



Biodiversity, Rights and Livelihood

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Niger – A Berber Tuareg cattle herder with his young son Photo by Giacomo Pirozzi/Panos Pictures, 2007 Battery hens, dead or alive Photo: http://www.floridaanimallaw.com/

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In this issue...

are focusing on livestock production, which is undergoing a process of massive and largely unreported change. There are still hundreds of millions of small-scale animal rearers and pastoralists throughout the world, but, as representatives from Inner Mongolia and Niger tell us, their way of life is increasingly under threat. Industrial livestock production, by contrast, is expanding rapidly, facilitated by changes in methods of animal rearing, the dismantling of trade barriers and the near doubling of world per capita meat consumption.

As is demonstrated in our introductory article, written by Susanne Gura (whom GRAIN thanks for her help in planning this edition), the control of industrial livestock production is increasingly in the hands of the breeders. These are the companies, most of them linked to the agro-industrial giants, that provide the genetic material for the hens that lay more eggs, the broilers that grow more quickly and the cows that produce more milk And now, in another crucial development, the breeders - renamed "livestock genetics" companies - are integrating. One gene giant already brings together the largest breeding companies in the cattle, pig and aquaculture sectors. Over the next few years the process will go much go further, faciliated by the growing importance of gene technology. Biotechnology giants, headed by Monsanto, are beginning to take over companies in the livestock sector. They plan, with the support of a rigid regime of patenting, to dominate the whole of commercial arable and livestock farming.

Intensive livestock production is harming communities and the environment. Hundreds of thousands of farmers in the South, whose livelihoods have been ruined by neoliberal market reforms, are now held in what is, in practice, a new form of debt bondage. Working as contract farmers for the big companies, they are the most vulnerable, the people at the end of the food chain, yet they are the ones who are forced to assume most of the financial risk in the ever more precarious practice of rearing animals. We look at what is happening in two of the world's leading producers of industrial poultry – Brazil and Thailand. And biodiversity has suffered. In some places, the damage is direct, as in the case of the South China Sea, which has been severely polluted by nutrient run-offs from poultry and pig farms in China, Thailand and Vietnam. Elsewhere it is indirect, as in Argentina, where the pampas – the humid grasslands in the north of the country – have been destroyed to plant soya beans for animal feed.

In the future the world will pay a heavy price for permitting such unbridled and irresponsible expansion in industrial livestock production. One alarming consequence has been the rapid erosion in animal genetic diversity. For instance, industrial pig production (which accounts for 42 per cent of the pigs reared in the world) is almost entirely dependent on just five breeds. Local breeds are struggling to survive. The FAO estimates that one breed is becoming extinct each month. Many of the animals whose numbers are dwindling are resilient and able to survive on little food, just the kind of characteristics that will be required as the world moves into an era of unprecedented climatic change. Even so, governments are twiddling their thumbs. Little effective action was taken at the international conference on animal genetic resources organised by the FAO at Interlaken in Switzerland last September (see page 30).

The day of reckoning may come sooner than many expect. As we show in another of our articles, the intensity of livestock operations and the genetic uniformity of the animals create the perfect breeding grounds for the evolution of highly pathogenic strains of disease. Major killers, like bird flu and SARS, have all passed through intensive farming operations. The world is heading for more diseases and more deadly types of disease, and yet governments refuse to take effective action to confront the dominant powers of industrial livestock production.

In this edition, we make room for an article on a different (though in some ways related) topic – the Budapest Treaty on the patenting of microorganisms. It may be little known, but it is through this treaty that the patenting of plants and animals is being forced on Central America and the Dominican Republic. It is a story that needs to be told.



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Scarcely noticed by the general public, the global livestock industry is going through a rapid process of concentration. Company takeovers and cooperation agreements proliferate and technology is changing fast. Patents are flying out for genetic material, and other proprietary strategies are being vigorously pursued. In a process that bears an uncanny resemblance to what has happened to the global seed market, the breeding sector – now renamed "livestock genetics" – is becoming the nerve centre of the industry and extending its control over livestock farming. Quick to seize the opportunity, agro-giants such as Monsanto are moving in.

Livestock breeding in the hands of corporations

SUSANNE GURA



Article

Susanne Gura advised the League for Pastoral Peoples and Endogenous Livestock Development in their preparations for the FAO Conference in Interlaken in 2007. She is the author of a study, "Livestock Genetics Companies", for Greenpeace Germany, see www.pastoralpeoples.org (also in Spanish). She will shortly be publishing a study of the impact of industrial livestock farming on smallholders in developing countries.

ike many other sectors of farming, the livestock industry has been through a process of radical change over the last decade. The proliferation of free trade agreements, both multilateral and bilateral, has led to an unprecedented growth in international trade in livestock products. Cheap imported meat has flooded the markets of countries in the South. Even though in many of these countries smallholders contribute up to a third of national economic output, they have received very little public support to withstand the influx. Unable to compete, many have been driven out of business. Many African farmers, for example, lost their livelihoods when first milk powder and then low quality chicken parts, originating from the European Union, were dumped in their countries. Thousands of chicken farmers in the Philippines went bankrupt during the "Broiler Crisis" in 1999–2000, when huge quantities of cheap poultry

were imported from the USA. Today smallholders in many parts of the world, particularly in Asia and Latin America, have to accept extremely unfavourable contract deals to provide cheap raw material to large meat and milk processors. The smallholders mostly receive breeding stock, feed, and veterinary services from the same company that buys the product. Government policies are generally supportive of this industrial livestock system, providing it with significant subsidies and tax exemptions, as well as drawing up health regulations that favour industrial livestock production and discourage smallholders.

These far-reaching economic changes have been facilitated by a technological revolution that is allowing industrial companies to take control of livestock farming. In **poultry breeding** a key innovation was the introduction of the hybrid chicken, first developed in the 1940s by former



US President Henry A. Wallace. Applying the same principles that he had used to develop hybrid corn (maize), he discovered that productivity usually increased when two different lines (one carrying female traits such as prolificacy [number of offspring], the other carrying male features such as muscle growth) were crossed. This effect is called "hybrid vigour". The emerging poultry industry took full advantage of this new technology to develop lines of chickens that, when crossed, would maximise the qualities sought. This meant breeding chickens that, in the case of layer hens, would produce a large number of eggs and, in the case of broilers, would grow rapidly and produce tender white meat. A range of other products, including special concentrated feed and veterinary pharmaceutical drugs, were also developed to make factory farming viable and to maximise output. Today industrial farming is responsible for about two-thirds of the world's broilers and about half of egg production.

In response to the huge market opportunities that came with hybrid technology and lower prices, breeding, multiplication and fattening were developed as three separate industries: multipliers buy the chicks from the lines bred by the breeders and sell the next generation to the farmers for fattening. To make sure that the farmers remained dependent on them, the breeding companies introduced into this process something that can best be described as a "biological lock". Hybrid vigour lasts for only a single generation, which means that hybrids have to be permanently bred from pure lines. To make sure that the multipliers do not start rearing their pure lines and thus competing with them, the companies provide the multipliers with only male chickens from the male line and female chickens from the female line. This means that the multipliers must return to the breeding companies each generation for further supplies of breeding stock, and farmers must return to the multipliers to buy the chickens for fattening.

The concentration of the **cattle breeding** industry has also gained momentum in recent years. There are no hybrid breeding lines yet, but artificial insemination was introduced during the 1940s and is widely used. This permits one high-performance bull to have up to a million offspring. Most commercial dairy farmers buy semen from these high-performance bulls. Even when by chance a farmer develops a world-class bull, the marketing of its semen is usually handled by a large company. About two-thirds of the world's milk is produced by high-output cows. These are cows that have been carefully bred around a few clear objectives:



Nineteenth-century drawing of a Holstein cow

to maximise the amount of milk they produce and its fat content; and to ensure that they use their feed efficiently. The lifespan of these animals is now reduced to three or four years, so dairy farmers need to buy replacements more often than ever before.

The concentration of the pig breeding industry was slowed down by one technical problem: artificial insemination is not as successful in pigs as in cattle. If inseminated with deep-frozen pig semen, sows have on average 10 per cent fewer litters and each litter contains one fewer piglet than would be the case if fresh semen were used. However, fresh semen remains viable for only a short period. For this reason live boars were widely employed until very recently, which facilitated the survival of pig farmers' associations and cooperatives. But their days now seem numbered: the companies are trying to place restrictions on insemination from live boars, pointing out that it entails a greater risk of infection. Hybrid lines are also very common in pig-rearing, with the separation of breeders, multipliers and fatteners. The biological lock, using male and female lines, is increasingly applied. Lines are also being developed of sows with large uteri, which means that they are able to give birth to more piglets, transferred to the sows in embryo stage.

The revolution in gene technologies

The early innovations, such as hybrids and artificial insemination, are now being overtaken by another technological transformation, which may have even more far-reaching consequences – the gene technology revolution. New technologies, such as cloning and gene transfer, are becoming increasingly important. The genetic engineering of poultry has been feasible since the 1980s, and transgenic birds have frequently been produced in laboratories. But this technology has not yet been used for the



commercial production of poultry, largely because of widespread public resistance. Meat from cloned animals is also on its way to consumers, after the US Food and Drug Administration gave its approval in January 2007, and the EU announced that no specific approval procedure would be necessary for such food.

Hybrid breeding and the associated separation of breeding, multiplying and fattening have strengthened the breeding companies and fostered concentration in the livestock breeding industry. The process of concentration has been fast: today there are just four breeders in the broiler sector (*see* Table 1), whereas in 1989 there were eleven. Among companies providing genetic stock for laying hens the number of companies operating at a global scale has fallen even more sharply: from ten to two in the same period. Today farmers all over the world wanting to produce eggs, broilers, ducks or turkeys on a commercial scale must buy genetic material from this handful of breeders.

A dominant player in the chicken market is the German Erich Wesjohann (EW) Gruppe, the world leader in genetics for layer hens and broilers as well as for turkeys. With 4,000 employees, the

EW Gruppe operates in 15 countries (including Germany, Poland, USA, Canada, Brazil, Japan and South Africa). It has more than 35 subsidiaries, one of which is Aviagen, the world's leading broiler chicken and turkey breeder. The EW Group provides the genetics for 68 per cent of white eggs and 17 per cent of brown eggs. Almost all the rest (65 per cent) of the genetics for brown eggs comes from the Dutch company Hendrix Genetics, which is also a leading player in genetics for broilers and for pigs.

Vertical integration

At first, integration occurred vertically, with breeders and meat processors becoming part of a single powerful company. Tyson Foods Inc., the world's largest processor of chicken and red meat, was one of the first to take this route. With 120,000 employees and a turnover of US\$25 bn, this giant company is producing some 25 per cent of chicken, beef and pork eaten by US Americans. Tyson became aware of the strategic importance of breeding, and in 1994 took over Cobb-Vantress, the USA's oldest breeding company, which supplies breeding stock for broilers. Cobb-Vantress is today the world's third largest company in this sector.

Table 1: Key players in the global breeding market

Genetics for:	Global Market Leader	Mother company	Subsidiaries
White-egg layer hens	1 (68% of market)	Erich Wesjohann Gruppe (Germany)	Lohmann Tierzucht, Hyline, H&N
	2 (32% of market)	Hendrix Genetics (Netherlands)	ISA, Hendrix
Brown-egg layer hens	1 (60-65% of market)	Hendrix Genetics (Netherlands)	ISA, Hendrix
	2 (17% of market)	Erich Wesjohann Gruppe (Germany)	Lohmann Tierzucht
Broilers	1	Erich Wesjohann Gruppe (Germany)	Aviagen
	2	Grimaud Group (France)	Hubbard
	3	Tyson (USA)	Cobb Vantress
	4	Hendrix Genetics (Netherlands)	Hybro
Turkeys	1	Erich Wesjohann Gruppe (Germany)	Aviagen, British United Turkeys
	2 (34% of market)	Hendrix Genetics (Netherlands)	Hybrid
	3	Willmar (USA)	
Ducks	1	Grimaud Group (France)	Grimaud
	2	Cherry Valley (USA)	
Pigs	1	Genus plc (UK)	PIC
	2	Hendrix Genetics (Netherlands)	Hypor, Pigs Online
	3	Pigture Group (Netherlands)	Topigs
	4	Danish Meat Cooperative	Danbred
Cattle	1	Genus plc (UK)	ABS
	2	Koepon (Netherlands)	Alta
Aquaculture	1	Genus plc (UK)	Syaqua

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Box 1: Monsanto moves to patent pigs

In 2005 a Greenpeace researcher found out that Monsanto was seeking patents not only on methods of pig breeding but also on actual herds of pigs and their offspring, even though none of the procedures involved genetic modification. To uncover the scale of Monsanto's ambitions, Greenpeace investigated 30 pigs of nine different breeds and found that they nearly all possessed a genetic combination which, according to the patent specification, would be regarded as a Monsanto invention. The implications were huge. "If these patents are granted, Monsanto can legally prevent breeders and farmers from breeding pigs whose characteristics are described in the patent claims or force them to pay royalties", said Christoph Then, the Greenpeace researcher. "It's a first step towards the same kind of corporate control of an animal line that Monsanto is aggressively pursuing with various grain and vegetable lines."¹

The public criticism that followed Greenpeace's disclosure led to Monsanto watering down its patent application, but the giant biotechnology company was not thrown off course. Monsanto made a dozen other pig-breeding patent applications. PIC, now belonging to Genus plc, has also made a series of patent applications. Such developments have led Greenpeace jointly with many other civil society organisations to call for a complete overhaul of European patent law in order to prohibit patents on non-GMO animals and plants, and their genes.

Monsanto has faced other temporary setbacks. For instance, it reached an agreement with the UK-based company, JSR Genetics, to become exclusive distributor of its "Genepacker" boar. Probably because it had had little experience in livestock breeding, this deal did not flourish. In September 2007 Monsanto sold Monsanto Choice Genetics to another US company, Newsham Genetics. Monsanto will, however, be carrying on with swine genetics research, which is the most important and potentially the most profitable part of its swine operations. As part of its new relationship with Newsham, it has signed a three-year research agreement. Monsanto has already developed the pig industry's most extensive genomic map, with over 6,000 genomic marker associations for swine performance.

1 Greenpeace International, "Monsanto files patent for new invention: the pig" http://www.greenpeace.org/international/news/monsanto-pig-patent-111

Vertical integration is also occurring among breeders for the pig industry. Smithfield, which is responsible for about a quarter of US production of both pigs and pork products, in 2006 bought a share in ACMC, a UK-based pig breeder.

Not all breeding organisations are corporations. Topigs, for instance, is an important pig-breeding organisation, based in the Netherlands, which is co-operatively owned by 3,000 pig farmers. The co-operative used to be a widespread organisational form in livestock breeding in the North, until privatisation was promoted in many countries, paving the way for the corporate take-over.

Horizontal integration

More recently a process of horizontal integration has been occurring alongside the vertical integration. In 2005 Genus plc, a UK-based breeding corporation (which developed from ABS Global, the world's largest bovine genetics company, which markets annually about 10 million doses of semen in more than 70 countries), purchased Sygen, a leading pig- and shrimp-breeding company, along with its subsidiary company. PIC, the world's largest pig-breeding company. PIC (the Pig Improvement Company) sells each year about 2 million breeding animals and controls about a third of the North American market and a tenth of the European. A gene giant was created, bringing together the largest cattle-, pig- and aquaculture-breeding companies. Horizontal integration is gaining momentum. In 2007 Hendrix Genetics, a leading company in the genetics of layers, broilers and pigs, took over all the breeding business belonging to Nutreco, Europe's largest animal compound feed and fish feed producer. Nutreco had earlier integrated vertically, taking over leading breeding companies in the turkey, broiler and pig sectors. This means that Hendrix Genetics now owns breeding companies in a wide range of livestock.

This process of horizontal integration is driven by recent technological advances. Transnationals have realised that the same principles of gene technology can be applied across a broad spectrum of farming, and that this technology, supported by a rigid regime of patenting, will help them to achieve global dominance.

The process is bringing new players into the livestock genetics market. In 1998 Monsanto acquired DeKalb Genetics Corporation, including its pig-breeding sector. Setting up Monsanto Choice Genetics, a special subsidiary for swine genetics, Monsanto then signed a deal with MetaMorphix, a genetic research company, which gave it access to all the available pig genome data (see Box 1). It is likely that, just as has happened to layer hens (two companies), broilers (four companies), and turkeys (three companies), within a relatively short period

Box 2: Livestock production threatens coastal habitats in Asia*

Nowhere have the rapid growth of livestock production and its impact on the environment been more evident than in East and South-east Asia. In the 1990s alone, production of pigs and poultry almost doubled in China, Thailand and Vietnam. By 2001, these three countries accounted for more than half the pigs and one-third of the chickens in the entire world. Not surprisingly, these same countries have also experienced rapid increases in pollution associated with concentrations of intensive livestock production. Pig and poultry operations concentrated in coastal areas of China, Vietnam and Thailand are emerging as a major source of nutrient pollution of the South China Sea. Along much of the densely populated coast, the pig density exceeds 100 animals per sq. km. and agricultural lands are overloaded with huge nutrient surpluses.

Land-based nutrient pollution has caused algae blooms in the South China Sea, including one in 1998 that killed more than 80 per cent of the fish in a 100-sq. km. area along the coast of Hong Kong and southern China. These changes affect the habitats of many forms of life, since the South China Sea supports substantial populations of fish, invertebrates, marine mammals and sea birds. The consequences for regional diversity may be far-reaching. As an example, since 2002 increasing masses of giant jellyfish reach the Japanese coast all year round and severely hamper fishing campaigns. These species originate in the East China Sea, where they are proliferating because of an increasing availability of zooplankton resulting from land-based pollution-induced eutrophication and decreasing fish stocks.

The impact of the decline in the quality of coastal seawater and sediment in one of the world's most biologically diverse shallow-water marine areas, the East Asian Seas, goes well beyond algal blooms and the related effects upon the food chain. Fragile coastal marine habitats are threatened, including coral reefs and sea grasses, which are irreplaceable reservoirs of biodiversity; the last refuge of many endangered species. Threatened coastal areas of the South China Sea, for example, have provided the habitat for 45 of the world's 51 mangrove species, almost all of the known coral species and 20 of the 50 known sea grasses. In addition, the area is the world's centre for diversity of hermatypic corals, with more than 80 recorded genera, of which four appear to be endemic to the region; there are record high numbers of molluscs and shrimp species. It also contains a high diversity of lobsters, with the second highest endemism count.

*This text is taken from FAO, Livestock's Long Shadow – Environmental Issues and Options, Rome 2006, pp. 211–12.

just a very few companies will control the supply of hybrid pigs to the world.

These huge gene companies are developing careful strategies to protect their profits. In 2007, Genus plc announced further progress in what it described as the "de-risking"¹ of its business, pointing out that 70 per cent of its US and European business is now based on a royalty model, and 90 per cent of production is now sub-contracted. In other words, the corporate giants are now safeguarding their profits by limiting their role to providing genetic material under contracts that ensure that payment will be made in all circumstances, and thus transferring all the financial risk to those who actually do the farming – largely contract farmers.

Future technological developments

The pace of change is speeding up. As was mentioned earlier, the technology to genetically modify chickens already exists. Indeed, Avigenics, a US pharmaceutical company, says it has been producing genetically engineered chickens for more than four years. Probably because a large majority of the European public believes this technology to be both unsafe and unnecessary, EW and its subsidiary, Aviagen, have both stated firmly that they have no intention of adopting it. It seems likely, however, that other European companies, some of which (such as Hendrix Genetics from the Netherlands and the Grimaud Group from France) have been keeping quiet on the subject, may eventually move into this sector. The same is true for Cobb-Vantress.

Another sector where genetic modification is expected to take off in a big way is fish farming. It is likely that a transgenic salmon that takes half the normal time to grow to market size will be launched on the US market in 2009. A large number of fish species, including salmon, trout, sea bass and turbot, can now be farmed, and they are being adapted to industrial production. It is probable that this sector will soon be dominated by biotech corporations, such as Genus plc.

Several cattle-breeding companies are developing the technology to sort semen, thus increasing the proportion of calves of desired gender from 50 to 85 per cent. Many dairy farmers are very interested in having female calves, and are ready to pay considerably higher prices for sorted semen. Such technologies will also speed up the breeding activities of the big corporations, an end to which

1 http://tinyurl.com/38t5rl



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embryo transfer, embryo breeding and other technologies also contribute.

Starting with artificial insemination in cattle, research has been carried out into how to conserve livestock genetic material, not only semen, but also oocytes (egg cells) and embryos. Unlike seeds from plants, genetic material from livestock cannot survive outside an animal's body, and has therefore to be kept deep-frozen (cryoconservation). These technologies are being developed for many reasons, including the conservation of genetic material from breeds at risk of extinction.

Social and environmental consequences

In the race to boost productivity, the companies have concentrated on only a handful of breeds of cattle, pig and chicken. Although the highoutput breeds can deliver substantial increases in egg production, milk yields, milk fat content and growth rates, these advances are achieved only if the animals are fed large quantities of high-energy feed and are reared in special conditions with regard to temperature, veterinary supplies, and "biosecurity" - management systems and technologies designed to control completely the hygiene of all entrants into a factory farm, in order to avoid infection. Because they have neither the necessary capital nor access to the marketing networks, smallholders cannot compete with this production system. One option open to them, which at least ensures their survival, is to become contract farmers, even though this means that they will be poorly paid, bear high risks and be liable to become entrapped in a modern form of debt bondage. (See "Contract farming in the world's poultry industry", page 12).

At the same time, the companies' concentration on just a few breeds means that the high-yielding livestock populations have become genetically very similar. Population geneticists say that about 100 unrelated individuals are required in a breed to prevent inbreeding and to maintain genetic diversity. However, for many industrial breeds of cattle and pig, the "effective population size", as it is called, has fallen to dangerously low levels. Take pig production: about 42 per cent of global pig production is industrial, with five dominating breeds (Large White, Duroc, Landrace, Hampshire and Pietrain). According to the UN Food and Agriculture Organisation (FAO), 66 per cent of the mothers of European fattening pigs are hybrid crosses of the Large White and the Landrace breeds. In the US, the "effective population" size is only 74 in Hampshire and 61 in Duroc.

The situation is little different in cattle production. About two-thirds of the world's milk is produced by high-output breeds. Consistent selection for desirable traits (amount of milk, fat content, weight gain and feed efficiency) has led to excessive genetic narrowing: although there were more than 3.7 million Holstein cows producing milk in the USA in 2004, the size of the Holstein "effective population" there was only 60 animals. The actual diversity in poultry farming is not known, as breeding companies are not obliged to reveal genetic information, which is regarded as a trade secret. FAO assumes that most commercial strains are based on four breeds.

The intensive breeding to select desirable traits has caused cascading problems in many industrial cattle-, pig- and poultry-breeding lines. As they are selected for productivity, other traits, such as vitality or fertility, are lost. Turkeys, for instance, were developed to produce the large breasts demanded by the supermarkets. Due to these heavy breasts, they now cannot mate naturally but depend on artificial insemination. They also developed skeletal problems from their excessive body weight. To counteract this problem, breeders selected traits to improve walking and leg strength, but the breeders failed to realise that these traits were correlated with other characteristics, such as competitive behaviour. These turkeys have now become unduly aggressive for the confined environment they are reared in.

Another problem has been growing vulnerability to disease. This is scarcely surprising, given that not only was resistance to disease neglected as a trait in



Young hybrid sows (gilts)



the intensive breeding, but also that thousands of genetically very similar animals are being raised in close proximity. It is estimated that 10–15 per cent of the potential profit from poultry production is being lost as a result of disease. Local breeds and wild relatives are known to carry some of the diseases, often without being ill, and so regulations such as culling were set up that discriminate against local breeds in order to protect industrial livestock production. Large public funds are required to control the diseases, in addition to the insurance fees that farmers in some countries now have to pay.

While industrial production with the same few breeds is spreading all over the world, local breeds are being lost. It is estimated that, of the 8,000 or so breeds documented by FAO, one is becoming extinct every month, compared with the one every year that was lost during the last century. Already, 20 per cent of breeds are at risk. Very little development has been carried out in Southern breeds during the past decades, and many of them have been crossbred with Northern breeds, without maintaining the pure lines. Serious environmental problems have also been occurring. These include water and soil contamination and the environmental cost of transporting large quantities of animal feed over long distances. It is often argued that rainforest is being saved through the rearing of industrial animals, as their high feed conversion means that less feed is required to produce a unit of meat. But this argument is easily challenged: local production systems are based on local feed and rarely use imported concentrate, often made from soya, the cultivation of which is leading to the destruction of rainforest, particularly in the Amazon basin. At the same time local breeds have multiple other uses, such as providing manure and transport, and serving as "banks on hooves" (a term coined by the Indian NGO ANTHRA). They also possess the ability to adapt to their environment and even to contribute to environmental sustainability.

Conclusions

The livestock-breeding industry has experienced an enormous degree of concentration in recent years, and cloning, gene transfer, and other emerging

Box 3: The transformation of the pampas*

The Pampas, the humid grasslands of northern Argentina, were the site of one of the earliest documented and dramatic transformations of a landscape by alien plants brought by animals. In the The Origin of Species (1872) Darwin remarked that the European cardoon and a tall thistle "are now the commonest [plants] over the whole plains of La Plata, clothing square leagues of surface almost to the exclusion of every other plant". Even in southern Uruguay he found "very many square miles covered by one mass of these prickly plants impenetrable by man or beast. Over the undulating plains, where these great beds occur, nothing else can now live." These scenes had probably arisen in less than 75 years.

Von Tschudi (1868) assumed that the cardoon had arrived in Argentina in the hide of a donkey. Many early plant immigrants probably arrived with livestock, and for 250 years these flat plains were grazed but not extensively ploughed. Cardoon and thistle were eventually controlled only with the extensive ploughing of the pampas at the end of the nineteenth century.

This was far from the end of livestock-related plant invasions, however. The transformation of the pampas from pasture to farmland was driven by immigrant farmers, who were encouraged to grow alfalfa as a means of raising even more livestock. This transformation greatly expanded the opportunity for the entry and establishment of alien plants. Towards the end of the nineteenth century over 100 vascular plants were listed as adventive near Buenos Aires and Patagonia. Marzocca (1984) lists several dozen aliens officially considered "plagues of agriculture" in Argentina.

While the massive transformation of Argentinian vegetation continues, the globalising livestock sector recently drove yet another revolution of the pampas. In just a few years, soya has become the country's major crop. In 1996 a genetically modified soya variety entered the Argentinian market with a gene that allowed it to resist herbicides. Upon arrival of the GM variety, soya covered six million hectares, while today it covers 15.2 million ha, more than half Argentina's arable land. Rates of deforestation now exceed the effect of previous waves of agricultural expansion (the so-called cotton and sugar-cane "fevers"). At the same time the intensive cropping of soya results in a severe mining of soil fertility. Altieri and Pengue estimated that in 2003 soya cropping extracted a million tonnes of nitrogen and some 227,000 tonnes of phosphorus, losses that would cost some US\$910 million if replaced by mineral fertilisers.

* This is an edited extract taken from FAO, Livestock's Long Shadow – Environmental Issues and Options, Rome 2006, p. 201.

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technologies, including proprietary arrangements, can be expected to accelerate concentration. These developments are not in the interest of the general public and will exacerbate problems associated with high-performance breeds and industrial production: large public expenditure caused by animal diseases, environmental pollution, human diet-related diseases, and animal welfare problems.

What is needed

New approach to breeding: The increasingly narrow genetic base of the small number of industrial breeds is a danger that has been known for many years, but only now is a start being made to address it. Instead of paying lip service to sustainability in public statements, countries and companies need to revise fundamentally their approach to breeding.

Internalise the hidden costs of industrial livestock production: Industrial livestock impresses with its high yields and enormously improved feed conversion rates. However, the economic efficiency of industrial livestock production looks very different if public costs are factored into the equation. Although meat, eggs and dairy products are cheap to purchase, society must also consider the following hidden costs:

- for cleaning up the environment (water, soil, and air) from livestock production effluents.
- for treating human diseases caused by overconsumption of livestock products. Even in developing countries, the recommended daily allowance of animal proteins has been reached. In the North, on average, three times the recommended amount is being consumed.
- for containing the spread of zoonotic diseases that increase in virulence when passing through dense, genetically similar livestock holdings.
- for *ex situ* and *in situ* conservation programmes necessary to maintain genetic diversity.

Redirect research funds from industrial production to sustainable breeding: Support for conventional breeding has almost vanished, and almost all research funds are now directed towards the "Life Sciences", i.e. gene technology. This means that most publicly funded biotechnology research is carried out by the very industry that benefits from it. To top it all, the livestock genetics



Giant thistle of the pampas

Cardoon

T. Pritchett, in Darwin, A Naturalist's Voyage Round the World

industry prepares the research grant cornerstones, on which the programmes are based that provide the criteria for deciding which research projects will be selected for funding.

No patents on animals or on genes: Historically, animal breeders have benefited from the exchange of animals. The patenting of genes and traits is expected to disrupt this exchange, to impede breeding and research, to increase corporate concentration and to be detrimental to farmers and consumers.

Abolish subsidies for industrial livestock production: For the past fifty years or so, national subsidies, tax exemptions, development projects and other support measures have been used to establish industrial breeds all over the world. Local production systems have been disadvantaged.

Start investing in local breeding: In the South, very little has been done to develop breeds, since faster results were expected from imported breeds – results focusing on the performance of individual animals. It is important to start investing again, this time focusing not on individual animal performance but on objectives that emphasise family farms, communities and the environment.

Address trade liberalisation and industry concentration as main reasons for the breed loss: Imports of cheap – usually subsidised – livestock products to a developing country following a free trade agreement often mean that local products cannot compete and local breeds are thus wiped out within a very few years. This is a major reason for loss of breeds and needs to be urgently addressed.



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As part of the carve-up of the world that followed the end of the Second World War, the Chinese were able to bring under their sphere of influence an area to the south of Mongolia, which they called Inner Mongolia. Although today the region formally remains autonomous, the Chinese effectively control it. Two Mongolians – Dorj Borjigin and Yangjain Tegusbagar – talked to GRAIN about the problems they face in their country, which they call Southern Mongolia.

Mongolian herders demand their rights

GRAIN WITH DORJ BORJIGIN AND YANGJAIN TEGUSBAGAR

ver the last 50 years the situation in our country has gone from bad to worse. Before the Communists took over in China, we enjoyed relative independence. But after that the situation deteriorated. The period of the Cultural Revolution in China after 1966 was terrible for us. There was a real massacre. First, they targeted intellectuals and then herders, anyone at all. It was a kind of ethnic cleansing. We don't even know how many people suffered. According to official figures from the Chinese government, 370,000 Mongols were imprisoned and 16,222 were killed, but we know that the true figures are much, much higher.

Since then, a lot of Chinese have moved into our region. There are now only 4 million Mongolians in the country, compared with 18 million Chinese. We have become a small minority within our own country. At least three-quarters of Mongolians still live as nomadic herders – or, to be more precise, semi-nomadic herders, as it has become almost impossible to remain truly nomadic. In the old days we moved three times a year, from our winter camp to a spring camp and then from there to an autumn camp and then back to the winter camp. Many communities saw the winter camp as their true home. Some of the older people used to stay there the whole year.

Life was good then. Families helped each other. We had the el amak concept, which broadly means "one big family". Everyone supported each other. We had five types of animals – cattle, goats, horses, sheep and camels. They roamed freely. If animals belonging to one family strayed away from the herd and got lost, another family would look after them and eventually return them to their rightful owners. No one ever stole animals. There were no

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Article



Dorj Borjigin

January 2008



clear boundaries between one family's land and another's, but we didn't squabble over it.

Today this is all changing. On the surface, it may look as if things are improving, but really they are getting worse. Since the 1960s, the Chinese have started to farm our grasslands intensively. They sent in army officers as part of a so-called "development army". They were mostly retired officers from the People's Liberation Army. These officers have ploughed up wetlands and planted crops - wheat, maize, rice, vegetables. They have destroyed the most beautiful of our wetlands. For example Ulgai, the most beautiful wetland located in Shiliin-gol League, has almost been destroyed by the intensive farming practice of the Chinese. And, along with the farmers, mining companies have moved in. For our land unfortunately is rich in natural resources - liquid coal, silver, copper, and so on.

The mining and the intensive farming are ruining the land, but the Chinese are blaming us for the degradation. They say that we are "overgrazing". It's strange, isn't it, how people talk of "overgrazing" but never of "overcultivating". So now the Chinese are aggressively imposing two policies which are harming us a lot. The first is the so-called "ecological migration policy". The Chinese say that, as our nomadic herding is degrading the land, we must be moved off. They say they are going to manage the land scientifically and that, once the land has been recuperated, we will be able to move back on to it. It sounds good. It is all being done in the name of protecting the ecosystem. But in practice it doesn't work out like that. If the land is fairly fertile, the Chinese plant crops on it. If it is not suited to arable farming, they plant trees. They are setting up big plantations, which they call green belts. In either case, we are never allowed back. The second policy - and it's linked to the first - is the decision, announced in 2006, that all livestock must be fenced. Since then, people have had to pay heavy fines to get their animals back if they are found roaming freely. These policies are enforced brutally by armed policemen.

These policies are destroying our animals. Even before the decision about fencing, we were suffering. Our horses don't get enough exercise in confined conditions. They must roam freely so that they can gallop. The Chinese don't understand this. They think that any animal that is roaming freely doesn't have an owner and can be caught and sold. We, the Mongolians, are called horseback people, but today our horses have almost disappeared. And it's not just horses. Most of our animals are disappearing. Way back in 1940, the Japanese



Yangjain Tegusbagar

began to bring in new breeds, but they didn't do it aggressively. People didn't like the new breeds so they didn't spread. The Chinese are different. They are bringing in sheep from the Xinjiang region of north-west China and the Mermos breed from Russia. We don't like them. Our local breeds have long tails and a lot of fat on them so they can survive the harsh winters. The new breeds, which we call "dog tail", are not suited to our environment. They aren't hardy enough. Many of their lambs die soon after they're born in the spring, because they aren't tough enough. And they get more diseases. But it's not just that: even if they were as good as our breeds, we wouldn't want them. We want our own breeds. But the Chinese are imposing the new breeds, and they are forcing us to use artificial insemination on them. Our farmers just refuse to do this, so the Chinese are forcing our womenfolk to carry it out.

What we are defending are our herders' rights. And the main one is access to the land. That's what we need more than anything else. If not, we have no choice but to migrate to the cities. We become double losers – we lose our land and then we lose in the cities, because we never make a go of it there. We don't have the contacts or the knowledge for life in the city. We end up homeless or working on construction sites. And what life is that? We are not against development. We want clean water. We want modern transport. But we want these things on our own terms: to improve our lives, not to destroy them.



Over the last 40 years the world has witnessed a remarkable increase in the consumption of poultry, pork and beef. Multinational meat processing companies have been able to respond to the hugely expanded export trade only by tying hundreds of thousands of small farmers into production contracts. In this article we examine contract farming in the poultry sector of two leading producing countries – Brazil and Thailand.

Contract farming in the world's poultry industry

GRAIN

orld consumption of meat has grown dramatically over the last 40 years. Whereas in 1965 per capita consumption was 25.3 kilos a year, it had almost doubled, to 41.0 kilos per year, by 2005.1 Consumption has grown most rapidly in the South, where the Western way of life, with its heavy consumption of beefburgers and chicken nuggets, has been strongly promoted by mass media. Between 1982 and 1994 meat consumption grew by 5.4 per cent a year in the South, compared with 1.0 per cent in the North.² And within the South it is the richer countries, such as China, South Korea, Brazil and South Africa, where consumption has grow most rapidly. In poor countries consumption of even the cheaper meats is still very low.³

The consumption of poultry has risen more dramatically than that of other meats (although pork remains the most heavily consumed meat). World poultry production increased from 8.9 million tonnes in 1961 to 70.3 million tonnes in 2001.⁴ It was a much faster increase than that registered by either beef or pig production. Although small farmers still produce most of the chickens consumed throughout the world, it is integrated, industrial poultry farming that has registered the most rapid growth. Indeed, from an

agribusiness point of view, poultry has been the big success story in livestock production over the last half century.

Several factors came together to facilitate industrial poultry production: new breeding techniques, which made it possible to separate off the various stages of the production process (see article by Susanne Gura on page 2); the rapid expansion of monoculture farming, which permitted big increases in the production of maize and soya, both of which are used to produce the feed needed to rear chickens in confined conditions; and neoliberal market reforms, which opened up the markets in many developing countries and ruined hundreds of thousands of small farmers, making them anxious to secure a regular income and thus willing to sign contracts with the multinational companies. Contract farming, which was virtually unknown in the poultry sector half a century ago, has proliferated rapidly. Governments, donors and international agencies have all promoted it, presenting it as a win-win solution in which the multinational companies are provided with the huge quantities of poultry they need and small farmers get access to the market economy.⁵

Industrial poultry production has been predominantly geared to the export market.

Article

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2 Christopher Delgado, Mark Rosegrant, Henning Steinfeld, Simeon Ehui and Claude Courbois, "Livestock to 2020: The Next Food Revolution", Brief no. 61, October 1999.

1 Dr Thomas E, Elam, "Projec-

tions of Global Meat Produc-

tion 2050", 21 August 2006. http://tinyurl.com/28xaub

3 Economic Research Service/ USDA, "Patterns of World Poultry Consumption and Production". http://tinyurl.com/yprogw

4 FAO data, July 2002, reproduced in ibid. http://tinyurl.com/yprogw

5 For an example of this positive analysis, see C. Eaton and A. Shepherd, "Contract Farming: Partnership for Growth", FAO, Rome 2001.



Article

Companies have looked for low-cost areas of production, and investment has been concentrated geographically, both in certain countries and then in certain areas within these countries. Two countries that have experienced a big expansion in industrial poultry production are Brazil and Thailand, currently the world's largest and fourthlargest chicken exporters.

Brazil

Brazil's chicken exports have risen more than 500 per cent in the last ten years (*see* Table 1), and in 2004 it overtook the United States to become the number one world supplier. Today it provides about two-fifths of the chickens traded on the global market. More than two-thirds of Brazil's poultry exports consist of frozen chicken parts, with another 29 per cent made up of whole frozen chickens. The EU is its main export destination, but a third of Brazil's poultry exports now go to the Middle East, and roughly 10 per cent to China.

Table 1: Brazil's chicken exports (tonnes)

1995	428,988
1996	568,795
1997	649,357
1998	612,447
1999	776,359
2000	916,094
2001	1,265,887
2002	1,624,887
2003	1,959,773
2004	2,469,696
2005	2,845,946
2006	2,712,342

Source: USDA

Brazil's chicken exports fell 4.7 per cent in 2006, largely because of a drop in European consumption as a result of the bird flu scare. But it was only a temporary setback: in the first half of 2007 they bounced back, earning US\$2.1bn, an increase of 47 per cent compared with the same period in 2006. The industry predicts that total exports for 2007 will reach 3.2 million tonnes, earning close to US\$5bn. Poultry has become one of Brazil's leading industrial sectors; it employs about four million people and generates about 1.5 per cent of the country's economic output. Brazil's poultry agribusiness was born in the south and south-east of the country; four-fifths of the country's poultry exports still come from the states of Paraná, Santa Catarina and Rio Grande do Sul. Recently poultry companies have started to build processing plants further to the north, on the edge of the Amazon basin, as this is where much of the soya and maize used to produce chicken feed are now grown, and the states there are also offering generous tax breaks. Mato Grosso is today the country's leading soya-producing state.

The biggest company in the sector is Sadia,6 a Brazilian-owned company founded in 1944, which is responsible for about 26 per cent of Brazil's chicken exports. It sells more than a thousand products made from processed poultry, pork and beef. Its operations include breeding farms for poultry and pig grandparent and parent stock, hatcheries, slaughterhouses and animal feed production plants. It has 13 chicken-processing plants and is building two new ones in Mato Grosso. When they are fully functioning in 2009, these two plants alone will employ 8,000 people directly and 24,000 indirectly. Each plant will have the capacity to slaughter half a million chickens a day. The next largest companies are Perdigão, another Brazilian company, with a 17 per cent share of exports, and Cargill, a US giant, with a 12 per cent share. US-based Tyson, the world's largest producer, is now planning to move into Brazil,7 holding joint venture discussions with Perdigão, Avipal (Brazil's fifth-largest producer), Globoaves (Brazil's largest producer) and the poultry processor Dagranja.8

Sadia was the first company to introduce a vertically integrated system. Using imported genetic material, its plants produce, usually from its own hatcheries, one-day-old "parent" chicks, which are supplied to the multipliers. The multipliers cross breed from the parents and produce one-day-old chicks, which are supplied to the *integrados*, as the contract farmers are known. All the chicks reared for the companies come from imported stock. Some of the *integrados* may also rear native chicken varieties in their back yards, but these will be consumed by the farmers themselves or sold at local markets.

Onório Granzotto is an *integrado*. He lives near the town of Serafina Corrêa in the southern state of Rio Grande do Sul and raises chickens for Perdigão. He said that he had been attracted to contract farming because it offered a secure market and a good income. About six times a year Perdigão delivers by truck one-day-old chicks, along with chicken feed and medicine. The company also provides



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6 Sadia's name comes from the adjective sadio, which means "healthy" in Portuguese.

7 *World Poultrymeat*, no. 108, 7 September 2007.

8 From an industry point of view, a closer union between Brazil and the USA makes sense. The USA has been losing ground to Brazil in many export markets, mainly because it exports only cheap rearquarter dark meat at very low prices. All of the more expensive white breast meat is sold on the US market. In Brazil, by contrast, consumers purchase all poultry cuts, so high-value breast meat forms a large part of exports

veterinary checks. In October 2006 Onório told an ActionAid researcher⁹ that he was rearing 14,000 chickens in a 100-metre-long battery. He said that it took 45 days to fatten the chicks and that, after raising four consignments, he had to stop for 20 days to allow for the cleaning and disinfecting of the battery.

Three family members (Onório, his brother and his son) are involved in the business. After deducting their costs, which include electricity and transporting the chicks to the factory, Onório said they earned about R\$500 (US\$200) from each lot. "It's not very much but we get by", he said. "Once it was good business, but today it's not so good. If we had to start from scratch and invest money in the construction of the battery, it wouldn't be worth it." Onório said that they had 25 hectares of land and could supplement their income by crop farming. He said life must be very hard for some of his neighbours who did not have enough land to do this.

After 45 days the chickens are collected by carregadores (carriers). The carregador is generally employed by a gang master, who may be collecting from 100 integrados within a 20-kilometre radius. Marcus de Paula, a carregador in Serafina Corrêa, told the ActionAid researcher that he had no set hours for work and that his gang master phoned him whenever he needed him. "We work in a team of 12, which includes the boss. We generally visit 4–6 farms per shift but sometimes we have to visit 6-8 farms and then we'll have to work a 24-hour shift. At every farm we each carry 16 boxes of chickens weighing about 40 kilos each. The dust and the stench are bad. I tried using a mask but it was dreadful, so I gave it up." The integrado pays the gang master, who then pays the carregadores. According to Marcus, he received R\$12 (US\$5) for each farm visit.

It seems that the most serious health problems occur in the factories. By far the most important source of employment in the small town of Serafina Corrêa is Perdigão's poultry slaughtering and processing factory, which employs 2,300 workers. According to figures provided by the municipal government, about one fifth of the town's adult population suffers from repetitive strain injury (RSI). Alidete Orso Begnini, aged 33, is one of those afflicted. For 16 years she worked in the Perdigão factory, taking the innards out of chickens and cutting and cleaning chicken parts. She began to feel pain in her shoulder but for two years the factory would not accept that she suffered from a serious medical condition. "I kept trying to see the company doctor and they kept saying there was no appointment

available", she told ActionAid. "Finally someone saw me but the company said that it wouldn't give me any sick leave. I left my job that day and I haven't gone back. I went straight to a pubic health clinic and was told to go to a specialist because my case was serious." She received treatment but never fully recovered. Today she receives a small government disability pension. Her condition, which affects her hand, arm and shoulder, means that her husband and children have to help her with the household chores. She finds it difficult even to wash her hair and put on her clothes.

As often happens in cases of RSI, it is difficult to prove the company responsible, and Perdigão denies any liability. However, Dr Roberto Mauro Arroque, who has worked as a doctor in Serafina Corrêa for 32 years, is fairly certain that he knows what the problem is. "I am 90 per cent sure that the problems people are having are to do with the factory. The work is highly repetitive. People don't have enough time off and the conveyor belt moves quickly. They have to cut four chicken thighs a minute, cutting them off the chicken and taking the bone out. It is the counterforce of the action that is the problem, and it comes every 15 seconds. Most workers don't complain about their pain. They think it is normal. Perhaps a third of the workers in the factory have problems." So far, little action has been taken by the Brazilian government or the Brazilian trade unions to improve conditions in the



Brazilian chicken for sale in Japan



Article

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9 The interviews from Serafina Corrêa are compiled from an unpublished ActionAid report.



Article

factories. There is little doubt that the companies would be reluctant, for the speed at which poultry workers do their job has helped to give Brazil the world's lowest production costs for chicken.¹⁰

Thailand

The poultry industry is often presented as an exemplary success story in Thailand.¹¹ In just two decades it installed industrial methods of production and became a leading exporter of poultry. Thai chicken production grew from about 380,000 tonnes in 1980 to 1.4m tonnes in 2001. Although Thais greatly increased their own consumption of chicken across this period, and small farmers are still important producers for the domestic market, the driving force behind the expansion was the export market. Chicken became the country's third most important export product (after rubber and rice). The main export market was Japan, which regularly accounts for half of foreign sales.

One company in particular played a key role in the expansion: Charoen Pokphand (CP). In 1921 the Chia brothers (Ek Chor and Siew Whooy Chia) from China set up a seed shop in Bangkok's Chinatown and began exporting swine and poultry to Hong Kong. Some years later they formed an animal feed production company called Charoen Pokphand Feedmill. In 1970 it set up a poultry breeding venture with Arbor Acres of the USA and started the industrial breeding of broilers and layers, using imported genetic material. Currently working with 12,000 chicken farmers (along with 5,000 pig farmers and 10,000 maize growers), CP is the biggest player in the Thai chicken market. There are 11 other firms operating in the broiler sector. Although the farmers have to pay taxes, the companies enjoy a wide range of tax breaks, including exemption from import duty on machinery and exemption from income tax on certain operations. CP's operations are highly integrated, with the company controlling, indirectly or directly, everything from chicks and feed to processing and marketing.

The set-up is very similar to that in Brazil, but there are differences. According to CP, half of its chickens are reared on its own industrial farms, (which is not the case in Brazil). The rest of the chickens are raised by contract farmers. Most of the broiler farms included in the CP inventory raise 2,000–5,000 birds. Some are much bigger, raising up to 400,000 birds or, in one case, 1 million.

When asked why they began contract farming, farmers gave two main reasons. First, they did not have the resources to set up independently. "I wanted to raise chickens but I had no capital", said one farmer. A contract means that the company will provide farmers with inputs (chicks, feed, medicines) and deduct payment later. It also means that a bank will supply a loan so that the farmer can pay for the necessary construction works and the other outlays. The second reason is the apparent security that a contract offers. "I was scared of failing", said another farmer. "With a contract, it's more secure. It's like getting a monthly salary."

The farmers must rear the chicks in strict accordance with the company's instructions. The companies determine the amount and type of chemicals to be used, with little concern for their impact on either the farmers' health or the environment. Companies are copying techniques used in the North, such as the addition of antibiotics to the feed to make the chickens grow more quickly. The farmers are supposed to stop using antibiotics for a prescribed period before sending the chickens off for slaughtering. Sometimes, however, the companies collect the chickens early. "When this happens, I feel sorry for the consumers", commented one farmer. After collection, the companies pay the contract farmers according to a series of complex mathematical formulae. None of the farmers interviewed in the Focus on the Global South report was able to explain clearly the calculation shown on their pay slip. Although incomes varied, the average monthly income of the contracted broiler farmers was 2,720 baht (about US\$68). This was lower than the average agricultural wage of 2,865 baht.

Contract farmers often get into debt, and they see this as their most serious problem. This debt is accrued in various ways. Very often the initial investment is much higher than that predicted by the company. The cost of feed, which the farmers must purchase from the company, increases regularly. Farmers often have to invest in more modern equipment. Since 1999 companies have insisted that farmers upgrade their farms into a "closed" system with an "evaporation cooling system" (EVAP), which is a form of air conditioning that allows the battery to be kept at a constant temperature. While this system has made it possible to reduce the average rearing period from 45 to 40 days, it has dramatically increased the costs of production, as it entails a much more intensive use of electricity. "The debt is continuous", said one chicken farmer. "After we finish repayments, a new debt comes along. We have to meet new safety criteria or purchase new equipment." And



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10 According to a USDA re-

port quoted by ActionAid.

11 Much of the information in this section is taken from Isabelle Delforge, *Contract Farming in Thailand: A View from the Farm*, a report for Focus on the Global South.

the farmers know they will lose their contract if they refuse to update their installations.

The financial security of the arrangement has also proved to be something of a myth. The contracts are one-sided. Small-scale, isolated farmers are not in a position to negotiate a fair deal with large transnational companies. The companies do not even allow them to retain a copy of the contract they have signed. Even the Thai Senate Commission on Agriculture and Cooperatives, after recognising the role of contract farming in modernising farming, admitted that "most of the contracts exploit farmers and producers. Farmers have to follow the conditions set by the processing factory, which are not equitable."12 The companies appear to overcharge for the feed. Feed accounts for a colossal 78 per cent of a farmer's costs (not including his or her labour). Not surprisingly, perhaps, feed sales are highly profitable for CP. In 2003 its income from feed sales for broiler production in Thailand brought in 18.1 billion baht, compared with earnings of 12.4 billion baht for its chicken exports.¹³

The company feels under no obligation to the farmers, even though they have often invested all their capital (and more) into the new venture. If a company faces a problem of overproduction, as many of them did in the wake of the bird flu epidemic in 2003, it collects the chickens late. This creates some resentment among the farmers. "Our earnings depend on the age of the chickens, but we never know when they will take them", commented one farmer. "Whenever they want the chickens, they get them. The chickens belong to them." Or it can simply stop delivering chicks to the farmer. When Focus on the Global South interviewed 19 chicken farmers in October 2004, five of them had not received any chicks since March. Or the company can simply decide not to renew its contract with the farmer. Most farmers invest on a long-term basis, for at least five years, but their contract with the company rarely exceeds a year.

Although most of the chicken farmers interviewed by Focus on the Global South complained about the conditions under which they work, few of them were thinking of giving up contract farming. There was a strong perception among them that there was no alternative. Rice farming, combined with traditional livestock, brings a very low income. And other economic sectors offer few job opportunities, especially for people who want to stay in the village. "It is better than doing nothing", many concluded. As well as introducing industrial poultry farming in Thailand, CP played a key role in bringing it to China. It was the first foreign firm to invest in China, establishing a feed subsidiary in the Shenzen economic trade zone. Today there are at least 100 companies connected to CP in China alone. It is the largest supplier of broiler chicks to Chinese farmers. Indeed, CP is said to have been responsible, virtually single-handedly, for changing the country's dietary habits. China's per capita poultry consumption is likely to treble over the next five years, turning it into a huge market. CP is poised to take advantage of the opportunity this will offer. The CP Group is already the secondlargest chicken producer in the world (after Tyson Foods of the USA), with an annual output of 40 million chickens.

New form of bonded labour

Contract farmers have many obligations but few rights. They generally work full-time for a company and depend on it for inputs and technology. They are inextricably bound to the company, in that they do not own even the animals they are raising, and the company takes all the decisions related to their rearing. The farmers are, in practice, factory workers, yet they enjoy none of the rights acquired by organised labour: they receive no sick pay, no paid holidays and no compensation if they are sacked. They even have to bear the financial cost of any calamity, such as the death through disease of the animals they are rearing.

The contract farmers are at the bottom of a chain in which all involved try to pass to those below as much of the financial risk as possible. At the top are the international breeders (some of whom, like the UK-based Genus plc, have formally established the "de-risking" of their operations as a company objective). They have devised legally binding mechanisms for safeguarding their earnings: they have carefully worded contracts, and increasingly they patent the genetic material they provide to ensure that all users pay. The poultry companies, in their turn, transfer as much of the risk as they can to the contract farmers, whom they exploit in all the ways discussed above. In practice, the companies transfer to the most vulnerable the main risks of a volatile export market. The contract farmers have become bonded labourers, who in some ways have fewer rights than slaves: because they had invested money in the purchase of their slaves, plantation owners made sure they were provided with food and other minimal conditions for survival. International breeders and the giant poultry companies feel no such obligation.



Article

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12 "Report on the Investigation into Contract Farming of the Senate Committee on Agriculture and Cooperatives", Bangkok, 2003 (in Thai).

13 CP Kitchen of the World, Annual Report, 2003.





Battery-reared chickens

The way forward

Seedling

Meat consumption appears set to grow inexorably over the next few decades. Projections from the Center for Global Food Issues predict per capita annual consumption of meat (in which poultry has an increasing share) to reach 68.8 kilos by 2050. As the world population is expected to reach 9 billion by then, such a level of consumption would require 624 million tonnes of meat.¹⁴ That means 359 million tonnes over and above today's production of around 265 million tonnes. Such a level of production does not seem not feasible, particularly if the world is to allocate large tracts of land to agrofuels. As the Center points out, the world could not produce this quantity of meat today, even if it were to use all of the world's productive farmland.

The Center argues that the only way that this demand can be satisfied is by more than doubling the yields of crops grown as animal feed. It states: "The only environmentally responsible way to accommodate the world's increasing demand for meat is to produce increased amounts of feed crops without using more land. The only way to accomplish that is to substantially increase yields." Although the connection is not made explicit, its conclusion provides convenient ammunition for the biotechnology companies that are arguing that only GM crops can provide the required increase in yields.

This, however, is not the future that farming communities around the world want. They believe that the stampede into industrial animal production disempowers their communities, dangerously reduces genetic diversity, exacerbates the environmental crisis, creates new threats to world health, and wipes out local food cultures. It also contributes vast amounts of waste to the environment, including manure, urine, carcases, excess feed and feathers. In 1997 industrially reared animals in the USA produced 1.4 bn tonnes of waste, which is equivalent to about 5 tonnes of waste for each person.¹⁵

The way forward, the communities say, is to source most food locally and to promote food sovereignty. This might well lead to a reduction in per capita meat consumption in the rich countries of the North (though not among many of the poorer countries in the South, which already consume very little meat). This would bring health benefits, for animal products are the primary source of the saturated fats responsible for cardiovascular disease, diabetes and some cancers.¹⁶ The most important gain, however, would be the boost this would give to local communities and local knowledge. Rethinking livestock production will be one of the challenges of this century.



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14 Center for Global Food Issues, Dr Thomas E. Elam "Projections of Global Meat Production 2050", Monday 21 August 2006. http://tinyurl.com/28xaub

15 Ibid.

16 Polly Walker, Pamela Rhubart-Berg, Shawn McKenzie, Kristin Kelling and Robert S. Lawrence, "Public Health Implications of Meat Production and Consumption", *Public Health Nutrition*, 8 (4), 2005, 348–56. http://tinyurl.com/298bvw

Bouréima Dodo is an agro-pastoral producer in Niger, executive secretary of the Association for the Re-dynamisation of Livestock in Niger (AREN), a national organisation with about 36,000 members, and part of the Niger Farmers' Platform, which is linked to the Network of Farmers' and Agricultural Producers' Organisations of West Africa (ROPPA).

Rights of passage in Niger

INTERVIEW WITH BOURÉIMA DODO

What do you produce?

I mainly rear cows. I have around 50, which in Niger is not many, but in an agro-pastoral context it's not bad, since I feed some of the grain I cultivate to the animals, while the animals produce the manure which allows me to work the land. It's a harmonious combination. I have goats and sheep as well, plus some hens for our own consumption. I also produce millet and some rice for us to eat, only giving the residues to the animals.

Are you settled in one place or are you transhumant*?

My animals are transhumant. During the dry season we have to move towards Benin, Burkina Faso and Togo to look for grazing lands. This is particularly common in my area, since all the land has been totally taken over by arable farming and there is hardly any space for animals. After we have harvested the millet, we put the animals on the land to eat the residues and to provide manure, and then we move them. I and my close family are fairly settled nowadays, because it is mainly the younger people who do the transhumance so they can put their children in school. The elders stay at home. Furthermore, as pastoralists don't make much money, we have had to diversify into other activities.

Could you give me some figures about the number of herders in Niger?

It is estimated that in 2000 there were over two million people who make a living exclusively out of herding. That is out of a population of ten million. There are also a lot of people who combine agriculture with herding. In any case nearly all families in Niger rear something, even if it is only chickens. But the form of herding that is most characteristic of our country is transhumance.

How many different species do you have? Are they mainly local?

Most of our breeds are still local. It's only near the cities, among the ranchers, that you find foreign animals, particularly cows. Often they have to irrigate the pastures so that they survive. Of course, today we are always being told "your animals aren't productive", "you should get animals that produce more milk or meat". But we believe that an animal needs above all to be adapted to its environment, to be resistant to disease. And we have seen that many of the animals that they bring from abroad aren't adapted to our environment. As to diversity of races, we have ecological zones that have typical species. Take cows. There is one in the west of the country that is called Djéli, and in the north you find M'Bororo and l'Azaouak. And towards the east we have the Kouri with their big horns. Some of these races are also crossed. And in the Gouré region you will find camels of a different colour from those in the north. We have at least three different types of camel that are suited to the different ecological regions. We have also a variety of kinds of goats and sheep.

What are the main problems you face as a pastoralist?

The first problem we face is access to land. Now that the concept of individual property has

*Transhumance is the seasonal migration of herds because of changes in the weather. Usually pastorialists take their herds to the mountains in the summer and to the lowlands in the winter.

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Article



emerged, the equitable access to resources that we used to have is disappearing. In the old days people could put their animals on the land after harvest but now the owners of the land often refuse to release their fields. Another problem are the new laws. There are two complementary ecological areas in our country. There is the north, which is the pastoral area, where all animals go in winter because there is a lot of grass. During the hot season this land gets parched, so herders go south, to the agricultural area. But new, western-oriented legislation has been progressively introduced. So now we have two different systems, with different rationalities, facing each other: traditional law, which nearly everybody knows; and modern law. The community used to guarantee the balance between pastoralists and farmers, but now to have access to land you have to bring proof of your rights, and most of our farmers are illiterate. This new emphasis on private property makes it difficult for herders to have access to natural resources. Just a few people own most of the resources needed for pastoralism. Transhumance has become more and more difficult because the land along most of the routes has been privatised.

Today herders feel completely powerless when faced with natural disasters such as droughts. There used to be strategies that we could adopt to face such problems and survive. For example, when a drought was predicted, we could change the animals' itinerary. Now that is not possible any more because the paths are closed. And so-called "development projects" have been introduced. They overwork the land, making it fragile. This has led to the real degradation of the environment: trees have disappeared and we are losing a lot of soil. Paths do not belong to us any more. They have become risky, because at any moment herders can find themselves hemmed in, without being able to move, because all the land is privatised. It is a real catastrophe.

Are you also facing competition from imported products?

Yes, particularly from powdered milk and tinned meat. We used to sell our meat to places as far away as Côte d'Ivoire, but we face more and more competition from goods imported from Europe. Even though our meat is better quality, imported meat is cheaper, so we have lost markets.

How do you see the problem of migration?

The rural zones are becoming impoverished, so more and more young people are going to the cities in search of work. But often they can't find work, so they start stealing or getting into bad ways. It's



Herders with camel, Niger

become a serious social problem. Shanty-towns are mushrooming around the cities. Even in the city centres there are hundreds of street hawkers, all trying to earn a living. Many people have had to move to the coast or to other countries, because they just can't make ends meet.

What actions have you taken to defend your rights?

We created our organisation because we realised that, given all the challenges we face, we needed to organise ourselves to defend our rights. And we have achieved things, although there is a lot more to do. To begin with, we have gained recognition. Today in Niger it's no longer possible to pass a law that concerns herding without us being consulted. Of course, that doesn't mean that our positions are always accepted but the fact that we are consulted means that sometimes we can get the government to change its mind. The clearest example of this happened three years ago. We were involved in the process of drawing up a pastoral code, which we thought ought to guarantee herders' access to resources and, above all, to provide herders with the legal means to defend themselves. At the time, there was an absolute frenzy of privatisation and we were in danger of losing our collective lands. But, working with the government, we managed to get our collective lands legally recognised, and get it accepted that these lands could only be used by herders. It was a big step forward, but the struggle continues because there are a lot of other battles that we haven't won yet. Above all, there is the battle to protect our right to transhumance, because the government wants to settle us on the land and give up moving. We are working with other groups to get the government to let us carry on with our traditional way of life, which is so well adapted to our ecosystem, but it is a difficult struggle.



Kouri cow, Niger



"The acceleration of international trade will continue, as will climate change, and their impact on ecosystems is already causing the spread of vector-borne diseases into hitherto untouched regions.... Rift Valley fever, Bluetongue virus and West Nile fever are instances of this for insect-borne diseases. But the spread of other epizootic diseases such as foot-and-mouth and African swine fever are, like avian influenza, other examples that are linked to the intensification of production systems and to the increase in commercial movements."

Jacques Diouf, FAO Director-General, 4 December 2007¹

Viral times The politics of emerging global animal diseases

GRAIN

1 http://tinyurl.com/2zzenz

2 David Barboza, "Virus spreading alarm and deadly pig disease in China", *New York Times*, 6 August 2007. http://tinyurl.com/2kg7qf

3 Kegong Tian et al., "Emer-



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gence of Fatal PRRSV Variants: Unparalleled Outbreaks of Atypical PRRS in China and Molecular Dissection of the Unique Hallmark", PLoS ONE 2(6), 13 June 2007. http://tinyurl.com/2gvzga

4 Ann Perry, "Genetic clue for fighting swine virus," 18 October 2007: http://tinyurl.com/2xg3sc

5 Kegong Tian *et al.*, 2007; Biosecurity New Zealand, Ministry of Agriculture and Forestry, "Import risk analysis: Poreine reproductive and respiratory syndrome (PRRS) virus in pig meat", 25 July 2006. http://tinyurl.com/24fdrx

6 Monte B. McCaw, Department of Population Health and Pathobiology, North Carolina State University, "New concepts for the control of PRRS: Within pig strategies", N.C. Healthy Hog Seminars, 2004. http://tinyurl.com/248438

n 2005–6 a mysterious pig disease erupted in China. Pigs in the country's southwestern Jiangxi Province began dying of a high fever. It moved rapidly through and between herds and nothing seemed to keep it under control. Within a year the unknown killer spread to ten provinces, wiping out an estimated 400,000 pigs. Fresh outbreaks began again in 2007, with the disease spreading to another 15 provinces, laying waste to further hundreds of thousands of pigs. The mass die-off helped send Chinese pork prices to record levels, bringing hardship to consumers and jitters within the Chinese government and global business over how such inflation might affect the country's political stability.

"This disease is like a wind that swept in and passed from village to village", said Ding Shurong, a 45year-old farmer from Sichuan province who lost two-thirds of his pigs. "I've never seen anything like it. No family was left untouched."²

A bad case of the blues

Most experts suspected the disease to be Porcine Respiratory and Reproductive Syndrome (PRRS),

because many of the sick pigs developed the telltale blue ears. But PRRS had never been known to be quite so lethal. Subsequent genetic testing by Chinese scientists confirmed that the disease was indeed PRRS, probably a new, highly virulent form that had emerged and taken wing within China's growing industrial pork operations.³

PRRS is not a new disease. Like many other diseases now plaguing the global meat industry, PRRS was never a problem when it was encountered in the wild. It became a deadly menace only when it entered the industrial hog operations in North America and Europe in the 1980s. The uniform, high-yielding breeds used by factory farms proved highly susceptible to PRRS, and conventional methods for controlling other diseases, such as closed all-in/all-out systems, proved incapable of containing it.4 Vaccines were also ineffective because the disease mutates so rapidly. In fact, the deployment of live vaccines is widely believed to be linked to the emergence of more virulent forms of the disease, and may even have played a role in the emergence of the new strain in China.⁵ Things have become so bad in the US that PRRS now causes an estimated US\$600 million in losses to the pig industry every year.6

Once PRRS had got into the pig industry, it quickly spread within North America and Europe and then to other countries adopting the same model of factory farming. It was carried through the import of high-yield pig genetics, whether through breeding stock or semen for artificial insemination. It entered Spain in 1991 through the import of feeder pigs, broke out in Denmark in 1996 by way of an artificial insemination centre, and struck Colombia in 1997 through the import of piglets. The disease moved into major pork-producing countries in Asia in the 1980s and 1990s, probably through similar means. Retrospective studies of the serum of pigs imported into Japan, for instance, where PRRS is now widespread, show that at least 15 per cent of them were positive for the disease.⁷ The variant of PRRS now on the loose in China seems particularly lethal. It has already moved into Vietnam and possibly Burma, and experts fear that it may now move far beyond China's borders.

"Wherever new PRRS viruses or unique combination of known agents are, the global swine industry needs to be concerned", warns Kent Schwartz, clinician at Iowa State University. "There are no secure borders".⁸ PRRS is thus rising up the priority list of emerging deadly animal diseases which the United Nations Food and Agriculture Organisation (FAO) and the World Animal Health Organisation (OIE) label "transboundary". But the list is long and growing, and many of these new threats are zoonotic diseases – those that can jump from animals to humans, such as SARS or bird flu. Today, it is estimated that three out of four emerging diseases affecting human populations are transmitted from animals.⁹

Disease Change

Just as the world is undergoing climate change, it is also undergoing a major transformation in diseases. And here too human actions are at the centre of the problem. Indeed, the very forces driving climate change are also at the root of global disease change.

According to the FAO, "upsurges in animal disease emergencies worldwide are linked to the increased mobility of people, goods and livestock" (read: globalisation), "changes in farming systems" (read: more factory farming), "and the weakening of many livestock health services" (read: neo-liberal privatisation and deregulation).¹⁰ The problems are in essence systemic.

The transnational structure of the livestock and meat industry, with its highly concentrated areas of production and the exporting of meat and animals over large distances, creates the conditions for disease to spread widely and rapidly. For instance, in 2005 more than 25 million live pigs were exported worldwide, not counting the large numbers smuggled across borders. Meanwhile, the intensity of the operations and the genetic uniformity of the animals create the perfect breeding grounds for the evolution of highly pathogenic strains and their amplification, with, at times, deadly consequences for humans.¹¹ Major killers like bird flu, Nipah and even SARS have all passed through such intensive farming operations.¹²

Today's global crisis with animal diseases is really a product of the expansion and integration of European and North American models of industrial livestock farming over several decades. The uniformity of these farming models, in terms of both genetics and systems of production, means that the animals are not adapted at all to the local environment and are thus highly susceptible to local diseases. Producers have tried to cope with this weakness by building ever more tightly sealed barns to keep all pathogens out, and by injecting animals with all manner of vaccines and antibiotics. At an international level, governments are tightening their borders, and pushing for greater surveillance and reporting of diseases in foreign countries. And yet, whether from international donor programmes and NGOs or from agribusiness contract farming schemes, the drive continues, pushing it to intensify the industrialisation of livestock farming towards a "Livestock Revolution", akin to the Green Revolution for crops.¹³

In fact, the so-called "Livestock Revolution" rapidly leads to a dead end for most farmers, especially in poor countries. These countries do not have the means to support strong national veterinary programmes, and the biosecurity and patented drugs deployed and subsidised in the North are completely out of the reach of their small farmers. Moreover, in many countries there are endemic diseases, such as foot-and-mouth disease (FMD) in Africa, that may not cause much mortality with local production practices but are heavily policed in international markets, thus prohibiting these countries from ever reaching the promised export markets.

The furious efforts on the part of the FAO, OIE, the World Health Organisation, the World Bank and some of their national counterparts to get a grip on these emerging transboundary diseases do little to alter this grim reality. Their focus is on surveillance, keeping track of where the disease is, and on control, stamping the disease out where it arises. Short of the occasional mass vaccination 7 Biosecurity New Zealand 2006; Joe Vansickle, "PRRS Spreads Worldwide," *National Hog Farmer*, 1 November 1997:

http://tinyurl.com/yunxpe

8 Personal email communication, 2 November 2007.

9 J. Otte, D. Roland-Holst, D. Pfeiffer, R. Soares-Magalhaes, J. Rushton, J. Graham and E. Silbergeld, "Industrial Livestock Production and Global Health Risks", Pro-Poor Livestock Policy Initiative, June 2007. http://tinyurl.com/280opa

10 Agriculture and Consumer Health Department, FAO, "New Animal Disease threats", Agriculture 21, June 2002.

11 Otte *et al.*, "Industrial Livestock Production".

12 The role of factory farming in the emergence and spread of bird flu is well-documented in GRAIN's February 2006 Briefing on bird flu. The Nipah outbreak in Malaysia, which killed 105 people, began in 1998 at a large-scale farm in the state of Ipoh, owned by a Singaporebased multinational corporation that was in contact with fruits bats (the natural hosts of the virus). From there it spread through the movement of pigs to other pork-producing areas in the country. The consensus is now that the SARS outbreak also passed from bats to intensively farmed animals - this time civet cats in China - and then to humans.

13 A 1999 report by CAST found that traditional livestock systems were being replaced by intensive units at a rate of 4.3 per cent of farms per year See CAST, "Animal agriculture and the Global Food Supply", Task Force report 135, 1999.



14 The first outbreak occurred in Savar, a suburb of Dhaka, at the Biman Poultry Complex, owned and operated by Biman Bangladesh Airlines.

15 Sheikh Sabiha Alam, "Row over bird flu compensation", *Daily Star*, 28 May 2007. http://tinyurl.com/2gyfha

16 "Poultry industry faces uncertainty", *Daily Star*, 26 March 2007: http://tinyurl.com/2b2bap "Avian Flu outbreak: Savar families pass nervous days", bdnews24.com, Savar, 25 March 2007: http://tinyurl.com/2d99hb "W.Bank body, NGO to fight bird flu in Bangladesh", Reuters, 2 July 2007.

17 FAO, "African Swine Fever in Georgia", *Empress Watch*, June 2007.

18 "Live pig insurance benefits breeders", CCTV, 18 November 2007.



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19 The China Insurance Regulatory Commission carried out a pilot programme for insuring pigs in the second half of 2007. If deemed successful, this scheme could be expanded. http://tinyurl.com/ywqak4

20 Akemi Kamakawa et al., "A sero-survey of the porcine viral diseases in the Mekong delta", proceedings of the 11th International Symposium of the World Association of Veterinary Laboratory Diagnosticians and OIE Seminar on Biotechnology, Bangkok, Thailand, 9–13 November 2003.

21 An owner of a larger farm, in the area where the first outbreaks were registered, claims that the disease killed 155 of his pigs in February 2007, months before the outbreaks were officially recognised. See David Matsaberidze, "Mystery pig disease strikes western Georgia", *The Messenger*, 11 May 2007. http://tinyurl.com/yqk2eu Livestock

or educational programme, little is done to help farmers cope with the increasingly frequent outbreaks of disease ... produced by the farming systems promoted by experts and partners of the very same agencies.

The unravelling of the recent bird flu outbreaks in Bangladesh is typical. Bangladesh is seen as a success story of the Livestock Revolution, having converted about half of its national poultry production from backyards to intensive and semi-intensive industrial farms. The micro-credit NGO the Bangladesh Rural Advancement Committee (BRAC) was instrumental in this transition, financing groups of poor women to set up thousands of mini-factory farms. In the process BRAC became a major, vertically integrated poultry corporation, with its own large-scale hatcheries, poultry farms and feed mills that supply the smaller units. The corporate NGO also played a central role in the national bird flu preparedness activities backed by the World Bank. In 2005 the government contracted BRAC to monitor "hotspots" in the country where migratory birds flock, and to convert the country's open-house hatcheries into biosecure closed facilities. Yet these actions did nothing to stop the bird flu outbreak of March 2007, which happened at a completely closed poultry farm - one of the country's largest broiler operations and hatcheries.¹⁴ From there it spread rapidly through the smaller "BRAC Model" farms and some other large-scale operations.

The small operators, most having gone deeply into debt to pay for their modern operations and inputs, were hit the hardest. The Rahmans, a brother and sister operating a newly established semi-intensive poultry farm near the initial outbreak, lost their 3,000 chickens to bird flu before they could even pay off their first bank loan instalment. Another farm, run by Bibi Ayesha Women Training and Production, was eventually compensated, but the Tk 70 it received per bird hardly covered the Tk 263 it had spent per bird to import layer chicks from Canada.¹⁵ Many non-infected farms, faced with collapsing poultry markets, were also run out of business. As for BRAC, it complained of a "recovery crisis" caused by the bankruptcy of its clients, but several months later it signed a lucrative deal with the World Bank's International Finance Corporation to "battle bird flu" by helping farmers to "improve farming practices".¹⁶

Big business bias

What is increasingly clear in the official response to the growing animal disease crisis, if only between the lines, is that small-scale production is not on the agenda. Traditional farming is generally treated as a nuisance, something that gets in the way of official disease control strategies.

"The nature of pig rearing in unconfined open grazing [makes] it very difficult to implement effective control measures", said the FAO about a recent outbreak of African swine fever in Georgia – as if control measures not suited to open grazing systems could ever be effective in countries like Georgia, where they predominate.¹⁷

In some cases, small-scale operations are simply ignored by the official response to outbreaks. The Chinese government's main response to the 2006-7 PRRS outbreaks was a pledge of US\$854 million to cover 80 per cent of the premiums for insurance on pigs. Good news for the large farmers but meaningless for the vast majority of farmers who cannot afford health insurance for their families, let alone their pigs. Only 21 million pigs in China are insured, out of a total national herd of nearly 500 million,¹⁸ though the number may increase.¹⁹ So, with little being done actually to eliminate PRRS from the big production systems or to support local, self-sufficient pig farming systems, the disease will continue to wreak periodic havoc on China's small farms for years to come.

The same goes for Vietnam. Years ago, a team of scientists warned that PRRS was rampant in the state's large breeding farms and was affecting villages through the distribution of piglets. They recommended that movement of pigs from these large farms to the villages be stopped.²⁰ In the ensuing years the opposite happened: Vietnam has become a major destination for the booming pig genetics industry – and PRRS has proliferated.

At other times, the official response to disease, more than the disease itself, undermines traditional small-scale animal farming, whether deliberately or out of ignorance of local farming systems and food cultures. When African Swine Fever broke out in Georgia in May 2007, the first time it had ever been recorded in the Caucasus region, veterinary experts with the FAO, the European Community and the governments of the US and Switzerland parachuted in, assessing the situation in a few days and offering a plethora of recommendations for the immediate and long-term control of the disease. Common to all of their reports was the urgent need to put an end to free-range pigs. "Keep backyard pigs permanently at home in total confinement", warned the FAO.

The Swiss even suggested punishing farmers with unconfined pigs by paying compensation only to farmers who could prove that their pigs were



confined, even though outbreaks also occurred at Georgia's few large closed pig farms, isolated from contact with other pigs and animals.²¹ They also recommended that the Georgian government compensate farmers with "restocking-piglets" rather than cash and, as part of a longer-term plan to improve pig production, ensure the confinement of pigs, the prohibition of free-roaming pigs, and the establishment of animal registration.²² All of this for a freak disease outbreak that the international experts on the scene believe was caused by a failure to dispose properly of contaminated waste brought in by international ships.²³

If these recommendations were taken up, most of Georgia's small farmers would have to give up pig farming. The recommendations go against not only generations of safe pig farming practice but also the need to preserve the country's incredibly diverse pig breeds. Many of the pigs in Georgia roam and are completely unsuited to confinement. The Kakheti pig, for example, one of Europe's oldest breeds and renowned for the quality of its meat, is farmed semi-nomadically in the mountainous zones of east Georgia, near one of the ASF outbreak areas. Pregnant sows sometimes go alone into a forest to give birth and return to the herd afterwards.

Diplomatic immunity

At the centre of the blueprint for the future of disease management is a new concept called "compartmentalisation", which is only now beginning to take shape. It will clearly prove highly destructive for local farmers.

A compartment, according to the OIE, is a "subpopulation defined primarily by management husbandry practices related to biosecurity". As an "epidemiologically closed" operation, it has a special status – a "distinct animal health status" – acknowledged through agreements with importing countries.²⁴ When a disease that normally brings trade sanctions breaks out in a country, a compartment can keep on functioning and exporting as usual. So it's like a special export processing zone – but for meat.

"Compartmentalization" is already being written into bilateral trade agreements, and in some countries has become the focus of official responses to transboundary disease outbreaks. Partly in response to the outbreaks of the Nipah virus nearly 10 years ago, Malaysia is in the process of concentrating all of the country's pig production in a few pig farming areas, where most production will be undertaken by large corporate producers. Vietnam is creating special zones to produce





A Kakheti sow and piglets, returned from the forest

poultry both for export and to supply the country's growing number of supermarkets. The new zones are the centrepiece of the government's plan to increase by 2015 the big commercial farmers' share of poultry production from 18 to 48 per cent, while the smallholders' share falls from 52 to 22 per cent.²⁵

It is not hard to see what is envisaged. Inevitably, national resources for veterinary programmes will target these compartments, with governments putting all their energy into keeping trade lines open and agribusiness investment pouring in. Meanwhile, smallholders operating outside these areas will be treated as risks – potential reservoirs of disease in need of constant surveillance and policing.²⁶

The pitfalls of big

There is no reason to think that this global approach to disease is going to make livestock farming any safer. "Epidemiologically closed" is just a notion – it does not exist in practice. Disease outbreaks happen all the time at these supposedly biosecure facilities, and there's no evidence to suggest that this is changing. On the contrary, developments within the industry mean that short-term profits are increasingly trumping long-term concerns with safety – whether for animals, workers, the public or the environment.

Smithfield, the world's largest pork producer, is a case in point. It recently established 33 largescale pig farms in Romania to serve as a lowcost production base for the European market – in effect, a perfect example of a "compartment". "Politically, it is acceptable and we've got people in Western Europe who make 20 euros an hour when you've got people in Eastern Europe who make 22 Federal Department of Foreign Affairs and the Swiss Agency for Development and Cooperation, Government of Switzerland, "Proposal for a control plan for ASF in Georgia: Expert mission to Georgia July 2nd until July 13th, 2007": http://tinyurl.com/26e56s

23 The source of the outbreak was never confirmed and the idea that this strain of the virus, which is confined to a few countries in south-east Africa that do not export pork, could somehow have been passed on to local pigs by way of ship waste remains a long-shot theory.

24 OIE Terrestrial Animal Health Code, 2006, Chapter 1.3.5.

http://tinyurl.com/2btnxs

25 0. Thieme, J. Hinrichs, FAO, "Poultry sector restructuring options and impacts: The Future of Poultry Farmers in Vietnam after Highly Pathogenic Avian Influenza", 9 March 2007. http://tinyurl.com/2cpstt

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26 One concrete product of this line of thinking that is already visible is the refusal of many governments to enact simple vaccination programmes against major diseases, which would reduce mortality among animals but cause export problems. Highprofile examples include the UK with foot-and-mouth disease, and Thailand, where, despite street protests by small-scale farmers calling for vaccines, bird flu vaccination was resisted at the height of its outbreaks to protect poultry exporters.

The demise and renaissance of the Creole pig in Haiti

For centuries the Creole pig acted as a kind of piggy bank for Haitian peasants. This small, hardy, black pig thrived on food scraps and was well adapted to the rugged terrain. It was renowned for never getting ill. Whenever a family needed a bit of extra cash – for a wedding, a funeral, school fees or a medical emergency – it slaughtered a pig. Because of its resilience and feisty nature, the pig became a symbol of the resistance of the Haitian people in their long and violent history. The pig was even incorporated into voodoo ceremonies.

Disaster hit in the 1970s, with the arrival of the African swine fever virus. It seems that the virus first appeared in neighbouring Cuba, where it is widely believed to have been introduced by anti-Castro terrorists backed by the CIA.¹ In 1971 the Cuban authorities were forced to slaughter half a million pigs to prevent a nationwide epidemic. The disease spread first to the Dominican Republic and then to Haiti (with which the DR shares the island of Hispaniola). According to US sources, African swine fever had affected almost one-third of Haiti's Creole pig population by 1982.

Under pressure from Washington, the Haitian government ordered the slaughter of all Creole pigs. In less than a year every native pig had been killed. The measure dealt a huge blow to the already impoverished peasantry. Many familes couldn't afford to keep their children in school. Others had to sell or mortgage their land. Families were forced to fell trees to sell to the charcoal industry, further contributing to desertification.

To replace the hardy creole breeds, the government imported new breeds of fat, white pigs from the American midwest. Though regarded as "better" than the Creoles, the imported pigs required clean drinking water (which was unavailable to four-fifths of the Haitian population), imported feed (costing US\$90 a year, when annual per capita income was about US\$130), vaccination and pigpens. Not surprisingly, the repopulation programme was a failure (although, against the odds, some of the imported pigs managed to adapt to local conditions and can still be seen today in the streets of Portau-Prince, rooting among piles of rubbish and protecting their white skins from the sun with layers of filth).

In the mid-1980s, French agronomists brought in tough Sino-Gascon and Guadeloupe breeds, similar to Haitian pigs. In 1988, the French started to distribute black piglets to relieved Haitian peasants.² By 1992, nearly half of the 650,000 pigs estimated to live on Haitian farms were descendants of these breeds.

- 1 "Cia Link to Cuban Pig Virus Reported", San Francisco Chronicle, 10 January 1977.
- 2 "Saving Haiti's Bacon", New Scientist, 17 July 1993.

one and two euros an hour", Smithfield Foods' president and chief operating officer, Larry Pope, told shareholders at a meeting in 2006. "Plants in Western Europe are very expensive. Plants in Eastern Europe, they will virtually give to you for small dollars."²⁷

There was a great deal of local resistance to Smithfield's entry, hardly surprising given the company's well-earned international reputation for pollution, union-busting and draconian labour practices.²⁸ But heavy lobbying and a smooth public relations campaign eventually convinced the politicians to open the door. "Smithfield has a long history in the USA of helping communities where their plants and operations are located", assured Pope. "It is our desire to bring a part of our culture to Romania, where we hope to be a contributing corporate citizen to the local Romanian communities."

27 http://tinyurl.com/2azuna

28 Tom Philpott, "Hog Futures: How the meat industry thrives, even as costs rise", Gristmill blog, 13 September 2007. http://tinyurl.com/yua8gs Less than a year later, however, in July 2007, just after the government's US\$60-million mass vaccination programme seemed to have finally put an end to outbreaks of classical swine fever and reopened the door to EU markets, pigs started dying on one of the Smithfield farms. People living near the Smithfield operation in Cenei told of hundreds of carcases of pigs left lying around for days. "We couldn't breathe any more", said Gheorghe Olarov, an employee at the town hall. "I live a kilometre away from the farm, and at night I had to close the windows to sleep. The Americans have made our village a hotbed of infection."

The company blamed the summer heat wave and blocked local authority investigation. "Our doctors have not had access to the American farms to effect routine inspections", said Csaba Daroczi, assistant director at the Timisoara Hygiene and Veterinary Authority. "Every time they tried, they were pushed away by the guards. Smithfield proposed that we sign an agreement that would oblige us to warn them three days before each inspection."

Finally, on 3 August, Smithfield announced the worst: classical swine fever had broken out on its farms. The company immediately downplayed the crisis. "We have nothing to say to the press; the swine plague is under control; journalists can just publish our communiqués", said the company's local director, Mircea Cotosman.



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The authorities had to step in. That month 50,000 pigs were slaughtered and 20 Smithfield farms were shut down. "The Smithfield farms are quarantined", declared Timisoara sub-prefect Zoltan Marrosy. "The police are assuring this region's security, so as to prevent the transport of animals and stop transmission of the virus. Smithfield has behaved aggressively: we asked them to stop breeding pigs and transferring them from one farm to another, but they paid no attention to our instructions." The outbreaks also revealed that 11 of Smithfield's 33 farms were operating without the necessary permission from the sanitary authorities.

These outbreaks hit local farmers hard. "Nobody wants our pigs any more", raged Lina Stoisin, a small-scale pig farmer. "We work morning to evening to raise them, and we don't know what to do with them any more. I believed that the Americans were very advanced and their technologies were flawless, but they weren't able to avoid swine plague."²⁹

Classical swine fever is just one of the many diseases that transnational meat corporations find difficult to avoid. While the swine plague was laying waste to Smithfield pigs in Romania, a different deadly disease was being churned out by another US corporation, this time in the homeland. On 25 September 2007, Topps Meat initiated what would soon become the second largest recall of beef in US history, involving 21.7 million pounds of frozen ground beef. The recall was ordered by US authorities after around 30 people were poisoned with the deadly strain of Escherichia coli (0157: H7).30 It was the most serious of 16 outbreaks of the same E. coli strain reported in the US in the first eight months of 2007. The US government estimates that up to 73,000 Americans a year are now made sick by E. coli 0157:H7.

Topps was once a family-owned enterprise that boasted of its reputation for quality. But in 2003 it was taken over by Strategic Investments, a private equity group eager to maximise short-term profits. Strategic Investments brought in new machinery and ramped up production to meet the growing needs of its clients, such as Wal-Mart and other major supermarkets and fast-food operations. "The whole time, the whole year, there was a lot more pressure", said Alberto Narvaelzi, a supervisor who worked at Topps for 23 years, referring to 2007.³¹

Private equity investment in the meat industry is on the rise around the world. US-based Goldman Sachs, one of the world's largest private equity groups, took over China's largest pork producer,



Workers at Charoen Pokphand's fully integrated poultry production and processing plant in Thailand

Shineway, in 2006. It also owns 25 per cent of the country's number two pork producer, the Yurun Food Group, making Goldman Sachs China's biggest pig corporation by far. A large chunk of China's pig industry is thus in the hands of global fund managers concerned only with rapid returns on their investments. Such a development must have implications for the control of transboundary animal diseases – but you won't see it being discussed within any of the official agencies dealing with such matters.

A way out

The world is in the midst of big changes with respect to global diseases. We are heading for more diseases, more deadly types of disease, and more capacity for these diseases to spread. There is also a greater probability of the emergence of zoonotic diseases and global pandemics. Yet the international response to this situation has so far failed by a large measure to reflect the seriousness of the crisis. The fault lies in governments' unwillingness to confront the dominant powers of industrial livestock farming – whether it be the pharmaceutical corporations and their patents or the industrial meat corporations and their factory farms. As a result, the official responses often deepen the larger structural problems.

If there is a silver lining to this gloomy prognosis, it is that the solutions are to hand: local systems of food production, which continue to feed and provide livelihoods for billions of people throughout the world, are our best defence against this emerging disease crisis. These systems need support, and it is vital that they start to take their rightful place within international thinking on disease control.



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29 Most of the information above comes from an excellent investigative report by Mirel Bran: "Swine Plague: Romania Criticizes American Group's Attitude", *Le Monde*, 15 August 2007, translated by Leslie Thatcher (Truthout).

30 E. coli is normally a benign disease, but this deadly variant has emerged from North America's factory farms.

31 Christopher Drew and Andrew Martin, "Many Red Flags Preceded a Recall of Hamburger", *New York Times*, 29 October 2007.

"We must have assurance that the viruses we send will be used solely for noncommercial public health purposes in an equitable manner, not only for the benefit of company profits or rich people in rich nations. We must have trust that when we entrust our viruses to the multilateral system, it would not be at the expense of our sovereign rights and at the expense of our people's health. For that to happen, we need to formulate a new system."

> Siti Fadilah Supari, Minister of Health, Republic of Indonesia 20 November 2007

Germ warfare Livestock disease, public health and the military-industrial complex

GRAIN

he continuing global integration of the meat trade, and more generally that of national economies, have made animal disease an international concern. An outbreak of a disease can mean the loss of export markets worth billions of dollars and typically sparks international rows over trade restrictions, regulations, secrecy and even bioterrorism. The geopolitics can get particularly nasty and intense when zoonoses animal diseases that can be transmitted to humans - are involved. There are international agencies, such as the World Organisation for Animal Health (OIE) and the United Nations' World Health Organisation (WHO) and Food and Agricultural Organisation (FAO), that are supposed to navigate such problems with objective expertise. So far, however, these agencies appear to be as heavily influenced by politics as their member governments - with a corporate agenda regularly coming out on top.

One of the more high-profile international conflicts over livestock disease involves the sharing of samples of the H5N1 strain of the bird flu virus. Under the WHO's Global Influenza Surveillance Network (GISN), national laboratories are supposed to forward virus samples that they collect from human victims of bird flu in their countries to the WHO's collaborating centres, which are institutions such as research institutes in universities. The reasoning is that the big laboratories in these institutions have the necessary capacity to analyse and compare viruses, and that this should make it easier and faster to appraise the evolution of the disease and its potential impacts. The virus samples also provide the critical raw material for the development of vaccines and diagnostic kits, since only the most up-to-date versions can be effective against such a rapidly mutating pathogen. And this is where things get sticky.

The way the GISN currently functions means that when a country sends samples of viruses to the collaborating centres it relinquishes control over those samples to these labs. The labs are then free to transfer the samples, or the important information derived from them, to pharmaceutical corporations, which can then apply for patents. The labs are also free to publish articles on the virus



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sequence in scientific journals, or even take out their own patents on the material or its derivatives – which is precisely what some of these labs have been doing.

The potential for conflict over who benefits from such a system emerged on 9 February 2007 when Indonesia cut off the supply of local bird flu virus samples to the WHO. Apparently, a company had approached the Indonesian government to sell diagnostic kits that it had developed from virus samples originally taken from Vietamese bird flu patients and sent to a WHO collaborating centre. Indonesia's Minister of Health says that this was when she first realised how corporations from rich countries were using the WHO network to gain patents and profits from the virus samples that poor countries like hers were sending in trust to the WHO. When the Indonesian government started demanding material transfer agreements (MTAs) from the WHO collaborating centres, it was firmly rebuked. So, unsurprisingly, Jakarta stopped sharing virus samples with the WHO and signed instead a private bilateral deal with a big US pharmaceutical company, Baxter International, who had agreed to produce and deliver vaccine to Indonesia on the government's terms.

Measly stockpile

After engaging in some nasty finger-pointing, the WHO eventually opened talks with Indonesia, and by the end of March 2007 announced that it had brokered a deal that would keep the virus samples flowing to the WHO network. But, in practice, little changed. Indonesia, along with China, continued to withhold virus samples while the numbers of H5N1-related patents increased rapidly.1 At the same time, with the WHO's global stockpile of human bird flu vaccines standing at a mere 50 million doses, far short of the 1 billion that a pandemic would require, rich countries continued to place their own advance orders with the major vaccine producers, leaving little, if anything, for the countries worst affected by bird flu. Moreover, the WHO's much-vaunted initiative to help poorer countries to build up their own vaccine production capacity, something they'd repeatedly called for, was only inching along, with nothing yet to show.

As part of the March 2007 deal with Indonesia, the WHO promised to produce a new set of standard terms and conditions for the sharing of influenza viruses, and, to this effect, it organised an intergovernmental meeting in Singapore at the end of July 2007. But at the meeting Indonesia's demands, which were supported by Thailand, were bluntly dismissed by the UK and the US. The UK objected to a proposed regulation that would stop WHO reference laboratories (that is, labs authorised to work with the WHO without having to satisfy such strict criteria as the collaborating centres) from seeking patents. It also warned that another proposed requirement, which would oblige these labs to get permission from the donor countries before transferring to third parties samples or information derived from samples, would be "very damaging to the ability to respond rapidly". On this same clause dealing with prior informed consent, the US demanded simply: "Strike this entire paragraph".² The WHO, for its part, once again joined the attack, with David Heymann, its assistant director for communicable diseases, accusing Indonesia of "putting in danger its own population, because if those viruses are not freely shared with industry, vaccines will not contain the elements of the Indonesia infection".3

The Singapore meeting failed to get through most of the proposed text, and a second meeting was set for November 2007. In the lead-up, Indonesia put forward a working document to set the record straight on the fundamental principles that it wants the WHO and its network of laboratories to abide by: national sovereignty over biological resources; the rights of states to determine access to their influenza viruses; the obligation for the WHO network labs to get prior informed consent from the countries that originally donated the viruses before transferring them to third parties; and, perhaps most importantly, no intellectual property rights (IPRs) on the viruses, their parts or derivatives for any "entity".⁴ These concerns were echoed in a statement put out by Third World Network and signed by 56 NGOs from around the world.⁵ Just to make sure that the assembled delegates got the message, Indonesia's Minister of Health, Siti Fadilah Supari, stood up on the first day and read out a statement denouncing the WHO influenza network as a "new type of oppression to developing nations".

Cold water

Indonesia was supported by Thailand, India, Brazil and, in particular, the Africa Group, which even proposed a text calling for the same prohibitions on IPRs. But the US and the EU were unmoved. Later that very day they once again poured cold water on Indonesia's requests. "We cannot accept any approaches that would undermine intellectual property rights", said John Lange, US special representative for avian and pandemic influenza. Instead he suggested that Indonesia would be better off worrying about "contingency plans for 1 WIPO, "Patent issues related to influenza viruses and their genes", Expert Report commissioned by the World Health Organisation, 2007. For a deeper analysis of the issue and the data see also: Edward Hammond, The Sunshine Project, "Some Intellectual Property Issues Related to H5N1 Influenza Viruses, Research and Vaccines", Third World Network, July 2007. http://tinyurl.com/2dxd4t

2 See Appendix Three of the Chairman's summary of the debate at the interdisciplinary working group on pandemic influenza preparedness. http://tinyurl.com/yspdwq

3 US Information Service, "Indonesia vs. samples for avian flu vaccines", 7 November 2007. http://tinyurl.com/yomfm9

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4 "Fundamental principles and elements for the development of a new system for virus access and fair and equitable benefit sharing arising from the use of the virus for the pandemic influenza preparedness", proposed by Indonesia to be considered as a working document for the discussion in the Intergovernmental Meeting on Pandemic Influenza Preparedness (IGM-PIP), 20-23 November 2007. http://tinyurl.com/255ejg

5 http://tinyurl.com/ynjml7





Avian flu viruses

school closings" than trying to resolve issues over access to vaccines.⁶ Three days later, the meeting ended without any progress towards a deal.⁷

The controversy around the sharing of bird

flu virus samples has tainted international collaboration over other diseases as well, even those that are not zoonotic. China, for instance, recently balked at sharing samples with OIE/FAO reference laboratories from its devastating Porcine Respiratory and Reproductive Syndrome (PRRS) outbreaks in 2006–7, sparking a similar wave of accusations. "They haven't really explained what this virus is", said Federico A. Zuckermann, a professor of immunology at the University of Illinois College of Veterinary Medicine. "This is like SARS. They haven't sent samples to any international body. This is really irresponsible of China. This thing could get out and affect everyone."⁸

China, however, was one notch clearer than Indonesia in saying that intellectual property rights were the issue. After all, the potential global market for an effective PRRS vaccine is estimated at over US\$200 million, and the current line-up of PRRS vaccines is controlled by a few pharmaceutical corporations with patents over entire virus samples.9 So China, which unlike Indonesia has its own pharmaceuticals industry, decided to pursue the development of a vaccine within the country and to license out its production and distribution to its emerging Chinese animal pharmaceuticals corporations – which are also beginning to develop exports.¹⁰ Juan Lubroth, a senior officer with the FAO, says that the FAO is currently working with Chinese authorities to arrange for the transfer of PRRS virus samples to institutes outside the country - even facilitating MTAs, something that was earlier denied to Indonesia by the WHO for the bird flu virus. "We have stimulated the

sharing of the strain with other laboratories and are currently ensuring that MTAs are in place to protect the scientific and intellectual property of the scientists and institutes that are providing such material", says Lubroth.¹¹ While MTAs may sound conciliatory, there is no guarantee that they will be fair, much less represent or respect the public interest.

Things moved very differently in Vietnam when the lethal variant of PRRS entered the country in 2007, probably from China. Before an FAO team was even on site, Hanoi sent samples of the virus to the US Department of Agriculture's National Veterinary Diagnostic Laboratory at Plum Island. Plum Island, off the north-east coast of the United States, is under the jurisdiction of the US Department of Homeland Defense, a ministry set up under the Office of the President in the aftermath of 9/11. It is neither a reference laboratory nor a collaborating centre of the FAO/ OIE. It does, however, form partnerships with pharmaceutical corporations, such as Merial, in the development of vaccines from its collection of viruses.

Dr Nguyen Van Long, of Vietnam's Department of Animal Health, says that they chose to send the samples to the US facility because of the good relations that his department has with the US authorities. He also says that virus samples were later sent to an OIE reference laboratory in Australia and to the National Veterinary Laboratory in China. When asked about the terms and conditions for the transfer of the samples, he would say only that international and national biosecurity standards were respected.¹²

The military-industrial complex

Bilateral arrangements like the Vietnam-Plum Island deal are bound to become more common as UN agencies refuse to address the core problem of patents on viruses, vaccines and other technologies important to the control of global diseases. In the case of bird flu, Indonesia is already exploring bilateral options as alternatives. Meanwhile, the US, largely through its military-industrial complex, is busy building its own network of laboratories to locate and get control of virus samples from around the world, under the guise of protecting the country from bioterrorism. The US Naval Medical Research Units, for example, have mobile regional research labs stationed in Jakarta, Cairo and Lima, while the US Department of Defense's Biological Threat Reduction Program (BTRP) operates in former territories of the Soviet Union. BTRP was set up to defuse bioweapons programmes of



6 Stephanie Nebehay, "UP-DATE1–Indonesia and US square off at bird flu talks", Reuters, 20 November 2007. http://tinyurl.com/2eu2rz

7 Stephanie Nebehay, "WHO fails in giving developing nations access to bird flu virus", Reuters, 24 November 2007.

8 "Virus spreading alarm and deadly pig disease in China", *New York Times*, 16 August 2007.



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9 For example, Boehringer Ingelheim has a patent in Canada (CA 2370372) that claims a PRRS virus deposited with the ATCC culture collection in the US under the Accession Number VR-2638, and a US patent application (20060286123) that claims any vaccines developed with PRRS virus strains deposited in the European Collection of Cell Cultures under the Accession Numbers ECACC 04102703, ECACC 04102702, and ECACC 04102704.

10 Two of these corporations are the Jinyu Group and China Animal Husbandry Industry Company (CAHIC). These two companies were also the official suppliers of bird flu vaccines for poultry within China.

11 Personal email communication, 8 November 2007.

12 Personal email communication, 23 November 2007.

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previous Soviet republics, but it also has a mandate to establish and expand US involvement in research on infectious diseases in the area, with the specific task of transferring samples of pathogens to US labs.¹³

There is very little information available on the work that these BTRP-linked labs are engaged in. The unit in Kazakhstan is working on bird flu vaccines and actually developed and tested one there. That lab houses and presumably conducts research on a number of the most serious animal disease pathogens, such as African swine fever and anthrax. In nearby Georgia, the programme is constructing a US\$90 million central reference laboratory that will consolidate all of the country's pathogen collections, with a direct open channel for transferring biological samples to the US.

Secrecy, whether it is in the workings of the WHO collaborating centres or around the US's global network of labs, is a cause for grave concern. For one thing, it facilitates patents that prevent poor countries from gaining access. Also - and this is a point stressed by the Indonesian government - it raises serious questions about bioterrorism. What guarantees does a country like Indonesia have that the viruses collected within its borders and sent out of the country won't someday be used for the development of bioweapons? On what grounds could it possibly trust in the "good will" of the rich countries and their massive arms industries? There is also the nagging question of biosecurity within these labs. A recent outbreak of foot and mouth disease in the UK was caused by the leak of the pathogen from one of the most modern laboratory facilities in the world, with a second leak from a Merial lab at the same location confirmed a few months later, this time apparently without an outbreak among animals. Certainly such a scenario could just as easily occur in a place like Georgia, even though the experts appear not to have even considered it as a possible source of the recent African swine fever outbreak.

In sum, three key problems are plaguing the global system that governments are now developing to deal with animal diseases that threaten human health. The first is information. There is an incredible lack of transparency around the whole scientific research infrastructure dealing with animal diseases and their human health implications. Connected to this, media coverage of these issues is a problem as well. Media are frequently dissuaded from covering animal health crises and disease research, sometimes through gagging orders, and, when they do report, they usually do a poor job. For instance, there is little or no information available about the PRRS crisis in China, and avian flu became a "global issue" only when it threatened the European Union. Second, the privatisation of viruses, vaccines and related materials and technologies for commercial purposes (whether state or private) is totally against the public interest. Trade agreements make it obligatory to patent microrganisms - and, as they don't define what these are, the sky's the limit [see "CAFTA and the Budapest Treaty" on page 33]. This translates into direct political and corporate pressure to get away with whatever is possible. Given that the threat of a human pandemic from infectious disease has never been as great as it is today, the stakes are just too high to allow exclusive monopolies over influenza and other pathogens, whether the patents are held by governments or corporations.14 Finally, the growing intrinsic connection between health R&D and military use - supported by powerful new technologies - argues in favour of much stricter oversight and control over the global movement of, and investigation into, animal-borne disease pathogens.

Neither the multilateral system, with key UN agencies playing an ineffective mediating role between highly competitive states and commercial interests, nor secretive bilateral deals between governments and/or corporations, inspire confidence. But greater social action on these issues will not be forthcoming without more information about what is really going on.

Resources & going further

- Statement by the Minister of Health of the Republic of Indonesia, HE Dr Siti Fadilah Supari, at the Intergovernmental Meeting for Pandemic Influenza Preparedness (IGM– PIP), Geneva, 20 November 2007.
- http://tinyurl.com/23sg48
- Documentation for IGM–PIP, 20–23 November 2007. http://www.who.int/gb/pip/
- Edward Hammond, The Sunshine Project, "Some Intellectual Property Issues Related to H5N1 Influenza Viruses, Research and Vaccines", Third World Network, July 2007. www.twnside.org.sg/avian.flu_papers.htm



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13 Shawn Cali, Program Man-

ager, CTR Orientation Biologi-

cal Threat Reduction Program

14 "WHO warns of global epidemic risk", BBC, 23 August

http://tinyurl.com/23zvww

(BTRP), 12 April 2007. http://tinyurl.com/2cfru7

2007

"Defending livestock diversity is not a matter of genes but of collective rights." Wilderswil Declaration, 6 September 2007

Livestock diversity still threatened Interlaken conference ducks the issues

GRAIN*

n international conference to debate the future of animal genetic resources was organised by the UN Food and Agriculture Organisation (FAO) from 3 to 7 September 2007 in Interlaken, Switzerland. It was attended by almost 300 people from more than 100 countries. Governments adopted the "Interlaken Declaration" and agreed on a "Global Plan of Action for Animal Genetic Resources". This was the first major intergovernmental conference to address the problem of how to reduce the rapidly dwindling diversity of livestock breeds of the few dozen animal species that are used in agriculture and pastoralism for food, fibre, fuel and power, as well as for social, cultural and environmental purposes.

In preparation for the conference, the FAO had compiled a "State of the World" report on animal genetic resources, which gives a comprehensive but alarming overview of the problem (*see* Box 1). The FAO has classified more than 7,600 different domestic livestock breeds currently in existence. These have been developed and nurtured by farming and pastoralist communities since the dawn of agriculture, but at least 700 breeds are now extinct and 20 per cent of the remainder are considered at risk of extinction. During the last 6 years alone, recorded extinction rates have increased (62 breeds lost), rising towards the loss of almost one breed per month. FAO acknowledges that this drastic fall in the number of breeds is only part of the problem, as genetic diversity within even the most common breeds is also in decline. FAO rightly highlights the main cause of this: "The rapid spread of large-scale industrial livestock production focused on a narrow range of breeds is the biggest threat to the world's farm animal diversity". It has led, it says, to "the marginalisation of traditional production systems and the associated local breeds". As documented elsewhere in this Seedling, livestock breeding and production is increasingly dominated by a handful of transnational corporations that drive local breeds and, indeed, pastoralists and small-scale livestock farmers, into extinction. The same corporations are using the threat of a global pandemic of avian flu to tighten their grip on the industry by pushing for the elimination of small-scale, diverse poultry flocks as a preventive measure.

With the problem squarely on the table, one would have expected the debate in Interlaken to focus on how to deal with the combined threat of the industrialisation of livestock-keeping and the increasing control over it in the hands of a few corporations. This was hardly the case, with the exception of a debate, organised by the IPC for food sovereignty and Swissaid, in which delegates from the Network of Farmers and Peasant Organisations in West Africa (ROPPA) and Union Paysanne, Canada, the Quebec smallholder farmers'

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* with additional material from **Patrick Mulvany**

Box 1: FAO's report on the world's genetic diversity

The report on the State of the World's Animal Genetic Diversity is based on submissions from 169 countries, 9 organisations and 12 thematic studies, backed by numerous reports and papers. It is comprehensive and covers all dimensions of domestic livestock development and use, from their origins, status and threats, to trends in production, legislation and methods for the conservation of diversity. The introduction to the domestication of livestock and its current parlous state is compelling. The report notes that "The crowding out of local breeds is set to accelerate in many developing countries, unless special provisions are made for their in situ conservation by providing livestock keepers with appropriate support", and that "The costs of implementing an in situ breed conservation programme may be relatively small". But it warns against using CBD-type Access and Benefit Sharing (ABS) measures to fund this work, as it notes that "governments rather than farmers benefit". It also identifies the problem of monopolies in the livestock breeding industry and that this concentration is fuelled by intellectual property rights systems. The report ends with a short chapter on future challenges, which concludes that "some indigenous breeds have unique traits and are ... important components of our future food security and cultural heritage. ... Most policies which sustain small-scale low external input production systems will, in general, favour maintaining a greater diversity."

organisation, stressed the devastating impact of the industrialisation and concentration of livestock production on traditional livestock keepers and therefore on livestock diversity.

The Global Plan of Action (see Box 2), adopted by the conference, talks a lot about compiling inventories, doing more research, creating in situ conservation areas and ex situ genebanks, developing policies and building capacity, but hardly deals with the real causes behind the destruction. It seems more concerned about securing access for corporations to rapidly disappearing genes than defending livestock diversity. Even the section on "sustainable use" doesn't address the central problem, but rather contents itself with unspecific proposals on the need for agro-ecosystems approaches, support to indigenous production systems, inclusion of livestock keepers and so on. The question of how to achieve these, when industrial production systems and the corporations behind them are not challenged, is not addressed.

Some of the debates around the Plan were mindboggling. Australia started a discussion proposing that any conservation policies should be "nontrade distorting", thus essentially ruling out any possibility that countries would be able to regulate their livestock sectors to favour pastoralists and indigenous and small-scale livestock farmers. It took almost a day to water that down to the requirement that any policies should be consistent with "existing international agreements", which the industrialised countries could accept, as it neatly establishes the WTO agreements as the overriding force to police countries that might otherwise want to prioritise the conservation of their biodiversity. A timid attempt to confirm that local livestock keepers have rights that should be honoured was diluted to an acknowledgement that they make "contributions" to animal genetic resources, and a reference to "relevant rights that may exist at the national level". The crucial issue of patents and other intellectual property rights, at a time when transnational corporations are increasingly monopolising animal genetic resources, was almost ignored.

Although the FAO talked about "an important step" having been taken towards saving the world's domestic animal biodiversity, it remains to be seen what real follow-up will materialise. While the people concerned about seed diversity at least have a legally binding treaty at the FAO, what was agreed in Interlaken is voluntary and grossly underfunded. At the closing of the Interlaken conference none of the delegates dared to speculate about whether a legally binding instrument for animal genetic diversity is even to be considered.

Meanwhile, in Wilderswil ...

Parallel to the FAO conference, a "Livestock Diversity Forum" was held in the small nearby village of Wilderswil, bringing together representatives of smallholder farmers' and pastoralists' organisations as well as NGOs from around the world. Whereas the FAO Conference failed to deal with the main issues behind the destruction of livestock diversity, the participants in this Forum got right to the heart of the issue. Their declaration, which was read to the FAO conference, puts it in the following way: "The industrial model of livestock production is causing the destruction of our animal diversity as well as our own livelihoods. (...) Furthermore, this model

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Box 2: The Interlaken Global Plan of Action for Animal Genetic Resources

The Interlaken Global Plan of Action for Animal Genetic Resources has 23 "strategic priorities" divided into four areas: 1) characterisation, inventory and monitoring of trends and associated risks; 2) sustainable use and development ; 3) conservation; 4) policies, institutions and capacity-building. None of the actions directly addresses the genetic meltdown caused by the industrial livestock industry that places our future food security at risk. However, some seven actions are proposed that could at least mitigate severe genetic erosion and would provide the basis required for future post-industrial animal production, if promoted by FAO, funded sufficiently and implemented as the top priority. These include: explicit reference to the promotion of agro-ecosystems approaches; support for indigenous and local production systems and associated knowledge systems; the strengthening of *in situ* conservation programmes and human capacity; raising national awareness; and developing national and international policies and regulatory and legal frameworks that will help to reduce losses of livestock diversity.

of production is based on a dangerously narrow genetic base of the world's livestock, propped up by the widespread use of veterinary drugs. Yet this risky and high-cost system is providing more and more of our food."

The participants in the Livestock Diversity Forum continued with an analysis of how industrial livestock breeding and production are the real cause of the problems, and how the world needs a radical reorientation in this respect. They committed themselves to this, working within the framework of food sovereignty. The central focus of their proposal is the defence of the collective rights and interests of pastoralists and other (smallscale) livestock keepers, who are the real custodians of livestock genetic diversity. "We are committed to fighting for our lands, territories and grazing pastures, our migratory routes, including transboundary routes. We will build alliances with other social movements with similar aims and continue to build international solidarity. We will fight for the rights of livestock keepers, which include the right to land, water, veterinary and other services, culture, education and training, access to local markets, access to information and decision making, that are all essential for truly sustainable livestock production systems."

The Declaration ends with a strong message about the governments' action plan: "The social organisations of pastoralists, herders and farmers have no interest in participating in a plan which does not address the central causes behind the destruction of livestock diversity but rather provides crutches for a collapsing global livestock production system. Because the Global Plan of Action does not challenge industrial livestock production, we reinforce our commitment to organise ourselves, to save livestock diversity and to counter the negative forces bearing on us. However, we remain open and willing to participate in any useful follow-up that might be facilitated through FAO."

For social movements, the issue of livestock diversity is now on their agenda, and awareness is now higher. It is to be hoped that civil society will take more interest and address the serious underlying problems. Another model of livestock production is possible.

For further information:

- FAO, The State of the World's animal genetic resources for food and agriculture, Rome, 2007. http://tinyurl.com/26afyy
- FAO, Report of the International Technical Conference on Animal Genetic Resources for Food and Agriculture, (includes the Interlaken Declaration and the Plan of Action) http://tinyurl.com/28doso
- IISD, Earth Negotiations Bulletin, summary of the first international technical conference on animal genetic resources for food and agriculture. http://www.iisd.ca/biodiv/angr/
- "Wilderswil declaration on livestock diversity" http://www.grain.org/bio-ipr/?id=522
- Seedling (2007), "Reclaiming livestock keepers' rights" http://www.grain.org/seedling/?id=459



Bilateral trade agreements are the latest tool to spread patents on life worldwide. They may be used to force countries to provide patents on plants and animals or to join the UPOV Convention's softer system of plant variety rights. Or they may include an obligation to sign the little-known Budapest Treaty on the patenting of micro-organisms. This was the option chosen for Central America and the Dominican Republic, which, through their free-trade agreement with the USA, are having the Budapest Treaty forced upon them. But the debate is far from over, for many Costa Ricans are determined to stop this happening.

CAFTA and the Budapest Treaty The debate in Costa Rica

SILVIA RODRÍGUEZ CERVANTES

he free trade agreement between the United States, the Dominican Republic and Central America (US-DR-CAFTA - CAFTA for short) has been highly controversial in Costa Rica. In October 2007 the deal was ratified by a wafer-thin majority in a referendum widely regarded as unfair, and the Costan Rican legislature is now in the process of endorsing the "complementary agenda" (which includes the Budapest Treaty). Although the Costa Rican government has managed, so far, to get what it wants, the process has not been smooth. As soon as the text of the agreement was made public in January 2004, groups began to examine the content and scope of its nearly 3,000 pages. One of these groups, Pensamiento Solidario (Solidarity Thinking), soon found that countries joining CAFTA would be required to sign ten intellectual property treaties administered by the World Intellectual Property Organisation in Geneva. One of these is the little-known "Budapest Treaty on the

International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure". It was signed in 1977 and came into force in 1980. Since then, the Costa Rican government has never shown any interest in signing it, and the scientific community has not felt any need for it. Today, the vast majority of Costa Ricans do not know anything about it, and yet it is being imposed on them.

What is the Budapest Treaty for?

The aim of the Budapest Treaty is to facilitate the process of obtaining a patent on a micro-organism. This "facilitation", however, involves a total overhaul of the way patents are granted when they are applied to life forms.

The first obligation on anyone seeking a patent is to provide a written description of his or her invention. This is not a problem for the inanimate objects or industrial processes for which the patent law was created to give property titles. At this time, no one



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argued that life forms, from micro-organisms to complex plants and animals, were "inventions", and therefore intellectual property rights were not applied to them. However, this changed with the move to extend intellectual property rights to biotechnology. It is practically impossible to describe a life form, however small, and even more difficult to do so following the guidelines for a patent grant application. Governments and corporations realised that the patent legislation would have to be rewritten.

The Budapest Treaty was thus established as an internationally accepted system to get over this problem. Instead of demanding that patent applicants make information available and provide a written description of the subject of their application, the Treaty requires applicants for patents over micro-organisms to deposit a sample. The US government came up with this solution, which was then adopted by the EU. The Budapest Treaty is now turning it into an international practice. It is doing this by setting up a network of International Depository Authorities (IDAs), of which there are 37 in different parts of the world, mostly in industrialised countries. By signing this Treaty, governments agree that the deposit of a micro-organism in one of the IDAs serves the purpose of "describing" the invention as required in the patent application, and, by doing this, the inventor automatically obtains recognition of his "invention" by all states party to the treaty.

The remaining requirements still have to be complied with, according to the rules of each national office. Indeed, every country still has the right (although this has been eroded as well) to grant or deny a patent under the principle of "territoriality"; this concept accepts that patents are national rights (with a few exceptions for regional systems).

Problems with Budapest

• Stifling information, innovation and scope to contest biopiracy

Patents are inherently dangerous to society, as they involve monopolies. One way of protecting society against this is to demand full disclosure of the invention when granting the patent; this means, when the patent expires, the invention passes into the public domain. In other words, you do not get a monopoly unless you disclose the invention. This is a basic principle of patent law. By weakening this principle to accommodate biotechnology, the Budapest Treaty creates an obstacle to the dissemination of information about inventions. There are other problems too. Article 9.2 says that the IDAs will provide no information about whether or not a micro-organism has been deposited with it under the treaty. Nor are the IDAs authorised to provide any kind of information on the subject of an application, except to an authority, individual or legal entity that is "entitled" to obtain a sample of the said micro-organism. In the case of individuals or legal entities, Article 11.2 of the Regulations say these must be "authorised parties" that comply with established requirements (Article 11.3). If deposit replaces description and the regulations restrict access, the whole idea of requiring disclosure in exchange for the commercial monopoly is sabotaged, and research and innovation become more difficult. This system creates huge problems for communities: how can an indigenous group appeal against biopiracy or other wrongly granted patents?

Sabotaging initiatives for benefit-sharing

There is currently a major debate going on at international level about making patent applicants present a certificate of origin attesting to where and how they got any biological material or related traditional knowledge used in their invention. This debate is conducted mainly among states party to the Convention on Biological Diversity (CBD) and members of the World Trade Organisation council on Trade-Related Aspects of Intellectual Property Rights (WTO TRIPS Council). This "disclosure" requirement has been proposed by countries with the greatest biodiversity as a last-ditch measure to stop the arbitrary extraction of biological resources and indigenous knowledge by bioprospectors, research institutes, governments and companies from industrialised countries.

With this proposal, the so-called "megadiverse" countries implicitly accept intellectual property rights over life forms in exchange for some kind of "fair and equitable" sharing of the benefits that accrue from the use of the resources in question. This means that national regulations on bioprospecting, access and benefit sharing will be reinforced by another form of protection. Patent applicants will have to demonstrate to the appropriate intellectual property office that they have complied with all the requirements of the country of origin of the resource.

What does the Budapest Treaty have to do with this? Quite simply, micro-organisms form part of the immense biological wealth of developing countries, and Costa Rica, like others, is trying





The push for Budapest

GRAIN

Over the last 50 years the global seed and biotech industry, headquartered in the rich industrialised states, has been using all sorts of means to try to get broad and powerful patent protection – monopoly rights, which prevent anyone from using an invention without permission or payment – over life forms in as many markets as possible. A major step forward was the signing of the Marrakech Agreements setting up the World Trade Organisation in 1994. One of those agreements was the Trade-Related Agreement on Intellectual Property Rights (TRIPS). TRIPS obliges all WTO members – and most countries of the world are members of WTO – to provide patents on life forms, starting with micro-organisms. TRIPS is the first obligatory international treaty to force patents on life globally, and it has a strong enforcement measure in the WTO's dispute settlement mechanism.

However, TRIPS was a compromise between the US, which wanted patents on everything, and the EU, which wanted to maintain a softer monopoly system for seeds, and left some loopholes. As a result, plants and animals do not have to be patented as such. And plant varieties have to get some kind of commercial property rights, either a "sui generis" system or patenting or both, but it's not specified further than that.

In the wake of this, major industrial powers such as the US, the EU and Japan have been using bilateral free trade agreements and investment treaties to push even stronger life patenting rules in the rather aggressively "TRIPS-plus" provisions over biodiversity in the South. They do this in several ways:

- requiring the patenting of plants and animals under national law this is common under US FTAs
- requiring accession to the Union for the Protection of New Plants Varieties (UPOV) or at least implementation of the provisions of its Convention, a softer patent system for crop seeds – this is common for US, EU and Japanese FTAs
- requiring accession to the Budapest Treaty on patenting of micro-organisms this is common for US and EU FTAs

So the push for Budapest is happening through bilateral trade deals, such as CAFTA, which are all the rage now as further trade liberalisation talks at the WTO have been getting nowhere for many years.

Related GRAIN materials:

* For a tally of who is being pushed into Budapest through FTAs, see GRAIN, "Bilateral agreements imposing TRIPSplus intellectual property rights on biodiversity in developing countries", October 2007. http://www.grain.org/rights/?id=68

* "Japan digs its claws into biodiversity through FTAs", August 2007, http://www.grain.org/articles/?id=29

* developing country markets they want to penetrate further. FTAs in particular have been used to push "TRIPS-plus through the backdoor", July 2001. http://www.grain.org/rights/?id=41



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to defend this wealth by introducing regulations on bioprospecting. Such legislation would be in line with international conventions such as the CBD. And the last meeting of the TRIPS Council, in October 2007, showed increasing support for the proposal.¹ The Budapest Treaty, however, completely ignores these discussions and facilitates the appropriation of biological wealth without any regard for the megadiverse countries' proposal about certificates of origin (which is already weak and excessively conciliatory).

Given that all Central American countries that have signed CAFTA are members of the WTO and the CBD, which policies and instruments will govern access to biological material within their shores? Budapest? The CBD? TRIPS? National laws? A minimum of common sense would oblige parties to the Budapest Treaty to introduce mechanisms to link the treaty to all those other international pacts that are in some way relevant to the issues it deals with. But that is not on the table.

• No definition of "micro-organism": oversight or trickery?

Neither the Budapest Treaty nor the WTO TRIPS Agreement defines the term "micro-organism", even though it is crucial to both of them. This is a major omission that promotes legal uncertainty about the very essence of the Budapest Treaty and about what is and what is not patentable under

1 See "Mandatory Disclosure of the Source and Origin of Biological Resources and Associated Traditional Knowledge under the TRIPS Agreement", South Center Policy Brief No. 11, October 2007.

Not only micro-organisms

Lorelly Arce Badilla

The Ombudsperson was informed that those in favour of the Budapest Treaty, in their attempts to convince others of their good faith, claimed that the Treaty facilitated disclosure of the invention and that the deposit was a complement to disclosure. Those not in favour of the treaty argued from the start that the Budapest Treaty not only did not facilitate disclosure but replaced it, which would have important implications.

Some of those in favour of the Treaty refer to the disclosure that is currently requested in Costa Rica by the Registry of Property as "simple" and consider the replacement of the same by a deposit, as regulated by the Treaty, to be acceptable. It appears that their opinion today about the treaty's replacement of disclosure is similar to that of those who have opposed the treaty. What is certain is that this procedure replaces disclosure as conceived in our laws, and the idea of depositing prevails. In Costa Rica, disclosure is an indispensable requirement for any patent application, and is not "simple". Applications must, among other things, specify the invention in a sufficiently clear and complete way that it can be evaluated, and that any person with knowledge of the corresponding technical subject can implement the invention.

So to apply for a patent makes the procedure for deposit and application interdependent and, consequently, establishes a relationship between disclosure with the above-mentioned characteristics in our legislation and disclosure as indicated in the Budapest Treaty, which is only scientific and/or taxonomic and, what is more worrying, not obligatory. Moreover, the applicant making the deposit can indicate that he has no knowledge of the properties of the micro-organism, which may represent dangers to health and the environment; all this in accordance with the regulations of the Budapest Treaty.

The concerns set out above appear even more reasonable if it is considered that the Guide for the deposit of microorganisms under the Treaty states that the only obligation is that depositors identify the micro-organism they are depositing with a symbol or number. The important thing is that the insufficiency of disclosure offered under ratification of the Treaty would contribute to reducing requirements for patent applications as established in our legislation, as well as the fact that the little information offered by patent applicants would not allow others to exercise the right to oppose the granting of patents under all the conditions required and established in the country's legislation.

The Budapest Treaty obliges states to recognise deposits of micro-organisms at the International Depository Authorities and does not expressly require them to have an International Depository Authority or centre for the deposit of micro-organisms, which does not however restrict depositing at the international authority chosen for the deposit of microorganisms and other biological material. In other words, with or without the International Depository Authority, by ratifying the Budapest Treaty, the country will be creating conditions to facilitate the patenting of micro-organisms and other life forms, many of which are not currently permitted under Costa Rican legislation, for example, micro-organisms not genetically modified; DNA sequences; plants and animals; natural processes and cycles; inventions essentially derived from knowledge associated with traditional or cultural biological practices in the public domain; inventions that if they were to be exploited commercially as a monopoly, might affect agricultural processes, and products that are considered as basic for the food and health of the country's inhabitants. Costa Rican legislation prohibits the patenting of higher life forms, and the principles contained in Articles 20 and 21 of the country's Constitution are incompatible with the private appropriation of human beings, including of course, their genetic material.

Excerpts taken from: Criterio Tratado de Budapest Defensoría de los Habitantes al Presidente de la Comisión de Asuntos Internacionales. Asamblea Legislativa. Oficio DH 797–2007. 3 November 2007.





Article 27.3(b) of TRIPS. This is deliberate. In a significant intervention at a TRIPS Council meeting, the US government made clear that it has no intention of including a definition of microorganism in international patent law because "rapid changes in microbiology will make constant updating necessary".²

This lack of definition means that, in practice, virtually anything can be understood as a microorganism. And this is what is happening. If we look at the lists of deposits held by the Budapest Treaty IDAs,³ we find that biological and biochemical material, such as deoxyribonucleic acid (DNA), ribonucleic acid (RNA), human cell lines, embryos, nematodes, seeds and other organisms, are being deposited as if they were micro-organisms, even though they are not. All this clearly serves the interests of the patent-holders.

A debate over ethics in Costa Rica

Because of this sheer lack of logic in what qualifies as a micro-organism for deposit at the IDAs, the Costa Rica's ombudsperson (Defensoría de los Habitantes) issued a far-reaching report to the Legislative Assembly about the implications of having to sign the Budapest Treaty as a requirement of CAFTA. This report is written from a human rights perspective, one that gives precedence to life and human dignity over research and science. The ombudsperson concluded that by surreptitiously introducing human life forms into a context of intellectual property rights, the Budapest Treaty was in conflict with ethical principles as these are understood and practised in Costa Rica. The report highlighted the following issues as the most problematic: details of deposits are not published; no description of deposits is available; deposits have no certificate of origin; and there is no definition of "micro-organism".

On 20 November 2007, the Episcopal Conference of the Catholic Church in Costa Rica, after pressure from various groups and individuals and after months of silence, finally announced its position on the Budapest Treaty.⁴ Among the points it raises are the following :

The Episcopal Conference of Costa Rica shares the concern that the Budapest Treaty, currently before the legislature, by not excluding human gametes [cells whose nuclei unite with those of other cells to form new organisms] and embryos from the scope of "micro-organisms", can be interpreted, both now and in the future, to include them, harming both human dignity and human rights.

It also urged members of the legislature to approve the constitutional reform that is required to guarantee respect for human life, stating that:

In the event that a clear and written commitment is not made to guarantee approval of this constitutional article, the bill "Adherence of Costa Rica to the Budapest Treaty on the International Recognition of the Deposit of Micro-organisms for the Purposes of Patent Procedure" should not be approved.

Conclusion

The questions raised by this debate are fundamental. How can Costa Rica support a Treaty that does not even honour the principle of disclosure that is supposedly part of the contract between inventors and society? How can the country adhere to a treaty with its subject matter undefined, which means that its content can be manipulated? Is this not to accept what lawyers call "legal insecurity"? How can one fail to question the lack of harmony and convergence between this Treaty and the relevant international treaties and conventions, and with the legislation on biodiversity and even with the terms and scope of intellectual property? In addition, how can the divergence between national legislation, which defines micro-organism, and the Budapest Treaty, which doesn't, be acceptable, especially when the Budapest Treaty allows anything, even an embryo or human cell cultures, to be deposited as a micro-organism?

For all these reasons, many groups in Costa Rica oppose signing the Budapest Treaty as it involves accepting the commercial values that underpin it, which are incompatible with ethical, environmental, socio-economic and legal considerations. In addition, it flies in the face of the major public debate on bioethics and the patenting of life that many of us in Costa Rica feel is long overdue. Even more, the international multilateral discussions on patenting are not exhausted, which makes it completely unreasonable to demand that countries make further provision for the patenting of life forms. This is an important discussion: our experience is a warning to other groups in other countries, who will face the same problem when their governments negotiate a free trade agreement with the USA or any other similarly demanding country. 🎽



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3 WIPO, Treaty of Budapest, Part II: Specific requirements of Individual International Depository Authorities and Industrial Property Offices.

2 Secretariat of the Council for

TRIPS, "Review of the Provision of Article 27.3(b): Summary of

issue raised and points made",

IP/C/W369, WTO, Geneva, 9 March 2006, paragraph 13.

http://tinyurl.com/3e54u5

4 Costa Rican Episcopal Conference, "A la opinión pública. Comunicado sobre la aprobación del proyecto de ley 'Adhesión de Costa Rica al Tratado de Budapest sobre el reconocimiento del Depósito de Microorganismos a los fines del Procedimiento en Materia de Patentes'," *Diario Extra*, 27 November 2007. Ramón Vera Herrera, who was born in Mexico in 1950, is the new editor of Biodiversidad, sustento y culturas, a quarterly magazine published by GRAIN and REDES-AT. He is also the editor of an 18-year-old project called Ojarasca (published monthly in the Mexican newspaper La Jornada), which covers the life and struggles of the indigenous and peasant communities in Mexico and Latin America.



A lot has been written about the devastation that the Spanish and Portuguese wreaked on the indigenous populations of Latin America in the 16th and 17th centuries. At times, one gets the impression that indigenous culture was nearly wiped out. But this wasn't the case, was it?

While it is true that the original European conquest wiped out many different aspects of the strong culture of thousands of indigenous communities, not only in Mexico but in all of the Americas, the destruction continued after the initial wave of annihilation. More recently, capitalism has given the process a new and aggressive impulse. The trend is global. The mega-corporations and the governments that act as their accomplices are invading ancient peasant and indigenous territories: they destroy the logic of entire regions, plunder the land and devastate their territories in a more sophisticated way than they did five hundred years ago.

The millions who are expelled from their lands have little option but to become workers in sweatshops. They are seen only as a defenceless labour force and are brutalised and despised merely for being what they have been for thousands of years. This violent takeover of their territories and their natural and human resources is becoming a planetary system of destruction. The main elements of the onslaught against them are: agribusiness and factories, transportation, unsustainable energy, "digital avenues", biopiracy, mega-projects to "urbanise", entertainment, consumerism, housing developments, railroads, privatisation of water and land, prostitution, trade in drugs and arms, and more brutal or subtle ways of coercion.

Capital devastates, destroys, plunders and displaces people from specific territories, rearranging anew



the general spaces where it grows, operates, raids, concentrates, marginalises, dislocates, produces, consumes and controls. We call these spaces cities...

So has indigenous culture been completely destroyed?

The conquerors could not wipe out everything. The indigenous peoples are still alive. What we call globalisation hasn't been able to destroy all relations and their meaning. If this were the case, resistance and hope would not just be impossible, but unimaginable. In a world where the logic of globalisation has decreed that all that is not useful to capital is doomed to disappear, the miracle is that these endeavours are still alive, although scattered, and so each one of them becomes very pertinent. One shining example is the cultivation of maize, along with other "subsistence" crops. Today, these food sovereignty crops are at the core of resistance in all communities that defend and reinvent their own particular way of life (whether it is traditional or not). And this is so because, if it produces its own food, a community does not need to ask permission to be or to exist, and is able to defend its communal territory where people live, dream, revere the sacred (the dead).

These are not the ideal communities, frozen in time, that ethnographers believed they had found. The real communities embody the ideal of communal life, for they place great value on the social realm, that of common experience and understanding. They do this without trying to go back to an idyllic pastoral life. On the contrary, communities want to have the opportunity to change, but on their own terms and in their own time, treating their history with recognition and respect.







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Has there been a growth in indígenous awareness and indígenous resistance in Mexico in recent years?

Since 1989, and especially after the Zapatista uprising of 1994, indigenous peoples and communities in Mexico have been organising themselves. At first, they struggled for the legal recognition of their rights as peoples, which meant recognising the multicultural fabric of the Mexican nation, the importance of their vision of history and the political value of their alternative cultures in the country's future.

From 1994 until 2001 the Mexican Indian Movement, including the Zapatistas, fought peacefully for their legal recognition. First, through a set of dialogues known as the San Andrés Dialogues, where many Indian representatives, joined by academics and NGOs, discussed, debated and agreed on several rights that hadn't been addressed in the past.

The Zapatistas decided not to impose any policy line on the participants, leaving them to build a legitimate project for the recognition of the collective rights and autonomy of indigenous peoples in the Constitution. For the first time in the history of Mexico, civil society (rural and urban) confronted the government directly and succeeded in making many aspects clear. Finally, the first set of accords was agreed between the Zapatistas and their allies, and government officials.

These documents, internationally known as the San Andrés Accords, are extremely important because they are legitimate: they were woven from below; they strongly commit the government no longer to take unilateral action to address the socalled problems of the indigenous peoples (the document stressed that the communities must participate fully in the whole process of decisionmaking, designing, implementing and evaluating policies, programmes and budgets); they recognise the right of indigenous peoples to autonomy and self-government, and to the possibility of forming regional alliances to exercise this right; and they recognised Indian territories and the Indian right to their resources.

These agreements were signed by the government in 1996, but the authorities never enforced them, and finally, in 2001, both Chambers of Congress (involving all political parties) passed a Constitutional reform that not only failed to recognise the collective rights of indigenous peoples and their communities, but was the first step in a massive attack on indigenous communities on every front. The reform was endorsed by the Executive and the Supreme Court of Justice. As one Indian leader put it: "the whole government is embarking on a process that directly infringes all indigenous rights". This Constitutional reform was approved because transnationals and the government had already drawn up plans to invade, loot and plunder the indigenous territories that were rich in "natural resources".

When the whole political class betrayed them, the indigenous communities – although torn apart by migration, repression, official corruption, the selling-out of people, deceit and annihilation – have had the moral and political strength to pursue de facto autonomy, knowing full well that they are alone and that the whole system, including the State, is against them.

Is the Mexican experience unique?

Today hundreds or even thousand of projects and programmes designed by multilateral organisms are being imposed in every region of the world that is believed to be rich in resources. Many experts in Mexico and elsewhere talk of a new general war on peasants and indigenous peoples. Indeed, governments are spearheading a real and terrible dirty war on communities in many regions. It is leading to the militarisation of entire indigenous areas. What we are witnessing in many parts is murder, imprisonment and the disappearance of militants. Here in Mexico communities receive periodic invasions of officials who are keen to give them money in every possible way, from projects for individual families to funding for obscure schemes. But pouring money into the communities to buy consciences doesn't stop them repressing, imprisoning and killing the dissidents. Under the current government of President Felipe Calderón, the whole country is militarised under the pretext of fighting drugs, and repression is brutally harsh.

In the past few years, many laws and reforms have been passed to allow the transnationals into the life of the communities and to guarantee corporate access to many resources. These are umbrella laws not only to introduce, plant and grow genetically modified crops and to experiment with them, but also to patent plants, animals and other living species, and much of the traditional knowledge they enshrine, and to privatise water and to allow land to be negotiated on the market (renting, selling or buying it, or forming commercial links with enterprises). The territories received a particularly severe blow when the laws separated water from land, allowing special taxes to be charged on both.



January 2008

The government attacks territories through the payment of environmental services, because this paves the way to financial manoeuvring, by means of which communities lose control of these spaces that are not only land, but everything. There are also many projects to transform ancient territories into ecological reserves, preserved only to be plundered by new schemes of biotechnology, information and genetic resources.

What is the reaction of the communities?

Some groups within the Mexican Indian movement reject the outside interference, despite the resources it brings. "Money is the most expensive thing in the world because you have to pay for it in dignity, time and self-respect", people say. So many communities are refusing programmes and resources from the government. This is not an easy decision to take, because their conditions are so extreme, but they are beginning to understand what lies behind what many indigenous communities in Chiapas in the 1970s called "the sugar bullet": the trick of sweetness that kills the whole idea of resistance.

In Mexico, the Indian movement has understood that we need the broader picture, so it has started to document and dismantle the huge edifice of regulations and policies and to analyse the real motives that lie behind the actions of transnationals and government officials at all levels. Communities are no longer willing to accept "development" as an abstraction; they are suspicious of short-term welfare programmes, and they are holding a plethora of workshops, assemblies, seminars and encounters in order to share experiences and to identify causes, sources, problems, obstacles and interconnections.

Understanding the conditions that many regions suffer is the first step towards authentic prosperity, which is achieved through self-government and the strengthening of communities, so that people can think, act, work and dream together, independently of the war launched by companies and governments alike.

How do the indigenous movements in Mexico relate to other struggles in the South?

The war is being waged on many different fronts so there is a need for an overall view. Many communities understand that no individual project will solve the huge range of interconnected problems that they face. The powerful know this too and try to isolate every project so as to blur the overall framework. But, thanks to globalisation, people now understand that their struggle is not unique. Knowing that many other people suffer in the same way triggers a whole set of strategies for fighting back. It becomes possible to link struggles fought in one region with other struggles and forms of resistance. This exchange of experience helps people to learn new ways of developing their struggle. People develop a complex view of the world and they begin to discuss history, economy and the specific problem of money. Now they fully understand the role of the institutions, the wicked ways of capitalism, the way war works, various strategies for evading the action of the State and/or the transnationals, practices that must be reinforced or remembered, and the harmful practice of many development workers, militants and NGOs, the corruption of the Mexican government at all levels.

The rural population is perhaps the most informed sector of society about the whole gamut of attacks launched by capitalism, because peasants and indigenous peoples suffer these attacks whole and unfiltered. Some sectors of an informed and noncorrupt civil society can also contribute to their understanding by using the sources to which they have access to provide hard information.

In Mexico we sense that a new flexible alliance is being built between many different people whose only aspiration is to share experiences so that they can develop better their own course of transformation – or agree to joint actions. Seen from below, this alliance is very visible, but it is invisible to those concerned only with what is happening to the powerful and those who appear on the front pages of newspapers.

Participants in this alliance, which stresses the autonomy of all who take part, include large segments of the Indian movement, the ecological movement, activists in local struggles and some parts of the peasant movement. Many young professionals are using the Internet to ferret out new sources of information that may be useful in building autonomy. These wonderful computer freaks trace the links between transnationals and the political class, working out who did what when, why and where. They uncover the dirty work of those in power, globally and locally. This information, revealed in workshops and meetings, makes it possible to make connections. Mexico is today buzzing with life as different experiences from a variety of different regions are exchanged. Perhaps for the first time in history we might build up a full picture of how capitalism actually operates in the real world. 🎽

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New publications

Fighting FTAs: The growing resistance to bilateral free trade and investment agreements

bilaterals.org, BIOTHAI and GRAIN (editors)

This book, of about 100 pages, available on the internet and in hard copy from February 2008, is the result of a remarkable collaborative effort between many grassroots activists throughout the world. The origins of the publication date back to July 2006 when FTA Watch, a large Thai coalition, held in Bangkok the first international strategy workshop for grassroots activists fighting bilateral free trade and investment agreements (FTAs).

Many who attended the workshop said that they had gained a great deal from sharing experiences, and wanted to keep the process going. In early 2007 GRAIN and bilaterals.org agreed to draw up a "big picture" view of what the FTA deals were about. They were soon joined by BIOTHAI, a member of FTA Watch, which also wanted to continue sharing experiences between national struggles. The three groups called on people who had come to the Bangkok workshop, and further afield, to join the effort.

Many responded, putting together accounts and analyses of the struggles against FTAs in different parts of the world. While there is a huge diversity in these experiences, there is a lot of commonality too. Where accounts could not be shared in writing, the organisers arranged some audio interviews which will be available on the publication's website, along with several anti-FTA films, and other resources.

While the book is being published first in English, Spanish and French, groups are welcome to translate it into other languages and otherwise reproduce it as they wish. Copies will be available from GRAIN. If you are interested in receiving copies or distributing within your networks and associations, please contact us with your full particulars at: fightingftas@grain.org.

http://www.fightingftas.org and http://www.combatiendolostlc.org

Good Crop/Bad Crop - Seed Politics and the Future of Food in Canada

Devlin Kuyek, University of Toronto Press, ISBN 978 1 897071 21 2

The author of this book is a researcher at GRAIN, so perhaps it is not surprising that he has written a book that deals with a subject central to GRAIN's concerns: the takeover over the global seed industry by transnational companies. Examining the experience of his home country, Canada, Kuyek looks at the way seeds have become increasingly commodified and plant breeding dominated by corporate priorities. He says that Canadian farmers should look

at experiences in the developing world, where peasant farmers are organising to regain control over seed supplies in their struggle to ensure food sovereignty and their futures.

"Few of us ever see the seeds of our food. They are small and easily overlooked in spite of their multitudes and our utter dependence on their survival and continuing evolution. But while most of us were not looking, certain interests were busy capturing and transforming the seeds we depend upon. Their goal: corporate control and profit. Kuyek tells the story of the privatisation of the seed in highly readable prose backed by his usual impeccable research. This story is of crucial importance for anyone concerned about the corporate control of food and the seeds it comes from."

Brewster Kneen, *The Ram's Horn*, November 2007

La Vía Campesina - Globalization and the Power of Peasants

Annette Aurélie Desmarais, Pluto Press, ISBN 978 1 55266 225 0

n 1993, 46 farm leaders from various countries met in Belgium to develop a strategy to challenge the devastation caused to their communities by a neoliberal international economic agenda. Over the next decade they and millions of peasants and small farmers around the world set up La Vía Campesina – Spanish for the "The Peasant Way"– to forge a radical force of opposition. Where did they find the capacity and strength to challenge multinational agribusiness and international institutions whose power and influence increasingly dictate national government policy? This book accompanies La Vía Campesina in a struggle to keep people on the land, producing food and culture, and building viable communities.

"La Vía Campesina captures the struggles, proposals and actions of a movement that embraces a new understanding of solidarity among farmers, peasants, farm workers, indigenous peoples and rural women in the North and the South as they engage in a common struggle against the neoliberal, free-trade and procorporatisation policies."

Paul Nicholson, farm leader with the Coordination Paysanne Européenne, Regional Coordination of La Vía Campesina for Europe.

PANAP (Pesticide Action Network Asia and the Pacific) has produced a series of booklets on issues of interest to GRAIN readers. One covers the scandal of Liberty Link, a GM variety of rice, developed by Bayer CropScience, a German agribusiness giant, which was at the centre of a worldwide scare caused by the contamination of rice crops. Another looks at the importance of rice in the lives of Asian people and examines the impact of globalisation. And another describes how the International Rice Research Institute (IRRI) has wreaked destruction for rice farmers in Asia. The booklets are available, free of charge, at

http://www.panap.net/223.0.html



