von Rad writes "*even when man slaughters and kills, he is to know that he is touching something, which, because it is life, is in a special manner God's property.*"^{xxvii}

The first account of creation goes on to teach that all beings have their own inherent value. This dignity derives from the fact that they are created by God (Gen. 1:12, 19-25). This inherent dignity of creatures increases and intensifies the higher one moves up the chain of being. In Gen. 1:21-22 God blesses creatures that live in water and the birds.

In the second account of creation the man is given the privilege of naming the animals (Gen. 2:19-20). The text recognises that all creatures, including humans, have a common origin. They are created from the soil. God invites the man to name the animals and thereby incorporate these creatures into

the human environment. While this gives humans dominion over other creatures, it is not an arrogant dominion with the right to oppress and exploit. Rather it is supposed to be patterned on God's own care and sovereignty. This is expressed in Psalm 72:4-6 where the righteous king combines concern for the poor and care for the creatures of the earth.

Furthermore, in the Judeo-Christian tradition creation is an all-encompassing activity. It is not a once-off action in the distant past by a mechanistic God who immediately abandons the world to its own devices. Right from the time of Origen there was this understanding of creation as a continuing reality. Catholic theology affirms that God's initiative in creation is not confined to the initial moment of creating the universe. This is often referred to as *creatio ex nihilo* (creating out of nothing). Catholic doctrine has always stated that God is constantly involved with creation. This is referred to as the doctrine of *creatio continuo* (continuing creation). God is perceived as living in each of Her/His creatures in the here and now. In terms of the future God holds together the web of life and leads all creation into the future (Ps. 104). In the Catholic theological tradition "creation is not an artifact. It is a gift, not of improved or altered being, but of being, pure and simple."^{xxviii}

The Bible does not share the reductionist myopia of the U.S. Supreme Court that sees life as an isolated entity and as a product of human industry. In the Thomistic tradition all being is indebted to God for its being and continuation. Underlying all action in the world and human affairs is the God who keeps us in being and enables our action.^{xxix} A modern theologian like Jurgen Moltmann writes, "*if we want to understand what is real as real, and what is living as living, we have to know it in its own primal and individual community, in its relationships, interconnections and surroundings.*"^{xxx}

Patenting is a fundamental attack on this understanding of life as interconnected, mutually dependent and a gift of God which is given to all. (Oh, come to the water all you who are thirsty; though you have no money, come! Buy corn without money, and eat, and, at no cost, wine and milk [Isaiah 55:1].) It opts instead for an atomised, isolated understanding of life.

It is also at variance with the Judeo-Christian conviction that freedom, openness and possibility are the hallmarks of life in God's creation.

The Bible also recognises that humans are companions and stewards of other creations in the community of life (Gen. 2:15). In Gen. 2:15-17 God settles the man in the Garden and invites him to cultivate and care for it. The text goes on to place certain limits on the man's use of the natural world. The Yahweh God gave the man this admonition, "*You may eat indeed of all the trees in the garden. Nevertheless, of the tree of the knowledge of good and evil you are not to eat, for on the day you eat of it you shall surely die*" (Gen. 2:16-17).

But stewardship does not mean that humans are inventors or owners of life or that they can dominate and exploit everything in creation. In fact it challenges and repudiates that view. God, and only God, is the creator of life and all life, including humans, is dependent on God. The Bible is very critical of those who, puffed up with arrogance, refuse to recognise that they are creatures and, thus, dependent on God. In the story of the Tower of Babel (Gen. 11) humans repudiate God's sovereignty and attempt to storm heaven under their own steam. I think it would not be misrepresenting the meaning of this text to interpret any claim to own life as usurping the Divine prerogative as author of life.

Living organisms are not merely 'gene machines' to be manipulated and exploited for profit. This is why after the U.S. Patent and Trademark Office patented the first animal in 1987 a group of 24 religious leaders issued the following statement:

The decision of the U.S. Patent Office to allow the patenting of genetically engineered animals presents fundamental dangers to humanity's relationship with the natural world. Reverence for all life created by God may be eroded by subtle economic pressures to view animal life as if it were an industrial product invented and manufactured by humans.^{xxxi}

In his encyclical on social justice entitled *Sollicitudo Rei Socialis* Pope

John Paul II interprets the Gen. 2:16-17 text as placing limitations of humans' use of the natural world. He states that

the dominion granted to man by the Creator is not an absolute power, nor can one speak of a freedom to 'use and abuse', or to dispose of things as one pleases. The limitations imposed from the beginning by the Creator himself and expressed symbolically by the prohibition not to 'eat of the fruit of the tree' shows clearly enough that, when it comes to the natural world, we are subject not only to biological laws, but also to moral ones, which cannot be violated with impunity.^{xxxii}

I would argue that the limitations referred to by the Pope include the call to respect the genetic integrity of other species, and that they preclude any claim to ownership over life.

The Pope once again raised the question of genetic engineering in his World Day of Peace message for 1999. He stated that "*recent developments in the field of genetic engineering present a profoundly disquieting challenge. In order that scientific research in this area may be at the service of the person, it must be accompanied at every stage by careful ethical reflection, which will bring adequate legal norms safeguarding the integrity of human life. Life can never be downgraded to the level of a thing*". But this is exactly what patenting does; it denies the fundamental notion that life is primarily a gift and treats it like an inanimate object.

The Pope returned to the issue in an address he gave to the members of the 'Jubilee 2000' Debt Campaign. In the midst of a talk on Third World Debt he had this to say:

The Catholic Church looks at the situation with great concern, not because she has any concrete technical model of development to offer, but because she has a moral vision of what the good of individuals and the human family demand. She has consistently taught that there is a 'social mortgage' on all private property, a concept which today must also be

applied to 'intellectual property' and to 'knowledge'. The law of profit alone cannot be applied to that which is essential to the fight against hunger, disease and poverty.

Opposition to Patenting Living Organisms

The opposition to patenting living organisms has come from many quarters, including tribal and peasant people, scientists and religious people. The arguments against are based on economic, social, scientific and ethical considerations. The Union of Concerned Scientists in the United States, for example, has consistently opposed the patenting of living organisms. They argue that patents make important products more expensive and less accessible.

Sir John Sulston, the British scientist who won the Nobel Prize for medicine in 2002, is opposed to patenting life. Sir John exemplifies all that is best in traditional British scientific endeavours. He worked in a University where he was able to devote 30 years of his life to studying a hermaphrodite nematode without having to seek corporate funding and consequently respond to their agenda. His patient research led him to discover how cells develop and die under instruction from their genes. Anyone studying how cancers develop needs this kind of accurate information. This explains why an expert on nematodes shared the 2002 Nobel Prize in the field of medicine. In collaboration with Bob Waterston in the U.S., Sulston promoted the publicly funded and publicly accessible codification and sequencing of the human genome. Writing in The Guardian Andrew Brown, author of In The Beginning was the Worm, comments, that, "Sulston believes passionately that the information on the genome sequence must be freely available and that it is wrong to patent human gene sequences, both morally and scientifically. It is morally wrong because human genes are discovered, and not invented, while the patent on a discovery blocks all invention in that area. If you patent a discovery which is unique, say, a human gene or even just one particular function of a human gene, then you are actually creating a monopoly and that's not the

purpose of the world of patent. Indeed, the purpose (of patents) is to cause inventors to compete with each to get better products. So mousetraps are in one category, human genes are in another! says Sulston.”^{xxxiii}

It was also clear to Sulston that in order to achieve results in his work he depended on the collaboration of other scientists. Sulston realised that he could not have made significant breakthroughs in his field without building on the work of other scientists. His studies of the worm’s cell lineage would not have been possible without the very detailed physical map of the worm produced by other researchers. Brown insists that “(t)here is no doubt that Sulston believes that DNA patents are immoral. But he is just as keen to argue that they damage science.”^{xxxiv} Finally, Sulston has not become an extraordinarily rich man like many other researchers in molecular biology and genetics. He believes in working for the common good, the betterment of human kind and the increase in knowledge that should be available to everyone.

Many Third World People Oppose Patenting

Patenting life is not seen so favourably in the South. Isidro Acosta, the president of the Guaymi General Congress in Panama, was shocked and outraged when he heard that the U.S. government was attempting to take out a patent on a virus taken from the cell line of a twenty-six-year old Guaymi woman in Panama. Acosta stated that “*It’s fundamentally immoral, contrary to the Guaymi view of nature... and our place in it. To patent human material ... to take human DNA and patent its products ... that violates the integrity of life itself, and our deepest sense of morality.*”^{xxxv}

Peasant farmers are also opposed to patenting. At a meeting of a network of peasant organisations called MASIPAG (Magsasaka at Siyentipiko Para sa Ikaunlad ng Agham Pang-Agrikultura) on the island of Negros in the Philippines in January 1999, 7,000 people protested against the patenting of life. They denounced the Intellectual Properties Treaty of the WTO. In the following years MASIPAG produced pamphlets in English and various Filipino languages opposing genetic engineering and patenting.

A similar meeting of 50 peasant, indigenous and environmental organisations took place in Quito, Ecuador in January 1999 to review contemporary developments in the area of agricultural biotechnology. On completion they published the Latin American Declaration on Transgenic Organisms. The document rejects genetic engineering and patenting. It states, “*genetic engineering is a technology driven by commercial interest. It is not necessary. It forces us to become dependent on TNCs which control it, putting our autonomy to take decisions about production systems and food security in real danger. In the field of agriculture, especially, there are traditional and alternative technologies which do not pose such risks and which are compatible with the conservation of biodiversity.*”^{xxxvi}

The South Asian Network on Food, Ecology and Culture (SANFEC) organised a workshop on patenting in Tangil, Bangladesh. The final statement on Intellectual Properties rejects patenting:

South Asian communities are historically premised on the deep sense of moral, religious and cultural values. The region is inhabited by multi-ethnic, multi-religious and large indigenous communities. All trees, crops, animals, birds, organisms, and soils are an inalienable part of our worship, our rituals, our celebrations, our joys, our culture of sharing and our loving affinity to each other. Our region is replete with hundreds of thousands of sacred groves where trees and plants are worshipped by people. We have a long history of spiritual and political movements where Sufis, Saints and various bhakti traditions have fought to preserve the integrity of Nature in her multiple expressions, including the beauty of life forms.

Such gifts must be cared for and respected and only then do we gain our moral rights to use them for our livelihood needs. The human as omnipotent consumer, that owns, controls, mutates, displaces and destroys the environment, through privatizations, colonizations and now through intellectual property rights (IPRs) in life-forms, is totally against our culture. We are strongly opposed to non recognition of the rights of other

cultures to live on their own historical premises and principles.

Some farmers in First World countries also are opposed to patenting. In Canada and the U.S. Monsanto engaged the services of an investigative agency to gather information on over 1,000 farmers that they consider are cheating on patented seeds.^{xxxvii} The affected farmers have coined a new word 'bio-serfs' to capture the feudal relationship which now exists between many seed companies and farmers. It is little wonder that across the world patenting seeds and animals is now seen as a major economic, development and ethical issue.

Patenting will Hinder Progress in Science and Medicine.

Opponents of patenting also believe that a patenting culture will promote a climate of secrecy in science and hinder the normal exchange of information that is essential in order to promote scientific research. The scientific information and the materials that are required for research will become more expensive and difficult to obtain if one corporation owns a patent on the material. In practice this will deter rather than promote research.

With the passing of the Biopatenting Directive in the European Parliament in May 1998, a patent owner can now decide who will be allowed to use the gene or gene sequence for developing a diagnosis, therapy, medicine or transgenic organism. Therefore it is obvious that patenting will actually hinder research. For example, recently a British and U.S. team of researchers were working together on isolating and decoding the gene for breast cancer. Once the gene was isolated the U.S. team patented it and effectively pushed their British colleagues out of the race because the royalties for the patent were too high.^{xxxviii}

A research culture focused on patenting will also mean that scientific research will no longer be undertaken simply to increase our understanding of the world, to search for truth or to promote the public interest. Even today it appears that scientific research in genetics is driven more by the search for corporate profit and patent control than by a concern for human

or planetary well-being. Many companies are applying for patents to scare off competition by “staking out an area of research”.^{xxxix}

Sheldon Krimsky of Tufts University in Medford, Massachusetts, examined 789 biomedical papers published by 1105 scientists based in Massachusetts Universities in 1992. In 34 per cent of the papers, at least one of the authors stood to gain financially from the results they were publishing, either because they held a patent, or were employed by a biotech company that was exploiting the research. An even greater cause for concern is the fact that none of the 267 papers, where the author stood to gain financially from the research, mentioned that fact. Krimsky discovered the financial links only by trawling through databases of U.S. patents and registers of corporate officers for the names of the first and last authors of the 1,105 papers.^{xl}

Julian Borger, writing in The Guardian from Washington, stated that a poll of American laboratory directors found that a quarter of them had received letters from lawyers acting for biotechnology companies ordering them to stop carrying out clinical tests designed for Alzheimer’s disease, breast cancer and an array of other disorders.

In January 2000 James Meek, a columnist in The Guardian, reported that “an American company which has ‘patented’ two human genes for breast cancer screening is threatening the work of 15 publicly funded British laboratories that perform a genetic test for half the cost (the American company charges).”^{xli} So great is the perceived threat to medical research that a group of American doctors and scientists has issued a protest saying: “(t)he use of patents or exorbitant licensing fees to prevent physicians and clinical laboratories from performing genetic tests limits access to medical care, jeopardises the quality of medical care and unreasonably raises its costs”.^{xlii}

In September 2001 thirteen of the world’s leading medical journals, including the Lancet, The New England Journal of Medicine and the Journal of the American Medical Association, mounted a concerted attack on pharmaceutical companies, accusing them of “distorting the results of

scientific research for the sake of profits”.^{xliii} They claimed that drug companies “tie up academic researchers with legal contracts so that they are unable to report freely and fairly on the results of the drug trials”.^{xliv} This is an extraordinary and very worrying development in terms of public health. It should be investigated immediately by competent and well-resourced government agencies and the medical profession itself. The chances of this happening in the present globalized world environment is close to zero. In today’s world TNCs are monarchs who are regularly wooed by governments and who dispense largesse to many doctors in the form of free trips to international drug company-sponsored conferences. This courageous intervention by the reputable medical press is timely, but once again it received little coverage. This pressure by corporations on researchers will further deepen the distrust that many feel about the reliability of in-company research trials, where billions of dollars may either be made or lost depending on whether a drug proves successful or has to be discarded.

Private Research is Marginal to Breakthroughs in Agricultural and Medical Research

The Biotech industry would like the public to believe that they have funded the bulk of medical and agricultural research and are, therefore, entitled to charge patenting royalties. The reality, in fact, is very different. Writing in The Guardian (February 22, 1999) Jean-Pierre Berlan, Director of Research at the National Agronomic Research Institute (INRA), and Richard C. Lewontin, holder of the Alexander Agassiz chair of zoology and professor of population genetics in Harvard, refuted these claims. They stated that “we owe the unprecedented increase in yields in the industrial countries, as well as the Third World, to the free movement of knowledge and genetic resources.” (Yields have increased four and five fold in two generations, after taking 12 to 15 generations to double and being no doubt unchanged for thousands of years before that.) The contribution of private research has been marginal, including that of the U.S. with its hybrid maize.

For example, in the course of the 1970s, nearly all the hybrids in the U.S. corn belt were the result of crossing two public lines – from the

universities of Iowa and Missouri. It is public research and public research alone, that does all the basic work on improving the population of plants on which everything depends. Research work is being hampered by the privatisation of knowledge, genetic resources and the techniques for their use. Tired of paying royalties on genetic resources that were snatched from them in the first place, many countries in the Southern hemisphere are now trying to stop their circulation.

In the wake of Thatcherism and Reaganism, the pressure to privatise public knowledge has gathered momentum. Within a few short years the private sector has taken over public research. For example, less than six per cent of all public sector patents were surrendered via exclusive license to private companies in 1981. By 1990 the figure had jumped to 40 percent and it was estimated that all the intellectual property accruing to U.S. universities and government agencies would be controlled by TNCs on an exclusive access basis by the end of the 20th century.^{xlv}

Most Research is Funded by Taxpayers and Charities

In response to the 'No Patents, No Cures' argument it is important to point out that much of the improvement in biomedical knowledge and procedures has been funded by taxpayers and charitable organisations. Vast amounts of public funds have been allocated to cystic fibrosis and breast cancer research. It will be ironic if public medical institutions have to pay royalties to biotech companies in order to use screening tests that were developed using knowledge that was gained in these institutions.

Patenting will Increase the Cost of Health Care

Daare (Disabled Against Animal Research and Exploitation) believes that the European Patent Directive will increase health costs and place the discoveries of publicly funded research in the hands of private corporations. In 1997 the Manchester Regional Genetics Service at Central Manchester Healthcare Trust received a bill from a Toronto-based biotech company demanding a \$5,000 licence fee and a further \$4 royalty each time the Centre uses a cystic fibrosis gene screening test on which the Canadian

company has filed a patent application. Before the European Parliament voted on the Biopatenting Directive in May 1998 the Centre paid no royalty since the patent operated only in Canada. Now existing patents will operate within the E.U. Since the Centre cannot afford such costs the patients will suffer as a result.

The patent application of the U.S. Biotech company, Myriad, will touch the lives of a larger segment of the population, especially women. They have applied for a patent on the breast cancer gene BRCA 1, as well as all therapeutic and diagnostic applications that result from the knowledge of the gene. If this patent is granted the company will be allowed to charge patients every time a diagnostic screening is performed. At present it costs the National Health Service in Britain £600 to screen patients for two breast cancer genes BRCA-1 and 2 and £30-35 for each subsequent test. Myriad Genetics on the other hand charges £1,500 to screen for the gene and £300 for subsequent tests.

Such costs would be prohibitive and would restrict access to these tests to the super-rich. Staff at the Manchester Regional Genetics Service wrote to all the members of the European Parliament in July 1997. In the letter they stated that patenting genes would make “the possibility of genetic testing for disorders such as heart disease or breast cancer so prohibitively expensive it would be beyond the scope of the NHS (National Health Service).”^{xlvi}

There is something very cynical and immoral when tobacco companies whose product causes lung cancer are now poised to make more money out of marketing future cancer vaccines. Japan Tobacco has already paid millions of pounds to a biotech company called Corixa for an exclusive licence to develop and market vaccines aimed at the prevention or treatment of lung cancer. Dr. Helen Wallace of GeneWatch UK feels that “*giving a tobacco company exclusive rights to lung cancer vaccines is like putting Dracula in charge of the blood bank.*”^{xlvii}

Patents will Promote Unsustainable Agriculture

Patents promote unsustainable and inequitable agricultural policies. A disastrous decline in genetic diversity could result from patenting crop species. The development of genetically uniform organisms would make it easier for corporations to maintain their patent claims. Biotech companies holding broad spectrum patents on food crops will encourage farmers to grow modified varieties with promises of greater yields and disease resistance. However, numerous examples worldwide show the 'improved' crops have failed to hold up to corporate promises, and led to the loss of the rich diversity of traditional crop varieties.

The patenting of seeds will give enormous economic power to a small number of agribusiness corporations. They sell their wares on the global market. They will not be cheap. The insect-resistant maize hybrid produced by Pioneer Hi-Breed requires access to 38 different patents controlled by 16 different patent holders.^{xlviii} In addition, farmers will be forced to pay royalties on succeeding generations of plants and animals that they buy or produce. It will be illegal to save seeds from the previous harvest without permission and payment. This will make farmers totally dependent on transnational agribusiness corporations. The impact on Third World countries will be devastating. It will lead to a further flow of financial resources from the South to the North. And, in the process it will institutionalise the dependence of Southern agriculture on Northern agribusiness corporations. The flow of scientific information and new agricultural technologies will be concentrated in the hands of these corporations. As a result, instead of feeding the hungry in the South as the agribusiness corporations claim, the new situation could create food shortages and famine.

Biopiracy

The patenting of Third World genetic resources by First World corporations or institutions represents theft of community resources. Much of the raw material used in genetically engineered food and medicinal plants is found in Third World countries. In recent years biotechnology companies have been collecting this material, patenting their products and in the process making huge profits. Even before the advent of biotechnology Eli Lilly was

in a position to make millions of dollars by developing a drug to treat some cancers from a plant called the rosy periwinkle which is found in the rainforest of Madagascar. In 1993 alone the company made \$160 million profit in sale but did not contribute one dollar to Madagascar where the plant was found.

Patenting will intensify and exacerbate the plunder of the Third World's natural resources. Microorganisms, plants, animals and even the genes of indigenous people have been patented for the production of pharmaceuticals and other products. It is nothing short of robbery to design international mechanisms that force developing nations to pay royalties to the wealthy industrial nations for products derived from their own natural resources.

Most of the world's germ plasm for crops and animals is held in seed banks either in the North or controlled by the North, though it originated in the South. To appropriate this, through patenting or Plant Variety Protection (PVP) legislation, constitutes a new form of colonialism. This time it is not merely the gold, silver or labour of people that is being colonised, but life itself. Biotech scouts have used the knowledge of indigenous plants which local people have accumulated over centuries, in their search for plants and animals which may have an agricultural or medical use and then patented these products.

The immorality of such behaviour is magnified even further when one remembers that the species and genetic diversity is available today because countless generations of Third World farmers protected, preserved, propagated and shared these species freely with others. Vandana Shiva, an Indian scientist and activist, points out that:

the common pool of knowledge has contributed immeasurably to the vast agricultural and medicinal plant diversity that exists today. Thus, the concept of individual property rights to resources or to the knowledge remains alien to the local community. This undoubtedly exacerbates the usurpation of the knowledge of indigenous people with serious consequences for

them and for biodiversity conservation.^{xlix}

Now all this richness is destined to be privatised for the exclusive benefit of Northern corporations. This will give them huge control over the food supply of our world. At present 10 corporations control 32 percent of the commercial seed market, valued at \$23 billion, and 100 percent of the market for genetically engineered seeds.¹

The Neem Tree

Two examples drawn from India and West Africa illustrate what is now happening. The **neem** tree is found all over India. Farmers and traditional healers have used this tree for a variety of purposes for hundreds of years. In ancient Sanskrit texts the tree is called **sarva roga nivarini** (the curer of all ailments), while Indian Muslims refer to it as **shajar-e-mubarak** (the blessed tree). The fact that everyone, even the poorest people, had access to its beneficial properties is captured by the Latin name, **Azadirachta indica** which is derived from the Persian and means 'free tree'.

However, it is possible that Indian citizens will soon be required to pay royalties on the products produced from the neem, since a patent has been granted to the U.S. company W.R. Grace, on a compound in the tree (azadirachtin) for the production of a bio-pesticide. In 1993 over five hundred thousand South Indian farmers rallied to protest against foreign patents on plants such as the neem, and launched a nationwide resistance movement. Transnational corporations can make huge profits on their 'discoveries', while depriving the communities which have fostered this knowledge for centuries of the beneficial properties of their own flora and fauna.

In West Africa the berry **brazzein** (*pentadiplandra brazzeana*) is renowned for its sweetness. This berry is much sweeter than sugar and unlike other non-sugar sweeteners it does not lose its taste when it is heated. This makes it an ideal candidate for the sugar-free food industry which is worth about \$100 billion a year. A U.S. researcher from the University of Wisconsin who saw people and animals eating the berry applied for a U.S. and

European patent on the protein isolated from the berry. The drive to create a genetically engineered organism to produce brazzein is under way. This will eliminate the need to grow the berry in West Africa. Naturally, given the market for such a sweetener, there is huge commercial interest in the project.

Most fair minded people would consider it totally bizarre for the University to claim that brazzein is “an invention of a UW-Madison researcher”. There are no plans to share any of the benefits of the discovery with the people of West Africa who nurtured this plant for generations.^{li} The knowledge, innovation and efforts of these communities is neither acknowledged nor rewarded. Such biopiracy on the part of Northern institutions and corporations is simply theft. This robbery should not be legitimised by cleverly worded patenting legislation.

Because of its location in the tropics, the Philippines is very rich in flora and fauna. Before the destruction of the Philippine forests they were home to almost 13,500 plant species or almost 5 percent of all the plant species in the world.^{lii} 558 bird species have been found in the Philippines and of those 171 are found nowhere else in the world. In marine ecosystems 4,951 species of marine plants and animals have been found.^{liii} A further 1,616 species of flora and 3,675 species of fauna are found in Philippine lakes, rivers, marshes and swamps.^{liv} The race to ‘discover’ and patent many of these is already underway. The Philippine sea snail, **conus magus** produces one of the world’s most powerful painkillers. This snail has now been patented by the U.S. transnational corporation Neurex, Inc.

Even when a corporation enters into a deal with a country such as the well publicised arrangement between the chemical company Merck & Co and Costa Rica, the benefits which the host nation receives are paltry. Merck has agreed to pay a million dollars to the National Biodiversity Institute in Costa Rica in return for being allowed to collect microorganisms, plants, insects and animals in one of the areas of greatest biodiversity on the planet. Over the long-term the contract could mean billions of dollars profit for Merck. All they will have to do is pay a pittance of one million dollars to a Costa Rican institute. It is worth noting that the indigenous people who live

in the forest and whose knowledge of the plant and animals will be crucial in making the agreement work are not included in the deal.

Undoubtedly, research in both the food and medical potential of biotechnology will continue in the coming years. The new technology may very well bring benefits to human beings while at the same time promoting a mutually enhancing relationship between our species and the rest of creation. One would like to see the technology assessed not just on narrow scientific or commercial grounds, but on social and ethical grounds also. It is on ethical grounds that the patenting ethos which claims ownership over life is repugnant to many people.

TRIPS came under sustained attack at the WTO Seattle meeting in November 1999. The U.S. trade representative Charlene Barshefsky and the director-general Mike Moore from New Zealand tried to get a statement from the meeting. The vast majority of Third World countries were excluded from the decision-making meetings. The African countries were exasperated at the way they were being treated that they issued a statement that the whole meeting lacked transparency and that they were excluded from discussing issues that were vital for their future. Little wonder that the meeting ended in a shambles. The proposed review of the implementation of TRIPS never happened.

Organisations like the WTO are not easily thwarted. By Spring of 2001 the WTO personnel had regrouped and were laying the groundwork for another round of trade negotiations to further liberalize trade. This included agricultural produce despite the caution from many knowledgeable commentators who have linked the increase in infectious diseases, like the foot-and-mouth among ruminants, with the increased unregulated movement of plants and animals over great distances. William Cashman, an Irish veterinary surgeon, claimed that “the active promotion of ‘free-trade’ has facilitated the movement of animal diseases given the distance that modern transport can move animals and products over a short time. Many EU inspection missions within Europe have expressed dissatisfaction with transit monitoring measures to protect animal and human health, but to date no effective action has been taken to strengthen procedures.”^{lv}

The time is now ripe to review TRIPS and rewrite it in a way that protects human health and vulnerable subsistence farmers in the Third World and also protects the environment. The main plank of such a review should be the affirmation that all living beings ought to be considered the common property of our humanity and our Earth. The hypocrisy of the current TRIPS position is that it fails to protect the genetic resources of the South while at the same time facilitates the patenting of genetic resources which will benefit northern multinational corporations. This is not free-trade; rather, it is a ploy to create global monopolies.

It is true that in its present form TRIPS Article 27.3(b) allows members to exclude from patentability plants and animals other than microorganisms, and biological processes essential for the production of plants and animals other than non-biological and micro-biological processes. The trouble is that TRIPS 27.3(b) does demand that member states enact legislation which is tantamount to patenting. It states that members states shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. Third World countries had until January 1, 2000 to implement and enforce these intellectual property rights (IPRs). The least developed countries were given an extra 10 years grace.

Despite the fact that the patenting of organisms is excluded from the GATT agreement, the whole tone of the document supports patenting. In the past few years the U.S. government has put pressure on many Third World governments to adopt *sui generis* legislation along the lines set down by the Geneva based Union for the Protection of New Varieties of Plants (UPOV). This UPOV system operates under a convention set up in 1978 and amended in 1991. According to Julian Oram, a researcher at the International Famine Centre, University College Cork, Ireland, the UPOV guidelines treats the South's biodiversity as apart of the 'heritage of mankind' and therefore it is freely available for scientific and commercial use. Once a corporation has acquired this material and 'transformed' it through genetic engineering techniques, they can claim property rights on the basis that they have made an 'invention'. Oram writes, "having done

this the ‘free heritage of mankind’ plundered from the fields and forests of local communities could be sold back to them as a commodity.”^{lvi} Obviously this approach helps breeders but not the farmers and not surprisingly the corporations are promoting it.

Plant Variety Protection legislation (PVP), while not as strong as patenting, protects the genetic makeup of a specific plant variety. The criteria for protection are also somewhat different. They include novelty, distinctiveness, uniformity and stability. PVP laws also can provide exemptions for breeders, allowing them to use protected varieties for further breeding. In certain highly restricted circumstances farmers can save seeds from their harvest. However, in many Third World countries like the Philippines the PVP legislation (Senate Bill 1865, co-authored by Senators Manuel Villar, Juan Flavio Velasco and Sergio Osmena III) extends the rights of breeders to the farmers’ harvest and the direct product of that harvest. If, for example a farmer sowed a field with a protected variety without having paid a royalty, the company that produced the seed had a right to claim ownership of the harvest.^{lvii} Many environmentalists feel that once governments enact PVP legislation it means that the agribusiness corporations already have their foot in the door on the way to a full-scale patent regime.

It is crucial that Third World countries and NGOs from the North and South call for a root-and-branch review of Art. 27.3(b). It is important to oppose patenting, PVP and Material Transfer Agreement (MTAs) in order to protect the biological resources of the South from predatory Northern TNCs who are bent on gaining monopolies on the seeds of many staple crops.^{lviii} The article should be amended as follows, “member countries shall exclude from patentability all life forms, including plants, animals, microorganisms and parts thereof; and also exclude from patentability all natural processes for the production of plants, animals, microorganisms and all living beings”. There must also be a concerted effort to rescind the one-size-fits-all approach to patenting which is vigorously promoted by the multinationals.

In 1989 the UN organization UNEP set up a working group to design

international laws and conventions to protect biodiversity. This was in response to the current extinction spasm which is having such a devastating effect on all life on the planet. It is estimated that up to 40,000 species are pushed across the abyss of extinction each year. At the Earth Summit 150 countries signed the Convention on Biological Diversity (CBD). By the year 2000, 170 nations had signed, but curiously Ireland has not yet signed this important international treaty.

The objective of the CBD is to protect biodiversity and to ensure that there is a fair and equitable distribution of any financial benefits derived from these biological and genetic resources. For this reason CBD is more in sympathy with the rights of Third World countries, traditional farmers and tribal peoples. Articles 3 and 15 recognize the right of each country's sovereignty over its genetic and biological resources. In order to guard against biopiracy it requires that any person or corporation who wishes to gain access to these resources must obtain the consent of the host country (Art. 15.5). Good news for Third World countries that are rich in biological resources. Not so good news for the pharmaceutical and agribusiness corporations that would like access to these resources free of charge. It is particularly mindful of the role played by tribal people and traditional farmers in enhancing and maintaining biodiversity down through the centuries (Articles 8 j and 15). It also affirms that the "conservation of biological diversity is a common concern of humankind". Article 27. 3 (b) of TRIPS will effectively negate all the above and therefore it and the other milestones along the way to patenting, like PVPs and MTAs, should be opposed by every possible means.

It is worth noting that while the U.S. is pushing TRIPS in every possible forum, it has not yet signed the CBD. The U.S. Embassy in Thailand sent a strong letter to the Thai government when it began to draft legislation to protect its indigenous medical knowledge. The letter stated that the new legislation was in breach of the TRIPS agreement. Many developing countries fear that if they do not bring in TRIPS-like legislation they may be put on the United States' Super 301 'Watch List' for free-trade offenders.

People who are campaigning against TRIPS ought to promote the Convention on Biological Diversity (CBD) to ensure that there is a fair and equitable distribution of any financial benefits derived from biological and genetic resources. This is the place to design mechanisms, including financial remuneration, which will reward individuals and companies for their investment and creativity in developing new products.

We also need to ensure that public research institutes protect the interests of poor, Third World farmers, and promote genuine sustainable agriculture. They can do this by protecting biodiversity and securing the rights of communities over their own biological resources and indigenous knowledge.

The Wealth and Political Power of the Biotech Industry

Right through this book I have made the point that TNCs are pushing the genetic engineering and patenting agenda. Given the huge investment which companies like Monsanto have made, they need to gain significant market share quickly or else cash-flow problems will send their shares tumbling on the stock market.

Monsanto went on a buying spree in 1996 and 1997 and invested \$2 billion buying up dozens of biotech companies, including Calgene of Flavr Savr fame, in order to gain control of their research patents. Many believe that their ultimate aim is to produce and patent genetically engineered varieties of all staple food crops. These new crops are created to outproduce existing varieties and might be expected to dominate this particular market globally within a short period of time. In the process farmers will become reliant on the patented seeds of the biotechnology industry. The industry has now developed seeds that will not germinate when replanted.^{lix} Monsanto now owns this patent.

After buying out or taking control of many small, innovative biotech companies, including Delta Pine, Monsanto turned its attention to large seed distribution corporations. In 1997 Monsanto bought Holden's Foundation Seeds for \$1.2 billion. A year later in June 1998 it paid a record

£843 million for Cargill Incorporated's. This huge agribusiness has sales and distributions networks in 51 countries on four continents. This acquisition gives Monsanto huge control of global seed markets. All these companies are conduits for distributing their GE seeds. Farmers will have very little option but to buy these GE products. Within a few short years the transition to GE crops will be accomplished. If the strategy works the profits for Monsanto will be astronomical.

It is no wonder that The Guardian correspondent George Monbiot fears that “*with astonishing rapidity a tiny handful of companies is coming to govern the development, production, processing and marketing of our most fundamental commodity: food. The power and strategic control they are amassing will make the oil industry look like a corner shop*”.^{lx} It is frightening to think that within a few years the world's food supply could be dominated by 11 or fewer giant Northern controlled agribusiness corporations. In 1998, 81 percent of the global agrochemical market was controlled by 10 companies. The stakes in the present scramble for market share in genetically engineered products are enormous. The global market for one year is estimated to be worth \$400 billion.^{lxi}

When biotech companies do not get what they want they can exert enormous influence on politicians. The speed at which GE soya has been promoted around the world is astonishing. In 1996 only 1.7 million hectares had been planted with GE soya. By 2001 that had jumped to 52.6 million hectares. By April 2002 Brazil was the only major soya producing country that had continued to ban GE varieties. The decision has benefited Brazil economically. Their share of the global soya market jumped from 24 to 30 percent while the U.S. share has fallen from 57 to 46 percent over the same period. This development has not pleased either the U.S. government or Monsanto. In January 2002 Anthony Harrington, a former U.S. ambassador to Brazil currently working as a consultant for Monsanto, had a meeting with President Fernando Cardoso to try and promote GE soya. Monsanto's strategy is simple. If Brazil allows GE soya then consumers in Europe who are demanding non-GE soya will not be able to get it. These bullying tactics by the corporations are designed to ensure that the consumer does not have the choice of non-GE food.^{lxii}

Monsanto has engaged in a high-wire financial operation that could end in financial disaster. They took a risk by putting all their financial eggs into the biotechnology basket. It was imperative for them to attempt to force genetically engineered food on to the world market. Otherwise it might prove very costly for them and other biotech companies.

Writing in the business section of The Independent on Sunday (May 12, 1996) Paul Rodgers agreed that biotech companies have been the darling of the stock market in recent times. But he struck a note of caution. He quoted a market analyst, Peter Doyle, who said he “*was surprised by the values attributed to companies on the basis of prospects rather than products*”.

By mid-1998 the Biotech Companies were experiencing some organisational difficulties and were beginning to slip again on the stock markets. It was clear that the gamble which Monsanto took was not coming off and they began to feel cash-flow problems. As a result of that and the resistance of many consumers, especially in Europe, to GE food Monsanto did take a financial tumble towards the end of 1999. Shares in the company fell dramatically and it was forced to merge with Pharmacia and Upjohn. Eventually Bob Shapiro was ousted from the company.^{lxiii}

It is much too early to write off Monsanto or any other biotech company. As I outlined in Chapter I, the power that large corporations wield over elected governments has become a very disturbing development in recent decades. Such companies, with financial resources greater than many countries, are poised to make huge profits if the biotechnology enterprise prospers and replaces other more traditional technologies in agriculture and medicine.

In the U.S. biotech companies like Monsanto wield enormous power over both the Democratic and Republican Parties. The company has made huge donations to both the Republican and Democratic Parties and pays lobbyists to represent its interests both at state and national level. It has made financial contributions to members of Congress who sit on food safety and regulatory committees. Within the U.S. political system this is,

unfortunately, quite legal. Mickey Cantor, who was the chief U.S. negotiator during the Uruguay Round of the GATT negotiations and the chairman of Bill Clinton's 1992 presidential election campaign, now sits on the board of Monsanto.^{lxiv} Monsanto also made huge contributions to President Clinton's Welfare-to-Work programme.

According to Betty Martini, who belongs to a consumer group called Mission Possible which monitors Monsanto's activities in the U.S., "the Food and Drug Administration, which regulates the US food industry, is so closely linked to the biotech industry that it could be described as their Washington branch office".^{lxv} John Vidal also states that there is a "constant exchange of staff between the government, the company and the regulatory bodies".^{lxvi} An analysis of Monsanto's operations in the U.S. and globally in the St. Louis Post-Dispatch in December 1999 stated that "where Monsanto seeks to sow, the U.S. government clears the ground".^{lxvii}

Monsanto can engage in much more aggressive lobbying when they perceive that their interests are threatened. In 1993 a memo was prepared for a Monsanto executive, Tony Coehlo, in preparation for a crucial meeting with the U.S. Agriculture Secretary, Mike Espy. The memo was written by Dr Virginia Weldon and approved by Monsanto's chief executive, Robert Shapiro. The purpose of the memo was to threaten Secretary Espy that, "if the Clinton administration does not stand up to persons like Senator Feingold" Monsanto will likely pull out of agricultural biotechnology. Senator Feingold's offence in the eyes of Monsanto was that he was attempting to secure a moratorium on the use of their Bovine Growth Hormone until further tests had taken place. Daniel Jeffreys wrote in the Daily Mail (February 18, 1999) that the memo then continues with a chilling statement, "*the administration must let socio-economic factors dictate approval of a new product*". Jeffreys comments that, "*in other words, not health considerations, not safety issues, but profits*".

The biotech industry is also well represented in President Bush's cabinet. The secretaries of Defence, Health and Agriculture, the Attorney General and the chairperson of the House agriculture committee have had connections with Monsanto or the wider industry. Writing in February 2002

Charles Lewis, director of the Centre for Public Integrity, said, “*It looks like Monsanto and the biotechnology industry has the potential to bring undue influence on the new government*”.^{lxviii}

These large companies exert pressure on Irish politicians also. In January 1999, The Sunday Tribune reported that during the visit of the Taoiseach (Irish Prime Minister), Bertie Ahern, to the U.S. in March 1998, leading figures in the U.S. administration, including Sandy Berger, the director of the U.S. National Security Council, used the Taoiseach’s visit to try to influence Ireland’s vote on the upcoming decision about planting crops engineered for insect resistance. Politicians “including Senator Christopher Bond collared Ireland’s Prime Minister on the subject”, according to a report in The St. Louis Post-Dispatch. Some commentators described as worrying and frustrating “the access Monsanto had to the Taoiseach during the visit”.^{lxix} It would be very difficult for Mr. Ahern to brush aside overtures from U.S. administration personnel or politicians, given the pivotal role the U.S. played in the Northern Ireland peace process. Could it be that such hard nose lobbying by U.S. and Irish biotech industry accounts for the fact that Fianna Fail (the largest party in Ireland) quietly dropped its hostility to genetic engineering once it entered government in 1997?

Similar apparent conflicts of interest can be seen in the Labour government’s approach to biotechnology in Britain. On February 12, 1999 a report in The Guardian claimed that research carried out by Dr. Arpad Pusztai which showed that rats fed on genetically engineered potatoes had suffered significant damage to their vital organs had been suppressed. Dr Pusztai believed that the cauliflower mosaic promoter used in the experiment might be the cause of the harm. As we saw above the story broke after 22 prominent scientists had backed Professor Arpad’s research and queried why he had been forced to take early retirement. The incident raised many disturbing questions. The Daily Mail headline on February 14, 1999 ‘Gene Lab Took Food Giant’s Gift’ claimed that Monsanto had given a £140,000 gift to the institute where Arpad worked. Could such a gift influence the way decisions were made about research findings at the institute?

More worrying still was the potential conflict of interest of the science minister Lord Sainsbury. As head of supermarket chain, Lord Sainsbury had strenuously promoted GE foods. In fact, he owns a number of valuable patents which are used in creating GE foods. The Blair government insisted that Lord Sainsbury had done nothing wrong and that he had taken no part “in any government decisions on discussions relating to GM food policy”.^{lxx} One of the letters to the same edition of the paper put its finger on the real problem. The author, Dr. Anthony Dowd, pointed out that “*the recent ruling by the Law Lords on the Pinochet case was disallowed as one of their number had links with a human rights group. The link between several members of a government committee considering GM food (Lord Sainsbury included) and the biotechnology industry does not seem to have led to a conflict of interest. This surely is a case not only of injustice being done, but being seen to be done*”.

It also appeared that the Minister for Agriculture in Britain had given £13 million to the biotech industry to help improve its public image and inspire confidence among consumers. In the summer of 1998 Mr. Cunningham and his deputy, Mr. Jeff Rooker had held meetings with Monsanto. The meetings were arranged by Bell Pottinger who is a public relations consultant for Monsanto. In October Cathy McGlynn, formerly a special adviser to Mr. Cunningham, joined the Monsanto team.^{lxxi} This is another example of the revolving door system at work. People have a right to ask whose interests are being served.

Given the huge impact of transnational corporations on global economic and political decisions, we need to develop effective international codes of conduct to monitor and regulate the activities of TNCs that control food and medicines. These codes must protect the rights, livelihoods and food security of the peoples of the world. Where they are breached there must be a mechanism to penalize TNCs in the courts.

Governments must ensure that food security, nationally and globally, does not pass out of their control into the control of the corporate world. It is also essential that a public debate on the ethical issues involved in patenting take place before any international trade organisation attempts to

promote a global patenting regime.

TRIPS Favours the Rich

TRIPS, as it now stands, favours rich countries, especially their TNCs, and institutionalises the economic dependence in which most poor countries are now trapped. According to the World Bank, poor countries pay on average on the Uruguay Round tariffs of more than 14 percent, a rate more than twice as high as everyone else. Most fair-minded people would agree with the comments in Newsweek (February 11, 2002) that “many countries didn’t understand what they were signing up for” when they accepted the TRIPS aspect of the Uruguay Round of GATT.^{lxxii}

Third World countries should be encouraged to walk away from TRIPS in its present form. The U.S., under President George Bush, had no problem walking away from the Kyoto Protocol on climate change because he considered it to be against U.S. economic interests. There must also be a concerted effort to rescind the one-size-fits-all approach to patenting which is vigorously promoted by the multinationals.

In any new agreement priority must be given to protecting human health, poor subsistence farmers in the Third World, and the wider environment – not the profits of transnational agribusiness corporations and giant supermarket chains. One of the main planks in such a review would be the clear affirmation that the genetic code of all living beings ought to be considered the common property of humanity and the Earth and that no individual, state or company should be allowed to appropriate it.

Not only is TRIPS unjust; it is also hypocritical. While it fails to protect the genetic resources of the South, it facilitates the patenting of genetic resources that benefit giant Northern multinational corporations. This is not ‘free-trade’ as envisaged by Adam Smith. In fact it is a ploy to create global monopolies that Smith would abhor.

The WTO meeting at Doha in Qatar in November 2001 was presented as a

breakthrough for poor countries. Most other rounds of GATT took their names from the city or country in which the initial discussion began – the Uruguay or Tokyo Round. The meeting at Doha was named the development round. It was nothing of the sort. Caroline Lucas, a Green MEP, wrote in The Guardian (November 21, 2001) that “*developing countries were already furious before they arrived because the negotiating text drawn up in Geneva was weighted entirely in the interests of the rich North. But that was nothing compared to the ruthlessness of the negotiation tactics employed against them*”. Rich nations threatened to withhold official aid and debt relief unless poor countries signed up to the new round of trade talks. The EU lobbied hard for the right to dump subsidised agricultural produce in poor countries – even though this has a devastating impact on local farmers. The industrial sector in poor countries was also hit and undermined. In Senegal almost one third of manufacturing jobs have been lost because of pressure in a previous round to cut industrial tariffs by 50 percent.

The media presented the Doha meeting as a triumph for developing countries. They pointed to the fact that poor countries have secured the right to buy cheap generic drugs for the medical needs of their poor. But even this turned out to be a Pyrrhic victory. While poor countries will be allowed to buy generic drugs by 2005, countries manufacturing them will be forbidden to sell them.^{lxxiii} Unfortunately, no action was taken to prohibit the patenting of life-forms in order that poor countries can protect local community rights to seeds from biopiracy by transnational corporations. So the fight goes on beyond Doha.

Relevant Websites

One good way to keep abreast of developments in this rapidly changing area is to check regularly with a number of websites.

The Union of Concerned Scientists is an alliance of leading scientists who

are dedicated to promoting a healthier environment and a safer world:
www.ucsusa.org/agriculture/biotech.html

Greenpeace International is a global environmental non-government organisation: www.greenpeace.org

Third World Net gives excellent coverage of North-South issues:
www.twside.org.sg

The Edmonds Institute disseminates information about biotechnology:
www.edmonds-institute.org

The Guardian: www.guardianunlimited.co.uk

GeneWatch UK: www.genewatch.org

Corporate Watch: www.corporatewatch.org.uk

Norfolk Genetic Information Network: <http://ngin.tripod.com/>

Friends of the Earth: www.foe.org.uk

The Ecologist: www.theecologist.org

Genetic Resources Action International: www.grain.org

Action Group on Erosion, Technology and Concentration:
www.etcgroup.org

Some of my own writing on this topic is available on the Columban missionaries website: www.columban.com

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