Kneen, Brewster
The geo-politics of Genetic Modified Organisms
Theomai, núm. 5, 2002
Red Internacional de Estudios sobre Sociedad, Naturaleza y Desarrollo
Buenos Aires, Argentina

Available in: http://www.redalyc.org/articulo.oa?id=12400508
The geo-politics of Genetic Modified Organisms

Brewster Kneen*


Genetic engineering of food crops, fish and human beings is carried out with the assurances that the technicians engaged in these acts of molecular reconstruction know what they are doing and that the results will certainly be beneficial. Of course they first have to be beneficial to corporate shareholders, but we are promised that they will also provide 'benefits' to farmers, sick people and the environment.

That genetic engineering should be bearing (some) fruit in the era of globalization may be only coincidence, but the dismantling of national sovereignty and social integrity in the name of free trade is an appropriate context for the systematic violation of the integrity of organisms in the process of genetic engineering. The deliberate and systematic violation of any and all boundaries is the hallmark of globalization and free trade and of genetic engineering.

This is the context in which we should examine the deepening integration of Argentina and Brazil into the global corporate operations of Monsanto and Cargill, from the molecular to the national level. Monsanto's Roundup Ready soya constitutes (legally or not) the majority of soya plantings in Argentina and Monsanto has been trying for several years to contaminate the GE-free soya of Brazil with its transgenic soya. Cargill is a major, if not the major, buyer, processor and trader in soya in both Brazil and Argentina as well as in the US. In 1998 Cargill sold its global seeds business (essentially everything but its North American seeds business) to Monsanto subsequently formed a joint venture with Monsanto, a company called Renessen, "to develop quality traits and customized products that enhance the functionality of grains, oilseeds and other crops . . . connecting biotechnology innovations with processing know-how in the first global alliance that spans the agricultural value chain." I have no idea of what Renessen is actually up to.

On February 20th of this year, Cargill unveiled a new logo and "the new Cargill." The new logo is intended to convey that Cargill is "building on tradition while moving forward." As Cargill explains, "a new Cargill is taking shape - one that is more approachable, innovative and forward-facing . . . Our fundamental business purpose is about nourishment, growth and making connections – to harness our knowledge and energy in providing goods and services that are necessary for life, health and growth."

The company does not say that what they mean by "connections" is, in part, the integration of farmers into the Cargill business structure as suppliers. While this may sound good to North American farmers desperate to sell their crops at something more than the cost of production, the trade-off is farmers’ much trumpeted independence. Cargill will buy their crop alright, but the farmers will have no choice as to where to sell it, and consequently, no control over price..

What may really be new about the new Cargill is an acknowledgement, in both philosophy and practice, that cooperation is superior to competition as a way of doing business, though today the term is 'partnership' or 'joint venture.' Gone is the mean old trader buying low and selling high. Well, not really gone – the company is still willing to take advantage of the misfortune, or mismanagement, of others by buying their facilities cheap, and the company is still a global trader in an almost endless list of commodities using its capital leverage to make deals that most mere mortals could seldom dream of. But then Cargill is not mortal.
It is the essence of corporate being, exercising an immortality that the immoral engineers of biotechnology are still only dreaming of. Cargill apparently no longer seeks to take advantage of others, but to give them advice, as ‘partners’. At least this is what it tells farmers, and it is what it tells the purchasers of its specialized food components and ingredients. As company chairman Warren Staley put it, “We are undertaking a fundamental change in our approach to doing business. Our efforts today centre on creating distinctive value for our customers – from helping farm customers market their products to helping manage food customers' supply-chain logistics and risks.” In offering advice, as the seller of ‘inputs’ and the buyer of ‘product,’ what Cargill is really doing is creating agricultural policy from the bottom up. In helping the farmers to grow more of what Cargill requires as its ‘inputs’ for trading and processing, such as soya, and helping farmers sell their ‘product’ in the global system over which Cargill exercises considerable control, Cargill is building the kind of industrial agricultural system it can best profit by, not necessarily the one that serves the farmers or the public best, or the system that ensures that everyone everywhere is adequately nourished. What Cargill also means by “supply-chain logistics” is transportation, and for Cargill this means water. This is as true in South America as it is anywhere. Cargill has had operations all over the South American continent for many decades. Some of these provided services and inputs to agricultural production (seeds and fertilizer), but most of its investment is in the gathering and exporting of major crops such as sugar and soybeans. It’s only natural then that Cargill can be found on the waterways of South America as well as those of North America and Europe, and for the same reasons: water is the cheapest way to transport bulk commodities and it is common practice for waterways to be maintained largely at public expense. This may be partially explained by the fact that historically rivers have served as boundaries of political jurisdictions, thus falling into a kind of shared/no responsibility situation. Or it may simply be that it was better to have the cost of maintenance born by the state than to have feudal barons demand tolls for passage through “their” water. The Rhine River is an obvious example, and the possibilities for toll collection can be observed by any river traveller. Today freight traffic on the Danube, which comprises a 2500 km system administered by The Danube Commission, is free except for pilot fees on the lower 270 km of the river. Costs of maintaining the river, including the locks, are borne by the bordering (riparian) states.

But Cargill’s presence in South America did not start on the waterfront. In 1947 Cargill entered into a business arrangement with Nelson Rockefeller in Brazil, where Rockefeller wanted “to demonstrate that private capital organized as a for-profit enterprise could also upgrade the economics of less-developed countries.” To do this, Rockefeller had formed the International Basic Economy Corporation (IBEC) in Brazil as a family-held business. Among the enterprises intended for this business were a hybrid seed corn company, a hog production company, a helicopter crop-dusting company and a contract farm machinery company. This was, of course, even before all the Rockefeller Green Revolution initiatives of the 1960s and 1970s. In 1948, Cargill Agricola e Comercial was established in Brazil as a joint venture with Nelson Rockefeller’s IBEC. In its company literature, however, Cargill identifies 1965, when it invested $9 million in a hybrid seed breeding program and plant, as the beginning of its presence in Brazil. In 1996, Cargill Agricola claimed to be Brazil’s largest agricultural company, with 20 production plants and 59 other locations in the country and 4500 employees. In 2000 Cargill said it was Brazil’s largest soybean and sugar exporter, and among the top soybean processors and citrus businesses, with 4000 employees in more than 70 locations. Cargill Brazil is also second in size only to Cargill’s US operations. With hybrid seeds went fertilizer, and as Cargill puts it, it has two plants, “distributors in many locations,” and recently acquired controlling interest in two other fertilizer companies, Solorrico and Fertiza. The next Cargill project was soybean processing, starting in 1973 with a plant in the southern state of Paraná. The second came along shortly (1975) in Mairinque, São Paulo state. The next three plants are in Uberlandia, Minas Gerais (1994), Três Lagoas, Mato Grosso (1996) and finally Barreiras, Bahia (1988) The locations of its plants directly reflects the spread of soybean growing in the country. Connected with soybean processing is refining, and in Brazil, as in Venezuela, Cargill has pursued a strategy of marketing under its own brand names a wide variety of vegetable oils (soy, corn, canola, sunflower) for the retail market. While Cargill’s Uberlandia started as a soybean processing plant, it has expanded with corn to become the largest Cargill plant outside the US. It also processes sorghum and in 2000 Cargill opened a citric acid plant in Uberlandia which can utilize cane sugar as well as corn from the fermentation feedstock. Cargill said it was cheaper to use cane sugar rather than corn sugar (dextrose). The new plant made Cargill the world’s third largest supplier of citric acid, which is used to flavour and preserve sodas, fruit juices and dairy products, as well as in the production of medications, cosmetics, plastics and biodegradable detergents. Besides citric acid, the plant’s products include potassium citrate, sodium citrate and liquid citric. (In the 1920s, scientists discovered that the spores of a microorganism, Aspergillus niger, can convert sugars into citric acid through fermentation.
and several years ago Cargill came up with a novel liquid extraction process for separating out the citric acid from the fermentation.)

Other recent additions to its processing enterprises are a wheat flour mill in Sao Paulo state and a cassava starch plant in Paraná state acquired from Grupo Maggi in 2000.

Already established as a cocoa trader, Cargill built its own plant for processing cocoa at Ilheus, Bahia, in 1980. The enterprise was not a great success and the output was of poor quality until 1986 when Cargill acquired Gerkens of the Netherlands, one of the world’s largest cocoa processors, and put Gerkens’ people in charge of the plant. It now produces top quality cocoa for the world market under the Gerkens name. (In the US, food producers and processors are encouraged to use the products of Cargill’s Wilbur Chocolate Company.) A very recent development is the formation of a partnership between Cargill, Bunge and CODEBA, a government agency, to invest in a grain terminal in the port of Ilheus.

Cargill had extensive coffee trading operations in Brazil and Colombia until it sold its worldwide coffee trading business in 2000 to a mysterious holding company, Ecom Agroindustrial Corp of Switzerland. Almost all of these activities are now strongly influenced by the magnitude of the growing soybean industry (and its lobby) in Brazil and Argentina and the engineering and construction projects intended to make it possible to get soybeans from the interior of the continent into the global market by means of the continents extensive river systems. The model, of course, is the Ohio-Missouri-Mississippi river system.

The weekly trade journal Milling & Baking News pointed out in an editorial (8/1/02) that the crop area of Brazil and Argentina, at 419 million hectares, equals that of the United States, but in addition, there is another 200 million hectares in the interior of Brazil that is being turned into agricultural land. This area has a more temperate climate than that of the corn/soy belt of the US with both longer growing seasons and the possibilities of double cropping. The Economic Research Service of the USDA, cited by the editorial, says, “the potential for further growth of South American field crop output, if realized, could have profound implications for global trade and US farm exports, prices and incomes.” What is most interesting in all such commentaries and reports is the absence of any mention of the major players in both North and South America, such as Cargill, that benefit whichever way the crop moves and at whatever price. The major hindrance to vastly increased agricultural production and export, however, is transportation. Apart from southern Brazil and the south of Argentina, the growing areas are a long, long way from an ocean, and trucking overland is very expensive. The solution? Transformation of the rivers into industrial waterways like the Mississippi, or hidrovias.

35 years ago the small farmers (sharecroppers, tenants, or squatters with less than 50 hectares of land) in the southern Brazilian states of Parana, Rio Grande do Sul, and Santa Catarina grew coffee, beans, corn, and cassava. Then soybeans took over, rising from practically zero to 6.9 million hectares in 1980. After 1980 the area devoted to soybeans contracted while soybean production took off in the Cerrado of central Brazil. The term Cerrado refers to a characteristic set of vegetative types that include natural savannas and woodlands dominating 1.5 to 2 million square kilometres in Brazil’s Centre-West states of Mato Grosso, Mato Grosso do Sul, Goias, and Tocantins and in parts of Bahia, Maranhao, Minas Gerais, and Piauí. (Fearnside)

In 1973, the Federal Government created the Brazilian Agricultural Research Corporation (EMBRAPA) which began to develop soybean not only for the southern states but also for the vast tropical Cerrado. It was, ironically, assisted in this by The International Soybean Program at the University of Illinois, financed by the Agency for International Development. While US government financing of soybean development might have been good for some Brazilians, the greater beneficiaries, surely not by accident, are the soybean traders and processors – none other than Cargill, Unilever, ADM, and Bunge.

Historically, the Cerrado had a low population density and large unoccupied areas, dominated by extensive cattle ranches, but the new soybean varieties, public road construction, and subsidized credit, fuel, and soybean prices changed that. The total annual crop area in the Centre-West rose from 2.3 million hectares in 1970 to 7.4 million hectares in 1985, while the soybean area soared from only 14,000 hectares to 2.9 million hectares and then reached 3.8 million hectares in 1990. Heavily capitalized farms with between 200 and 10,000 hectares grew most of this.

Without the new soybean varieties developed by EMBRAPA, soil treatments (lime in particular), and machinery, the rapid spread of soybeans into the Cerrado would have been impossible, but credit subsidies were an essential precondition for the rapid adoption of agricultural machinery and soil amendments. Between 1975 and 1982, for example, one subsidized credit program made $577 million in agricultural loans, 88% of which went to farmers with over 200 hectares. Government subsidies, combined with high international prices encouraged the spread of soybeans, and this in turn increased the political power of the soybean lobby and enabled farmers and processors to obtain further government support.
Where the rivers start

"A 1986 World Bank document identified the eastern Bolivian lowlands as prime soybean land, and by 1995 there were close to 340,000 hectares under soya. . . Around a third of the potentially rich 2 million ha. have so far been cleared for agriculture. Much of the credit for this goes to Joaquin Aguirre, who dreamed even in the 1930’s of turning the Paraguay-Paraná River system into a South American Mississippi-Missouri. He finally achieved his dream of a port in 1989. Now Aguirre has signed two joint venture agreements, one with Cargill for expansion of the soya handling capacity, the other with Williams Energy of Oklahoma for grain, oil and diesel terminals on the Aguirre land. Meanwhile, efficiency on the Hidrovia is rising. With minor improvements and night navigation, the 45-day trip from Puerto Aguirre to Uruguay's Nueva Palmira transhipment facility could be halved." (Financial Times, 20/11/96)

In 1996 Cargill and Central Aguirre Portuaria S.A. formed a joint venture to operate a grain, oilseed and oilseed-product storage and handling elevator in the Puerto Aguirre Free Zone in Quijarro, Bolivia. Bolivian soybeans were to be transferred from trains and trucks to barges for movement down the Paraguay-Paraná hidrovia system to Buenos Aires. The elevator would also serve Bolivian flour millers with wheat imported by barge from Argentina. Five years later it was reported that Cargill bought 51% of the Puerto Aguirre grain port located on the Canal Tamengo in Bolivia close to the Brazilian city of Corumba on the Paraguay River.

The latest plan for expansion of the Paraguay-Paraná river system, or "hidrovia," involves the US company, American Commercial Barge Lines (ACBL), which plans to build a new port on the Paraguay River in the Pantanal wetlands 80 km downstream from Cáceres at Morrinhos in the state of Mato Grosso. American Commercial Barge Line is the largest barge operator in the U.S. and its shipyard subsidiary, Jeffboat Inc., builds and maintains much of the country's barge fleet. (A "barge" actually is a series of barges called a "tow," lashed tightly together with steel cables and pushed by a 'towboat.') "We're pokey and low-priced," said the CEO of American Commercial Lines Holdings, the parent of American Commercial Barge Line and Jeffboat. According to its Third Quarter 2001 report, American Commercial Lines LLC is an integrated marine transportation and service company operating approximately 5,100 barges and 200 towboats on the inland waterways of North and South America. In South America, ACBL Hidovias operates as a partner with Ultrapetrol S.A. in the joint venture UABL, S.A. It is the largest barge line operating on the 3600 km. of the Paraná/Paraguay river system which covers Argentina, Bolivia, Brazil, Paraguay and Uruguay. UABL operates 331 covered hopper barges, 36 tank barges, 16 towboats and miscellaneous other equipment and facilities. Attempting to paint a "green" face on its port project, UABL says that building the port downstream from Cáceres will eliminate the need for dredging and straightening the curves in the most crooked stretch of the river. Environmentalists counter that the official studies themselves recommended engineering works at more than 140 sites along the upper Paraguay to guarantee year-round passage of barges. In response to public pressure, and exposure of the total inadequacy and even illegality of many of the environmental impact assessments required under Brazilian law, the government has announced that most of the hidrovia projects have been cancelled. What this really means, however, is that those with an interest in these projects – such as UABL and Cargill – have simply changed their strategies and their arguments. They now push for specific projects which, taken on a one-by-one basis (case by case) basis, appear relatively harmless, but taken together they add up to the old hidrovia projects. This is certainly the case with UABL’s port construction at Morrinhos.
Fearnside has pointed out that, "Brazil’s legal mechanisms for assessing environmental impacts and licensing infrastructure projects are incapable of detecting many of the most severe consequences of soybeans—especially the ‘dragging effect’ through which other destructive activities (such as ranching and logging) are accelerated by infrastructure built for soybeans. Even when problems are evident despite limitations of the environmental impact assessment system, the system is no match for the lobbying power of soy interests.” (Philip M. Fearnside, "Soybean Cultivation as a Threat to the Environment in Brazil", Department of Ecology National Institute for Research in the Amazon, 3/10/00)

The expansion of soy monocultures in central Brazil has had its impacts in the central United States, of course, and soy trading companies and shippers are calling for an expansion of the upper Mississippi locks and dams “so that US companies can compete with the Brazilians.” ACBL’s expansion plans, and the increasing domination of the South American soy business by US agribusiness giants Cargill, Archer Daniels Midland, and Bunge, demonstrate that the multinationals are adept at an old game – playing both sides against each other.

The Paraguay-Paraná river system is not the only one South America, of course. There is also the Amazon, and the maze of rivers and wetlands that drain into it. Here is an example of what is happening in the Amazon basin.

Itacoatira, a little-known Amazon River port some 1200 or more km. west from the mouth of the Amazon River, was made accessible to ocean-going grain ships by Grupo Maggi and the government of Amazonas state at a cost of some $29 million. The port opened in 1997. Before the port opened, most grain from Mato Grosso state was transported by truck more than a thousand miles to distant coastal ports, at a cost of $110 per metric ton and 11 days of time. After the Itacoatira terminal opened, 145 truckloads of soy a day started arriving in barges at Porto Velho to be transferred to barges to go 800 km. down the Madeira River to Itacoatira where they are stored and loaded on ships for export. The new water route cut transportation time to eight days and cost to $75. Another soybean terminal at Santarém, Pará, began operation in May 2000. Blairo Maggi, senator from Mato Grosso and head of the Maggi Group, has been financing soy planting in Santarém but it is not clear whether the new soy terminals at Santarém and Itaituba are being built by Maggi, Cargill, or both.

Argentina

The Paraná River wanders all over, but from the southwestern tip of Paraguay it flows directly south to Buenos Aires and the Atlantic Ocean through Argentina, where Cargill has been active since 1947 and is now the country’s leading exporter of agricultural products. In 1995, Cargill Argentina reported annual sales of more than $1 billion, with about 80% accounted for by foreign sales. The company says the presence of its Financial Markets division helped make the enterprise profitable by buying and selling currencies and other financial instruments while the commodity divisions bought and sold beans, grains and fertilizer. Cargill itself makes the point that its Financial Markets division has been able to learn from its branch in Argentina how to make up in the financial markets “the money we would normally expect to make from the commercial side” during inflationary times. As a result, the Argentine Financial Markets division of Cargill "developed a reputation for gutsy financial trading that resulted in winning big." In recent months, of course, there has been ample opportunity for global corporations such as Cargill to carry on trading operations accompanied by bookkeeping measures sure to deliver more profit to the corporation (somewhere in the world) than to the farmers and citizens of Argentina.

Argentina is beef, and so is Cargill. Cargill has said that it intended to transform the traditional practice of the cow-calf operators in the northwest of shipping their calves to the pampas for fattening on grass into one of fattening cattle in feedlots. More control can be exercised this way, more manufactured feed sold, and more dependency created. It also cleans the land for soybeans.

In 1979 Cargill built a soybean crushing plant and a private port and terminal elevator at San Martin, near Rosario on the Parana River, about 250 km north of Buenos Aires, to serve the soy growing region to the south. Cargill also built country elevators in the same region to funnel grain to its $24 million export elevator at Bahía Blanca, Argentina’s best deep-water port to the southwest of Buenos Aires. Cargill has a malt plant there as well. It already had a soybean crushing plant on the coast above Bahía Blanca at Necochea, which is also the site of a warehouse that receives fertilizer from Cargill’s Florida phosphate plants. Farmers delivering soybeans to the crushing plant can return home with a load of fertilizer. Out of its "concern for the environment," Cargill also provides support to a foundation that educates farmers about "ways to conserve soil through modern farming techniques."

In 1996 the company expanded its Puerto San Martín soybean plant, making it not only the largest of its own plants, but one of the largest oilseed processing facilities in the world. It also built a barge terminal facility so
that it could load ocean vessels with soybeans and protein meals coming from Northwest Argentina, Bolivia, Paraguay and Brazil, as well as provide an alternative source of raw materials for Cargill processing plants. At the time, Cargill clearly already had the Paraguay-Paraná hidrovia in mind.

Next came construction, in 1998, of a $14.4 million fertilizer port facility, the largest on the upper Parana River adjacent to its large oilseed processing complex at Puerto General San Martin (also is known as Quebracho). The facility includes a warehouse and high-speed bulk and bagged handling systems. Its location enables it to source the lowest cost raw materials, whether it is phosphate (actually, diammonium phosphate) from Cargill’s Florida phosphate mines, or urea from the Caribbean, Mideast, the FSU or Brazil. Cargill also has a long-term agreement with Nidera S.A. under which each company agreed to handle fertilizers for the other. Cargill agreed to utilize a portion of its port terminal at Puerto General San Martin to handle fertilizer products for Nidera in the upper Parana River region while Nidera agreed to use its port facility at Necochea to handle fertilizers for Cargill in that area.

Cargill diversified in Argentina as everywhere else and developed businesses that served its global operations. Juices and peanuts are good examples. In 1989 it established its Argentinian Juice Division to process apples and pears at Neuquen, in the valley of the river by that name in the west of the country. In 1997 it added a $6 million peanut shelling plant in Alejandro Roca, Cordoba Province, to supply the domestic market and to provide it with a counter-seasonal supply to complement its Stevens Industries peanut business in the U.S. Cargill also built a malt plant in Argentina to serve the local brewing and agriculture industries. In 1995 it entered the Argentine flour milling business with the acquisition of Minetti y Cia S.A. and in 1999 Cargill S.A. and Molinos Rio de la Plata S.A. merged their Argentine flour milling operations to form the country’s largest flour milling company. As part of the deal, Molinos agrees to buy all its flour from the joint venture, which is 65% owned by Cargill.

Joint Ventures and the New Cargill

In recent years Cargill has forsaken a number of enterprises, such as fresh fruit, rubber and coffee trading, hybrid seeds, equipment leasing and transportation services, while finding new ways to extend the product lines of its traditional businesses, such as soy and corn milling. And then there is always the complex but firm foundation of its financial services and financial markets activities – good old trading, speculating and ‘risk management.’ Like a healthy organism, Cargill’s old cells constantly die and new ones take their place. Most interesting, to my mind, is what Cargill has been up to in the creation of joint ventures and partnerships in the business activities it is most familiar with. There is an aspect of this partnering that is very disturbing. A great many of Cargill’s new joint ventures are with farmers’ co-operatives, from small single-facility grain co-ops to very large co-op conglomerates. Here is a sampling of its recently formed smaller joint ventures that indicate how Cargill utilizes the assets of others to enhance its position.

In 1997, Cargill’s structural transactions included the acquisition of 20 grain elevators in central US, the construction of at least one new grain elevator, and the upgrading of others. Cargill leased its York, North Dakota, elevator to BTR Farmers Co-operative and BTR became a ‘preferred supplier’ of grains and oilseeds to Cargill. It formed a limited liability company with Garden City Co-op to own and operate the grain handling facility that Cargill was expanding in Garden City, Kansas. Cargill formed another joint venture with Alceco, a farmer-owned cooperative in Iowa, to combine the grain-handling, fertilizer, agrotoxin, seed and feed operations of the two companies. In Indiana Cargill purchased Frick Services’ four grain facilities and the two shortline railways serving them as well as Heartland Cooperative’s grain elevators in eastern Illinois and the nine elevators of AGP Grain in Indiana and Ohio. In Kansas Cargill and Santanta Cooperative made a deal in which Santanta purchased five Cargill grain elevators and Cargill agreed to market the grain Santanta collected.

In 1997 Cargill also took over operation of the corn wet milling plant owned by ProGold Limited Liability Co. in Wahpeton, North Dakota. The plant, built by a consortium of three farmers’ co-ops, came on stream the year before but it was on the brink of bankruptcy due to poor market conditions when Cargill began to operate it on a 10-year lease.

That was all in one year, and no doubt there was more that went unreported. In every case, what might have looked like a good marketing opportunity for a small farmer-owned co-operative was, in fact, an arrangement that assured Cargill of a reliable supplier of grains and oilseeds without increased investment. However they might like to think of it, the farmers become captive suppliers to Cargill.

While the co-ops may appear to still be there, from Santanta to CHS, the fact is that they have been effectively absorbed, leaving Cargill the beneficiary of a century of dedication and hard work of earlier generations of farmers who were building lives, and businesses, for themselves they thought.

Strategic partnerships don’t only occur in traditional businesses. They now include universities as they take on more and more corporate characteristics. Kent State University in Ohio, for example, has become a
"core school" in Cargill's Higher Education Initiative, a corporate program designed to promote strategic business partnerships with several colleges and universities in the US. In Kent State's case, this translates into $300,000 over three years for the university’s college of agriculture to help students and faculty develop a better understanding of today's agribusiness sector (i.e. Cargill) and to enable the university to better serve the agriculture industry, according to the university's dean of agriculture.

I have already indicated that Cargill is ecologically minded and environmentally sensitive, but there are accidents and mistakes and these usually raise questions, for some of us, about the nature of the operations themselves. It is not enough, for example, for Cargill Pork Inc. to pay a $1 million fine and $51,000 in restitution for the illegal dumping of hog waste that contaminated five miles of a central Missouri river and to spend $500,000 in remediation costs associated with the dumping as well and then say, "We're pleased to settle the matter and are satisfied with the terms of the settlement. . . The incident clearly concerned us and was not characteristic of Cargill Pork's environmental record. We can now move ahead and put this matter behind us." It is not enough to "put this matter behind us." The question remains, why was a facility that had the potential to cause such pollution built, or allowed to be built, in the first place?

Cargill can legitimately take pride in its phosphate mine site restoration in Florida and in its solution to disposal of the waste water from its Alberta meat plant. But to describe Cargill as a good ecological citizen on the basis of such individual cases would be to miss the larger issues altogether. The mining of huge amounts of phosphate rock in Florida to produce fertilizer that is then shipped to Argentina is not ecologically sound. The concentration of great numbers of cattle in one area so that it is possible for Cargill to kill thousands of cattle in one day in one place, day after day, is neither environmentally nor ecologically good practice. For Cargill to maintain that it is doing Indian farmers a favour by offering them hybrid sunflower seed that is composed entirely of alien germplasm is the antithesis of sound ecology.

The creation of dependency is an ancient colonial practice, serving the interests of the colonizers at the expense of the colonized. I have elsewhere likened hybrid seed to an envelope within which is contained its relations of production. (see Kneen, *The Rape of Canola*, NC Press, 1992) The global process in which Cargill is engaged can be described as the recreation of feudalism, with the intent of driving people off the land by what amounts to acts of enclosure and forcing them to become wage labour and customers for what they used to provide for themselves. This is the process which still goes under the misleading title of Development.

Current corporate -- and to a great extent now public -- ideology holds that the corporation is the fount of wisdom and the most competent body to plan global production and distribution in accordance with the dictates, or ideology, of the market. Accordingly, Cargill now puts itself forward as the most competent agency to help develop the backward (that is, unindustrialized) peoples of the world. At the same time, these same companies are heavy feeders at the public trough, while, with their mouths full, they decry public indebtedness and social welfare. This suggests to me that their business success may at times have more to do with their ability to avail themselves of public subsidies than with their business acumen. Cargill is no exception.

Cargill's corporate goal was stated, at one time, to be the doubling of its size every five to seven years, and while it may have relieved itself of the burden of such statements, the achievement of such a goal requires the occupation of ever more territory and the expulsion of whole societies from their settlements and their commons. Cargill emphatically proclaims that in the long term this will be beneficial, since the outcome will be a higher standard of living as these people will be able to buy a greater variety of food at lower cost than they could produce for themselves. No system of subsistence agriculture can ever achieve such benefits, it says, assuming that everyone will somehow have the money required to purchase what they need and what Cargill is willing to supply.

Cargill's argument is not, of course, a matter of science. It is a question of ideology, or faith, because there is no proof or even anecdotal evidence that the outcome would ever be as Cargill predicts. So we come back to the thesis of this study: Cargill does not really do business in food. It deals in agricultural commodities as raw materials to be deconstructed and reconstructed (this is where genetic engineering comes in) into some value-added product for the market in order to produce a profit for the corporation. It does this with consummate skill.

Cargill and the advocates of science & technology, progress and capitalism, claim that theirs is the only way forward and the only hope for feeding an expanding global population. We must remember, however, that the globalized industrial system that works for Cargill is a very recent invention -- post 1945 -- that has worked well to make Cargill and a small elite of the world wealthy, but at an increasingly unacceptable cost to the earth, to the creatures of the earth, and to the majority of the people of the world. The industrial system may be able to produce quantities of food, but it cannot produce the justice required to ensure that everyone is adequately nourished.
There are many things that Cargill cannot do and many things that Cargill does not want to do. Its structure and business are contradictory to decentralization and self-provisioning. Cargill deals in volume, and to get sufficient volume in both buying and selling it has to do business transnationally and industrially. In other words, it is a matter of both scale and mode of operation, and there is a definite threshold beneath which a company like Cargill cannot function even if it wanted to. Therein lies the key to resistance and the pursuit of alternatives.

The choice before us can be put in terms of the deepening divergence between hybrid structures and organizations and the practice of monoculture on the one hand and open-pollinated organizations and the practice of diversity on the other. The metaphor, of course, refers to fundamental differences in seed characteristics and propagation and in the cultures of their production and reproduction.

Modern hybrid seeds produce deliberately uniform commodities as the foundation of industrial agriculture. They are not themselves capable of reliable self-reproduction but are, instead, dependent on an external industrial process for their replication. In contrast, traditional seeds are, by nature's necessity, open-pollinated and self-replicating, not dependent on outside powers (unless you count the sun, the wind and the birds and bees) and will themselves generate cultural diversity through mutation and cross-breeding.

Genetically engineered seed (herbicide tolerant soy, corn and canola, or Bt corn and cotton) also follows nature's inherent drive to reproduce and in a sense rides on this to contaminate the countryside and traditional seeds, and while this contamination may be the deliberate sabotage of natures diversity by those, such as Monsanto, nature is quick to respond with mutations and adaptations that produce biological mechanisms to overcome such assaults. Therein lies our hope.

Cargill and other TNCs have the wealth, skill and political leverage to outflank or overpower virtually any head-on attacker, and the game is rigged in their favour. They cannot, however, force people -- either farmers or the general public -- to play the game.