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So that Fish May Flop in Vegetable Gardens *Biodiversity and health in movements for peasant-based agriculture and artisan fishing.*

1. Trees and shrubs, earthworms and dung-beetles

Analysing the essential points articulated in the debate for a different management of agriculture and fishing requires dealing immediately with the crucial instance for the defence of biodiversity. In fact, it is an incontrovertible and continually documented datum, and several exemplifications will be given, that the industrial management of agriculture and fishing *reduces biodiversity*, thus its defence and restoration, where possible, are central to organizing another type of agriculture and another type of fishing. One could say for peasant-based agriculture and for artisan fishing, keeping in mind that the latter refers to a reality in Southern countries that does not correspond to what is meant by artisan fishing in countries such as Italy.¹ Therefore, to illustrate the issues, we will refer fundamentally to the experiences in “developing countries”, while still aware of the inadequacy and the ambiguity that such an expression always connotes. Rather, with regard to peasant-based agriculture, we can refer to both these countries and countries such as Italy.

Linked with the loss of biodiversity is the *loss of health*. Not just because the productive processes that derive from industrial management are usually marked by noxiousness and in their development they continually generate new noxiousness (at least in the types of agriculture, breeding and fishing that we are considering), but rather because these processes, analyzed globally, deprive growing numbers of people of alimentary self-

sufficiency by taking away and compromising the resources from which these people derived the possibility of building their own alimentary system. First of all: by taking away land destined for local cultivation, which instead is destined for monocultivation for profit; by denying access to the sea for fishing because that sea is reserved instead for large fishing boats, often belonging to multinational corporations, or because that sea is polluted or depleted of its ichthyological patrimony; by taking away pivotal animals of an agricultural system to manipulate them for the purpose of intensive breeding to produce meat or milk; by the destruction of forests, a source of food and habitat, in order to instead carry out plans to supply precious wood, plantations, roads, dams, and other projects. A group of processes that, to use a term that is fashionable among Indian activists, could be defined as “job-loss growth” in that it progressively deprives populations of the jobs that formed their economies, but also, more importantly, as “resource-loss growth” in that it destroys the resources used in those jobs that weave the subsistence of the communities.

This relentless loss of resources and jobs is not matched by a corresponding move to generate other occupational skills and resources that would guarantee life anyhow. For the most part, it means going toward a destiny of poverty, increasing the slums around large cities, or following the path of emigration. Therefore, it is with this massive loss of resources and jobs that the first major risk is the loss of health. There is no longer healthy and sufficient alimentation, there are no longer traditional medicines, there is no purchasing power to buy different foods and medicines, the environment is no longer an asset due to the great socio-ecological alteration that in the South of the world usually accompanies the agricultural or breeding activities managed in industrial terms. Whether we're dealing with plantations for export, intensive breeding or industrial aquaculture, the alteration of the environment, aside from the productive process per se, is at the origin of new diseases and epidemics.

On the other hand, the Green Revolution and its zootechnics violently overthrow the plant-animal-environment relationship. Plants and animals are no longer selected in relation to the environment. Instead chemistry and large mechanical means are

used to modify the environment to adapt it to the plant or animal that has been selected or even modified.

Therefore, outlining the relationship between loss of biodiversity and loss or risk of health in the organization of production typical of the industrial capitalistic concept which uses nature as a warehouse of potential commodities and as a machine to produce further commodities, requires referring to three large lines of development: intensive monocultivation, animal breeding, industrial aquaculture.

I will only discuss a few example cases, but they are significant in showing a concatenation of consequences that can be found everywhere. I will make frequent reference to cases in India and to the treatment of Shiva, given that I agree with what this author maintains (2000, p. 7) which is that if one out of four farmers in the world is Indian, what goes on in that country regarding major transformations in agriculture has an immediate global impact. But I will also refer to other areas and to our own country to understand the correlation with the issues that we are invested with every day.

2. Corn and soy

Intensive monocultivation, a system typical of the Green Revolution in which only one plant species is intensively cultivated over vast expanses of land, represents the denial of polycultivation which was, and still is where it survives, the system by which various plant species are cultivated together in order to insure the completeness of a nutritional system among vegetable gardens and fields. For this nutritional system to be balanced it requires cereals, legumes, oilseeds, vegetables, and fruit. The monocultivation expels the species that are different from the one cultivated but, since these are essential to human nutrition, it must either increase pressure on land in other areas to cultivate them or, more frequently, do without them due to the unavailability of land, thereby leading to nutritional deficiencies for the inhabitants of those places. Furthermore, plantation workers are often forbidden from having a patch of land for their own small cultivations to provide for their own needs. The consequence of this is the diffusion of serious diseases and malnutrition which in particular affects children². Often, the

distance to the first market or grocery shop is unreachable so the little money there is gets spent on medicine that “makes up for” the nutritional deficits. In particular, these aspects bring to mind cases of sugar plantations in Brazil. Monocultivation requires vast and empty expanses of land in order to use large mechanical equipment. In fact, the Green Revolution that took off on a large scale both in the West and in the East in the 1960s aimed at greater productivity through the improvement in technology at mechanical, chemical and biotechnological levels (Cleaver 1977). Trees and shrubs, seen as obstacles, had to be torn down. Just this fact meant and means, since the agricultural “system” of the Green Revolution is in use even in the era of genetically modified organisms (GMOs), that the animal food chain is interrupted due to the destruction of different species, mostly birds and small mammals, that make their habitat in the shrubs and trees and that contribute in keeping harmful insects under control because they feed on them. The case of Dutch elm disease is significant for having destroyed this tree in many areas of the United States and Europe. The cause seems to have been “the annihilation of the predator birds which fed on the bark beetle, which in turn is responsible for spreading the fungus which causes Dutch elm disease” (Shiva 1988, p.164). But above all, by replacing animals with machines to work the land, the soil has lost a great source of nutriment and regeneration represented by dung. The by-products of cultivations nourished the animals, the animal excrement fertilized the land which nourished the cultivations which in turn nourished the humans. Therefore dung is seen as nourishment rather than mere waste that is difficult to get rid of. Often this is a hard problem to solve seeing as the dung is polluted by what the animals ingested, and concentrated in large quantities in areas of intensive breeding. Millions of microorganisms and small animals lived organically in the fertilized soil and contributed to working the land and making it fecund. The dung-beetle is important but above all there is the earthworm whose essential functions have been recognized even in western agriculture for some time. Shiva (2000, pp. 61-62) says that “soils treated with farmyard manure have from 2 to 2.5 times as many earthworms as untreated soils. These earthworms contribute to soil fertility by maintaining soil structure,

aeration, and drainage and by breaking down organic matter and incorporating it into the soil. [...] The little earthworm working invisibly in the soil is actually a tractor, fertilizer factory, and dam combined. Worm-worked soils are more water-stable than unworked soils, and worm-inhabited soils have considerably more organic carbons and nitrogen. By their continuous movement through soils, earthworms aerate the soil, increasing the air volume in soil by up to 30 percent. Soils with earthworms drain four to ten times faster than soils without earthworms, and their water-holding capacity is 20 percent higher. Earthworm casts, or droppings, which can consist of up to 36 tons per acre per year, contain carbon, nitrogen, calcium, magnesium, potassium, sodium, and phosphorus, promoting the microbial activity essential to soil fertility.” Instead, the techniques of industrial management of agriculture, with their chemical aggression of the terrain, deprive not only these tiny animals of nutrition but also many other species which contribute in a fundamental way to reproduce fertility of the land. For countries such as India, Shiva (2000, p. 58) further emphasizes how bovine dung is used half as fertilizer and half as fuel thereby satisfying the needs of two thirds of the villages of this nation. But these high yield varieties (Hyv) of hybrid varieties of crops which denoted the Green Revolution contribute to the reduction of animal biodiversity (Shiva 2000, p. 59) since their by-products are not fit for animal consumption and have caused disease. For example, the stalk of Hyv wheat, which was rendered shorter and harder in order to hold up a heavier ear, provides a straw that cannot be used as forage. Correspondingly, the soil is deprived of nutrients. Besides, these varieties require an elevated use of chemical products and water. The intensive use of chemistry in fertilizers such as pesticides and herbicides not only fouls our bodies undermining our health but also destroys the possibility of the survival of animal and vegetable species which had a very important role in maintaining an ecological equilibrium, that is, in maintaining not only the fertility of the land but also a balance between prey and predators as a protection system for plants. This system, as the fundamental axis of peasant-based farming, made use of crop rotation and, through the contribution of natural substances, methods for strengthening the plants themselves.

Again, with regard to the crucial importance of the contribution of the miniscule representatives of the animal kingdom, the case of the red ant in the Amazonian context is extremely interesting. Shiva (1988, p. 161) refers to Posey's description. The Kayape women of the Amazonian basin have a particular ritual in which they paint ants on their faces during the corn festival. Notoriously, the ancient knowledge of associating corn or other cereals with the cultivation of legumes connoted ancient civilizations, above all the Mayans. But this knowledge was well known even by our farmers who made classic dishes such as pasta and beans or rice and peas that even now are enjoyed in the Veneto. The association of cereals and legumes produced an excellent nutritional combination as well as providing nitrogen for the land. But, getting back to the Kayape women, what is the role of the red ant in their corn ritual? What is the meaning of the strange ritual? Posey emphasizes that "the myth begins to make sense when we understand the co-evolutionary complex of maize, beans, manioc and this ant. Manioc produces an extra floral nectar that attracts the ants to the young manioc plant. The ants use their mandibles to make their way to the nectar, cutting away any bean vines that would prevent the new, fragile manioc stems from growing. The twining bean vines are therefore kept from climbing on the manioc and are left with the maize plants as their natural trellis. The maize can shoot up undamaged by the bean vines, while the bean plant itself furnishes valuable nitrogen needed by the maize. The ants are the natural manipulator of nature and facilitate the horticultural activities of the women." Obviously industrial agriculture and its science consider the ants only as harmful insects to be destroyed. But, even in the case of parasites, many of these are typical of certain plants. Organic manure and crop rotation allowed these plants to grow stronger and resist their attack. While instead, the elimination of crop rotation, the repeated use of chemical fertilizers for the same type of plant that continues to be cultivated brings about a weakening of the plants' defences with regard to the parasites. If we are looking to exemplify vegetable species that are destroyed by the chemicals accompanying industrial agriculture, once again in India, there is a famous case of bathua, a plant rich in vitamin A which grew together with wheat and protected children from

blindness. The women gathered it during weeding. However, the chemical fertilizers caused it to infest the cereal, thus rivalling the crop, so it was destroyed with weed killer, leaving many children to go blind. Often, western agencies that intend to address this problem with programs aimed at providing vitamin A to clinics in the country affected by this issue then complain about the fact that the women don't bring in their children. Evidently they fail to consider the cost of transportation not likely to be faced, and the cost, in terms of time and distance, in a place where the context of life has been made extremely precarious. It's clear to see that the most effective measure would be to withdraw from agricultural strategies that greatly deprive other populations and harm their health.

Referring once again to the works of Shiva (2000, pp. 21-34) who has dedicated various studies to the illustration of, on the one hand the contradictions and the destruction of reductionist mechanistic science which this scholar calls capitalistic science, and on the other hand the abundance of resources contained instead in ancient knowledge and traditional systems, it is worth considering the case of soybean oil versus mustard oil. The case is significant of many difficulties that we will try to illustrate, making reference to what this author, who has brought the issue to global attention, writes. In August 1998, an epidemic of dropsy broke out in Delhi caused by the strong adulteration of mustard oil with seeds from the *Argemone mexicana* plant and other adulterating substances which provoked the death of 41 people and afflicted 2,300 others within the first days of September of that year. Most likely, the adulteration was carried out in order to outlaw bulk mustard oil and open the doors instead to the importation of soybean oil. The various regions of India have their typical oils. Mustard oil was diffuse in the North and in the East and was part of small local economies, allowing women to purchase it at low prices. Most importantly, the seeds could be ground right before their eyes by the *ghani*³ who extracted the oil, guaranteeing its freshness and healthiness. Above all, besides being a fundamental oil in those regions for use in cooking, as olive oil is for us, it was also useful from a medical standpoint for therapeutic massages, especially for newborn infants and to cure muscular and joint problems. Combined with garlic and curcuma, it helped alleviate rheumatic

pains as well as repel mosquitoes, an important aspect in a malaria infested zone. Furthermore, used as lamp oil, it purified the air and kept the insects away, reducing the spread of diseases that destroy the stores of cereals. When mustard oil lamps were replaced by paraffin candles, the environmental purification party turned into one of environmental pollution. The adulteration which led to the ban on such a precious oil from a number of versatile aspects, and to its substitution with soybean oil was to benefit, first of all, Monsanto which was interested in importing genetically modified soybean oil to India. But, contrary to a certain culture, diffuse even in Italy, which presented soy as a totally positive product for human nourishment, better in fact with respect to more traditional foods, Shiva pointed out the aspects of soy that are risky to our health, especially if it goes on to constitute an important component in one's diet. She declared that it contains trypsin inhibitors which block the functions of the pancreas, increasing its size and weight, leading to cancer. She recalled how in the United States cancer of the pancreas is already in fifth place for deaths caused by cancer and that its occurrence is on the rise. Furthermore, as this scholar points out, soy contains phytic acid which blocks the absorption of essential minerals such as calcium, magnesium, zinc, copper and iron, a particularly serious fact in countries such as India where the population is often malnourished. But, Shiva confirms, the most alarming aspect is that diets rich in soy, especially if modified, have an elevated content of estrogens that have a very negative effect on the reproductive apparatus in women and on fertility in men. As for children, a soy-based diet is equivalent to the assumption of 8 to 18 contraceptive pills a day.

This event, soy versus mustard, clearly shows the interlacing of loss and damages: loss of biodiversity, loss of a fundamental alimentary resource, loss of a medicinal resource, damage to health, an alimentary dictatorship imposing a foreign, standardized food, without flavour and risking health safety, the denial of alimentary sovereignty meaning a right to produce one's own food according to one's own traditions and environmental context, the destruction of a low-cost, fresh and flavourful food, the destruction of jobs related to the food and thus with the small economy that contributed in maintaining those communities.

In the Po valley in 1950, there were hundreds of varieties of corn being cultivated; 280 types in just the Veneto. They were selected on the basis of the type of terrain and climate, choosing the most productive ones. In Treviso particularly, there was a greatly appreciated variety, Biancoperla corn, which made a soft and slightly sticky polenta, particularly good for soaking up sauce, that I myself remember. Another type was used only as chicken feed. Today in Italy, we have only four classes of corn, hybrid, and 90% purchased by two multinationals, Monsanto Pioneer and Syngenta. This same area now results as having less than 1% organic matter, thus it has been classified by the European Environment Agency as being on its way to desertification⁴. High yield corn is a particularly destructive plant for the ground, requiring a lot of chemical input and lots of water, to the detriment of other cultivations and to the wallets of the citizens since the expenses relative to the necessary amounts of water are for the large part subsidized and therefore paid by the community. Not by chance is it called a “dustbin plant” (Bové and Dufour 2001, p. 66) because it is highly pollutant for the environment and for water. Today we produce 10 times more corn with respect to the 1950s but we consume one tenth of it because the rest goes for animals. Intensive breeding in Europe presupposes the “shadow hectares” of cereal cultivation destined for their industry, mostly corn and soy, which are situated in extra-European countries covering a surface seven times greater than that destined for them within Europe. This exerts pressure on the land which we don't see but which arouses indignation in those who see taken away land that could be used for growing food for humans.

It is primarily the chemical equipment of the Green Revolution that have poisoned the fruit of the apparent abundance. This abundance, that should have resolved the problem of world hunger, was the promise of the new high yield varieties as miracle seeds. But the destruction of alimentary resources for man and other living beings was kept quiet, as was the misery brought about by the intensive use of chemicals, such as fertilizers, herbicides and pesticides that would accompany the seeds. No one mentioned how this revolution would have generated the destruction of economies, progressive indebtedness, and inaccessibility for many

people to the food products of the Green Revolution. But that's another well known story.

According to data from the European Environment Agency, the chemical products for agriculture used in Italy in 1997, the last year for which official data is available, represented 70% of the chemical products marketed. Applying this percentage to the total marketed in 2002, it's possible to hypothesize the use of 440 kilograms of chemical products for every square kilometre of agricultural surface area. This certainly leads to an infiltration in the water-bearing strata, a reduction of fertility in the terrain, the upsetting of natural balances and, as illustrated above, a reduction in the number of species (Dominici et al. 2003). In 1992, the *Istituto Superiore della Sanità* [Superior Institute of Health] recognized many pesticides as the probable cause for the increase in different types of cancer and for the alterations of the endocrine system (Dominici et al. 2003). But the first to suffer the effects of the pesticides were the farmers. It's significant that Celestino Benetazzo, managing owner of a biological farm in Padua, in speaking about his decision in the early 1980s to become involved in this type of agriculture, cites having learned that the percentage of cancer in apple growers was the same as in factory workers at Porto Marghera as one of his reasons for choosing this occupation. Similarly, other people trying to avoid sickness discovered methods of biodynamic agriculture which they adopted in their farms⁵. One of the most substantial alarms raised in Italy comes from researchers at the *Società Italiana di Andrologia* [Italian Society of Andrology] which maintains that anti-parasite chemicals provoke a decrease in male fertility (Dominici et al., 2003). Regarding diseases that affect the female reproductive system and which often lead to unjustified hysterectomies (M. Dalla Costa, 1998) it is worth pointing out what Dr. John Lee (1996, p. 241) and other doctors in Italy maintain. They affirm that by switching to a biological diet that stays clear of the effect of estrogens from pesticides and herbicides (and by eliminating red meat, chicken and refined sugar) fibromas show a notable improvement over two to three months. Above all, Lee maintains that endometriosis, a particularly painful disease of the female reproductive apparatus, which raged during the last part of the twentieth century while previously it was practically unknown, most

likely owes its wide diffusion to the prevalence of xenoestrogens (toxic estrogens found in pesticides and herbicides) in the environment. He notes that 70 years ago 21 cases of endometriosis were recorded worldwide while today, 20 million are recorded in the United States alone. And, to return to India, the latest news shows that a particular pesticide has caused death and malformations among farmers in the state of Kerala⁶. However, on the occasion of the Rotterdam Convention coming into force, the following was written with regard to new procedures for use of chemical substances and pesticides that are harmful to people's health⁷: "Today there are approximately 70,000 different chemical products present on the market and more than 1,500 new ones are introduced every year. In this situation, it is difficult for many countries to monitor and manage potentially dangerous substances. What's more, many pesticides that were banned or whose use was severely reduced in industrialized countries are still marketed and used in developing countries."

So on the one hand, we lose the variety of products from the land, their wholesomeness, freshness and flavour, as well as the link with the geographical and historical context of where they come from. On the other, we are hit with products that chemistry guarantees will be ever more tasteless, alien and bearers of poison. We lose the real abundance represented by the capacity of life to reproduce itself and defend itself through strategies of natural evolution of the species to confront each other and organize themselves within their environment. And we lose the cooperation between man and nature which, rather than break and poison the web of life, aim to safeguard it. We know full well that in life nothing is "waste" but rather in the continuous cycle of reproduction, by-products of one phase become nutrients for another, decomposing and regenerating themselves. It was the most ancient knowledge that characterized so-called traditional systems in diverse civilizations and which resurfaces today as irreplaceable knowledge in the now global movement for a different type of agriculture. It's required by the demands of life of all living beings left to die in the deserts created by technology and by all humans impoverished by large agricultural transformations, abandoned by the hundreds of millions to the nightmare of hunger.

I will not deal with genetically modified organisms here because it's an argument that is already at the centre of a highly specific treatment and a very close debate. I will just mention a few aspects relative to the relationship of biodiversity and health. Not by chance have these products been labelled "Frankenstein Food" by those who fight to have them eliminated. This name points out the monstrosity of the violence that the species undergo in the operation of modifying their DNA, what's more without there being any certainty as to the non-existence of negative consequences to health. On the contrary, for some varieties there are certainties in the opposite sense and they have tried to be administered as "help" to developing countries. In this capacity, GMOs that have already been verified as harmful and banned in the United States or the European Union have been sent to Bolivia, Guatemala and Nicaragua in recent years. It's difficult to suppose that this is a matter of sporadic cases. It's a great worry that the increase in allergies, especially infant allergies, is to be connected with the assumption of genetically modified foods. The same goes for the increase of resistance to antibiotics. Despite the fact that in Europe three out of four consumers declare themselves to be against⁸ the consumption of genetically modified products, the recurrence of their use has not diminished. In any case, the principal harm lies in the fact that such products impair biodiversity, the result of natural evolution and cooperation between man and nature, altering the balance of the environment and destroying the identity of the output and the farmers who, in peasant-based farming, with their knowledge passed down over thousands of years of work, have selected and improved the varieties. Genetic pollution, well rooted even in Italy, is a big problem since it has been shown that letting in genetically modified seeds, even in the smallest amounts, leads to a progressive and rapid genetic pollution of natural plants. Unfortunately, the presence of such seeds does not appear at all to be very small since surveys taken in the Veneto by *AltrAgricoltura Nord-Est* [Another Agriculture North-East] ascertained that for every three samples of DNA from the plants analyzed, two turned out to be genetically manipulated⁹. In the summer of 2003 the Piedmont Region case broke out following the findings in that region of 381 hectares of genetically modified corn that the Monsanto company

had sold to unsuspecting farmers leading to an inquiry by the magistrature and the destruction of the cultivations¹⁰. But this is not an isolated case. The siege by multinationals who try to introduce genetically modified seeds into our country has been going on for years. In 2003 the European Parliament fixed a threshold on GMO levels requiring packaging to show if GMO content exceeds 0.9%. This violates consumers' rights to recognize and choose between genetically modified food and non-modified. It also risks constituting the start of a process by which this threshold, through the powerful push of lobbies, may be progressively increased.

3. Horses and cows

The second line of development that we will look at is **animal breeding**. How many varieties have disappeared in the selection for industrial breeding? Infinite varieties. A part of our world that we will never know. We can only imagine and share the great wonder that a student¹¹ in the 1970s felt when, taking advantage of a ride in a truck while hitchhiking to reach the grape harvest in the Tarn region in Southwest France, he came across two beautiful black horses with charming names, Milord and Belle de Nuit, that were in the wagon. They were of a very old alpine breed which could be left in the mountains without shelter and without forage for the entire winter. They would feed on the little bit of grass they'd find grazing the snow on the slopes exposed to the wind where the snow is less deep and by gnawing the tree bark. They would keep warm by growing a long, thick red coat and losing half their weight in a few months. By the end of Spring they'd gain back the weight, shed their fur and in its place they would have a beautiful, shiny black coat. Just like in the fairy tales. That student, having come into contact with a person who worked to protect ancient rustic breeds, would then learn about the existence of the "vachette bretonne", a very small cow, not much taller than a goat, but like the horses, very tough and very thrifty, although perhaps not very productive, seeing as it only gave three litres of milk a day. He would also learn about breeds that had developed and maintained evident qualities for defence: sheep with horns, chickens with feathers that completely covered their legs, dogs with spurs.

Evidently it was a sense of wonder and attraction which pushed this student to go on to dedicate his life to the protection of biodiversity. That sense of wonder and attraction that we, too, felt when, in a still rural Italy, we went to visit our grandparents in the country and there was a threshing floor, a hay loft and dangerous ditches in the fields where they told us not to go because there were holes full of deep water. Feelings that have been replaced by that of repulsion to the idea of going to see an intensive breeding establishment for a Sunday outing.

By now it's become easier to associate animals to alimentary scandal than to the marvel of their qualities. Industrial breeding is a picture of the violence that animals go through in being turned into machines which must produce much more than they could naturally and producing only the type of product which is most suitable. Meat or milk. Dairy cow or white calf for slaughter. The case of the sacred cow in India and its transformation into a milk machine (Shiva 1988, pp. 165-178; 2000 pp. 57-78) is the example that best lends itself to demonstrate the loss of biodiversity represented by different bovine breeds, the loss of versatility of functions, the loss of health. It's a situation that happens even here, for cows as well as other animals. The sacredness of the cow in India represented the crucial importance this animal had in making agriculture, breeding and forestry work together, and in the integration of these systems it contributed to the reproduction of their fertility. The cow easily found its forage in leftovers from cultivations and in uncultivated land, without competing against man for the supplies of food. The system of traditional breeding had selected species with very different characteristics in relation to the diverse climates and soils, with specific capacities to withstand these environments and unfavourable circumstances that might be present such as insects and diseases. India had produced some of the best breeds of subtropical cattle. Shiva (1988, pp. 175-178) cites Shanti George (1985, p. 118): "It may perhaps have taken many thousands of years for our forefathers to evolve the best dairy and draught breeds for the tropics... who could be kept under a tree in hot summer, who could drink village pond water, could stand up to fly and mosquito nuisance and tropical disease, and who could live on grazing and monsoonic grass or on roughages which are available

as agricultural by products.” However, ignoring the wisdom of Indian breeders of the past, the pure indigenous breeds were gradually replaced by homogenized hybrids of the local Zebu and exotic breeds like the jersey, Holstein, Frisian, Red Dane and Brown Swiss in order to increase milk production by the Zebu. This transformation was absolutely unsuitable seeing as how “if the main economic function of the Zebu cow is to breed male traction animals, then there is no point in comparing her with specialised American dairy animals, whose main function is to produce milk” (Shanti George 1985, p. 39). Furthermore, as with all hybrids, these animals are particularly vulnerable to diseases so they can’t be simply left out to graze. There’s more. They’ve also brought about “new ailments such as viral pneumonia, bovine rhinotracheitis, malignant catarrhal fever, bovine viral diarrhoea, tuberculosis and ephemeral fever” (Shanti George 1985, p. 108). As with all hybrids, they also require great input, in this case fresh forage, concentrated fodder, fresh and clean water. However, an overwhelming majority of rural Indians is not able to provide an adequate basis of health and nutrition for their own children, let alone for mixed-breed cattle. Their cows were used to drinking water from the wells and ponds. “In the Anand region that boasts the most elaborate and efficient veterinary system in India, they say it is easier to get a doctor for a sick animal than for a sick human being” (Shanti George 1985, p. 112). But the white revolution which has brought about the transformation of the sacred cow into a milk machine has denied the versatility of functions and products that the animal provided. We have already mentioned the importance in agriculture of this animal’s dung as fertilizer and fuel as well as the crucial need for its strength in traction. Let us also remember the artisan who flourished making use of cow hide, bones, horns and hooves when it came to the end of it’s life cycle. This meant creating jobs, satisfying needs, monetary income. But the resources and the most important jobs were those tied with the production of milk and all the other activities of a traditional dairy that were for the most part in the hands of women. As Shiva explains (1988, pp. 177-178) the most important milk products in India are *ghee* (a kind of liquefied butter), its by-products, serum, curd, homemade cheese and *khoya* (a kind of yoghurt) that can be produced even in small

country kitchens and preserved without refrigeration. While *ghee* is sold, the milk serum which preserves its nutritional qualities remains for family consumption and is given away to the poor. In the first place, this satisfies the nutritional needs and health of rural populations and secondly, it fulfils the need to have some money through the sale of part of the product. Instead, with the sale of fresh milk, the milk producers have to make the painful decision whether to give the milk to dairies such as Amul or to their own children. Through the industrial method other dairy products have become those favoured by the urban population with a certain purchasing power (butter, cheese, powdered skim milk and chocolate) to the detriment of the needs of the rural populations. Seventy percent of the milk furnished by farms is transformed into these products which only 2% of the population consumes. This immediately results in a great detriment to health, especially for children under five years of age who show serious nutritional deficiencies, particularly protein and calorie malnutrition due to the fact that they don't get enough milk at the time of weaning (Shanti George, p. 261). Besides the loss of health for all members of the family, for the women there is also the loss of money that they earned from their work in traditional dairies.

Yet, says Shiva (2000, p. 60, at a time when the idea of the cow as a milk machine brings about a crisis on a global scale, biotech multinationals promise that the new miracles of genetic engineering will increase production, thus further threatening the survival of milk producers. We are speaking of the, by now, famous genetically modified growth hormone (Bgh – bovine growth hormone) that enables cows to produce more milk (20%-25% more without the need of ulterior food) which, however, provokes a general deterioration of the cows' health, a shorter life span (five years rather than ten) and the possibility for very few births (about 3 calves during its lifetime) (Bové and Dufour 2001, pp. 67-68). In countries where this hormone is used, the United States leading the way while Europe has refused it, there have arisen contestations among breeders who don't want to adopt it but who see, at the same time, their economies destroyed by competitors who do use it. Here again it is a matter of advanced countries re-proposing the same issue: the ruin of the animal corresponds with the ruin of the

environment and the breeders who want to maintain more natural and healthy methods, but who are displaced by the latest, harmful technological transformations.

In India, the only animals that were slaughtered were those that were old or infirm or sterile or undernourished, therefore there didn't exist breeding farms, nor were single breeds of animals raised and bred exclusively for their meat. So the new political turnaround that gives India incentive to slaughter for exportation is full of implications for biodiversity and health which we will discuss here, making reference again to Shiva's works (Shiva 2000, p. 67). Between 1991 and 1996 32,000 illegal slaughterhouses¹² were opened. The exportation of meat, including beef, veal and buffalo almost doubled between 1990 and 1995 but during the same period the total population of bovines, buffalos and other farm animals grew only by half. In other words, India was exporting more meat than it was producing, thus impairing its national patrimony. In any case, the Ministry of Agriculture decided to offer 100% subsidies and fiscal incentives to encourage the opening of slaughterhouses. This massive slaughter for exportation strongly reduces the variety of the domestic breeds, and with each breed that is lost, there is also the loss of irreplaceable genetic traits that may contain the key to withstanding diseases and surviving adverse conditions. At this rate, the basis of sustainable agriculture will dwindle. The patrimony of agricultural cattle that is already being undermined will thus be decimated by the reduction of available forage since a lot of land is being destined for high yield monocultivations, arboreal monocultivations such as eucalyptus groves, and because of the growing scarcity of pasture owing to the privatization of land. Added to the decline in presence of animals there is the destruction of the rural economy and the loss of jobs that were vital, especially for those without land, the lower castes and women. The first loss of health will come from this poverty induced by the new politics regarding animals. The second from the noxiousness represented by the fact that the area around the slaughterhouses will become polluted by the waste matter (blood, hides and bones of the slaughtered cattle) which will only constitute refuse that is hard to get rid of rather than important materials for peasants and artisans. It is true that someone suggested making animal flour out of the

waste matter, but that, commented Shiva (2000, p. 69) would spread mad cow culture rather than that of the sacred cow.

The high consumption of meat in advanced countries has as a consequence the intensive production of meat (as well as intensive slaughter which is so foreign for countries such as India). The Green Revolution which has replaced animals with machines to work the fields allows us to see farm animals exclusively as producers of meat or milk. It's the story of intensive breeding. Guglielmo Donadello¹³ introduces the question thus, "Western population is characterized by obesity that affects 50% of the people. This is due not only to the quantity of food taken in and peoples' lifestyles, but also to the quality of the food, in that it has been proven that there are high doses of hormones present in the meat that we find on our plates. There's more. In breeding establishments there is widespread use of preventative antibiotics. This accumulation of antibiotics is damaging to our organism." The book on intensive breeding presupposes *a priori* a strong selection of species and their crossbreeds to render them more productive but this is to the detriment of their hardiness and diversification and therefore to their capacity to withstand pathogenic agents. A massive use of pharmaceutical products ensues, first among which are antibiotics to protect the health of the animals which has been undermined by the manipulations they have undergone (crossbreeding to increase their yield, transformation of the bovines from herbivores into carnivores¹⁴) and by the conditions of the breeding establishment. But the antibiotics are also used to foster their growth, thus the hormones. This remains the case even in Italy as shown by the operations of the *Nucleo Anti Sofisticazioni* (NAS) [Anti-Adulteration Unit] of the Carabinieri, despite the fact that the European Community banned the use of hormones in 1988. Among the most recent cases are those relative to findings of boldenone (a growth activator used particularly in calves, the residues of which disappear within 24 hours) in breeding farms in the Lombardy, Veneto and Piedmont regions (Giustolisi, 2003). Health related consequences are beginning to emerge in connection to the use of hormones in meat. In North-Western Italy, some pre-school aged boys who had been fed common homogenized baby foods in their infancy developed mammary

glands¹⁵. Another operation of the NAS in the summer of 2003 led to the seizure of more than 30,000 tons of fish, turkey and rabbits and substances believed to be carcinogenic – banned by the European Community more than ten years earlier – in about ten breeding establishments between Brescia and Verona¹⁶. It is noteworthy that after the seizure there was an increase in pestilence among the animals. But researchers of microbiology have for some time shown that given a concentration of animals there follows a concentration of pathogens and health risks (Dufour, 1999). In France during the 1980s, the *Paysans Travailleurs* union (Bové and Dufour, 2001) publicly denounced the situation of the breeders of cattle for slaughter who were being forced by the companies and groups they worked for to use largely prohibited hormones, in order to avoid bankruptcy. The denouncement set off a boycotting campaign that forced subsequent Ministers of Agriculture to maintain strict regulations on the use of growth activators. Despite this, the ministers continued to undergo pressure from the pharmaceutical firms. Unfortunately, completely inappropriate and harmful substances are sometimes administered together so that food, which in traditional agricultural and breeding systems was always a bearer of life, today has become a bearer of disease and death, producing continuous food scares such as dioxin chicken, swine plagues, avian flus, and mad cow disease. While delocalization of production and importation foster the use of illegal and harmful substances, which were originally present within our country as well, there is a significant informational pamphlet entitled “Today You Can Die of Food” (*AltrAgricoltura– Comitato Spontaneo Produttori Agricoli Nazionale* [Another Agriculture – National Volunteer Committee of Agricultural Producers], 2003). This document illustrates in detail the use of illegal substances which are utilized particularly in the production of meat that we import and that very often ends up on the tables of the weakest strata of society. We could go on to speak about many other attacks on the health of animals and humans but it is enough to have stressed here how poverty and lack of health represent, as we have seen in the preceding cases, the latest outcome of the rupture in the web of life that has been woven through an immense wealth made up of the diversity of species, cooperation between man and

nature to safeguard it, and the cooperation and integration of systems that generate life, agriculture and breeding. The rupture of all this, creating separation and contrast, exasperating manipulation in the name of productivity in search of greater profit, generates, even in the case of breeding, a false abundance and a false productivity that leave behind multitudes of impoverished people, violated animals and poisoned food.

4. **Sardines, shrimp and salmon**

The third line of development in this parable of the attack on nature in the form of mechanization and distortion of plants and animals is constituted by the **attack on the sea**. The ichthyological patrimony of the sea has notoriously been impoverished on a massive scale by the industrial transformation of fishing. Once again, it is to the detriment of traditional fishing as a source of sustenance for numerous coastal and other communities. According to the 2002 SOFIA report, approximately 47% of the principal stock or groups of species are fully exploited and consequently they have reached their minimum limit, or are close to it. Therefore, almost half of the world marine stock does not offer much hope for new expansion. Eighteen percent is already over-exploited, in continuous decrease and without prospect of expansion, while 10% is heading toward extinction. Only 25% of the fish species, therefore, is not subjected to irrational capture and the FAO emphasizes that, if measures aren't taken to reduce the excessive fishing effort, the catch will continue to diminish¹⁷. In the Mediterranean, the stock most in shortage are western tuna, whiting and red mullet¹⁸. In Italy, anchovies, cod, red mullet, swordfish, skates and even the domestic sardine risk becoming rare species¹⁹. The depredation of the ichthyological patrimony on a global level has almost exhausted the stock of cod, so scientists of the National Council for fishing exploration have recently asked for a halt to fishing in northern seas. After twenty years of intensive fishing in these waters, many thousands of fishermen who depend on this resource risk losing their jobs²⁰. Even in Italy phenomena have recently been recorded that never before occurred in the memory of man. In 2003, for the very first time, the usual schools of tuna didn't

reach the few surviving traps, those of Favignana and Bonagia²¹. The reasons put forth for this mystery are pollution or climate change. But the most credible hypothesis seems to be that of the so-called “slaughterhouses of the sea”, the Japanese ships that use sonar to hunt and capture large and small tuna, processing them on board and taking the frozen product to markets in the land of the rising sun. The FAO admits that approximately 70% of the total reserves of fish are exhausted or nearly exhausted. In ten years, approximately 60,000 European fishermen have lost their jobs²².

On a worldwide level, fish provides 17% of the protein in a human diet. More than 200 million people depend on fish for their survival (Shiva 2000, p. 37). Referring to this author and to her work just cited (pp. 37-54) we can again look at the case of India because it is extremely significant. This country is the seventh producer of fish worldwide, the second for fresh water fish. Its 7,000 kilometres of coast are a source of sustenance for millions of families of fishermen and farmers. Up until the end of the 1950s the catch from the sea increased in southern Asia by 5% a year, without new technologies for fishing. During this period, each year India exported five to six thousand tons of shrimp to Burma, Thailand and Malaysia, equivalent to 20% of the total exportation of shrimp. In the 1960s, fishing with a trawl was introduced – the system used by **industrial fish boats** – scraping the bottom of the sea and thereby destroying the habitats of families of young fish and eggs. By the end of the 1970s and the start of the 1980s, the growth rate of capture of marine fish fell to 2% a year. These fishing boats use nets that pull up entire schools of fish which don't have a large commercial value so they are thrown back into the sea. These discarded fish or *by-catch* are considered “waste”. In terms of weight, according to estimates in *The Ecologist*, this waste equals more than one third of the fish caught globally. But in the matter of catching shrimp, in some areas there may be 15 tons of discard for every ton of shrimp caught! The “waste” that returns to the sea dead or dying includes turtles. This discarded fish was the ecological basis of the marine environment and the economic basis for coastal populations. The abundance of fish from the large fishing boats hides the destruction of ichthyological resources and biodiversity, as well as the impossibility of subsistence for people

who lived on and from the sea. But the further leap in the productivist approach to obtaining fish comes from **industrial aquaculture**. This too was introduced, like the Green Revolution, under the banner of humanitarian goals, to solve world hunger, becoming instead a cause of severe worsening of this very problem as well as destroying ecosystems, spreading environmental pollution and diseases in animals and humans. In many agricultural systems of the past and present, where such a method still exists, traditional aquaculture was a system that was completely sustainable and integrated with agriculture. The contribution of the fish completed a nutritional system based on agriculture. Depending on the seasons and tides, the fields were used to grow wheat, rice or to capture and raise fish and shrimp. Simply using the ponds that filled with sea water and nets, the farmers were able to keep in the fish, raise them naturally, and catch them. Depending on the region different systems were used, all, however, with simple, sustainable methods, above all the *bheri* and the *gheri*. The *thappal* instead meant simply using your hands to catch, at high tide, shrimp, fish and oysters that were pushed toward the beach. This system could also make use of a mat made of dry grass and balsam plants entwined with grains of rice at the top to attract the fish which would then be trapped in the mat (Shiva 2000, p. 51). These images depict the wonderful abundance of fish in tropical seas and the simplicity of their capture which, for thousands of years if not more, has provided many people with an important source of food and at the same time allowed them to bring a product to market. Instead the aquaculture industry, especially in the case of shrimp, by installing huge tubs (2 meters deep by one hectare long), destroys the environment and the same abundance and biodiversity that previous systems of fishing and breeding had protected. It destroys mangrove forests, which played an important role as nurseries for many fish species, as a defence from soil erosion and natural disasters. It is an industry with a highly polluting impact. Four to six tons of food per hectare are required, but only 17% of this food is converted into biomass for shrimp. The rest, highly contaminated with pesticides and antibiotics, is thrown back into the sea or into the mangroves and the surrounding farmland. Cleaning of the tanks themselves spills the overflow into

irrigation canals of the fields or into the sea causing fish mortality, risk of ground water contamination, and other health risks. In areas near the establishments, skin diseases and endemic diseases, such as dysentery, spread which especially affect the weak, elderly, women and children. The very concentration of fish represents pollution due to the concentration of products placed in the tub and the excrement. There is a risk that bred species can escape into environments of other species, thereby altering the ecological balance. The need to draw fresh water to adjust the salinity of the tubs results not only in a shortage of drinking water for the people but also in the salinisation of that water since it spills out of the tubs as the shrimp grow, and because the massive withdrawals of fresh water leave the aquifers depleted, and therefore highly vulnerable to entering saltwater.

This aspect is important enough to have put in crisis the opportunity to continue farming in many places. Plants withered, there was no more drinking water, even the animals got sick, and people had to leave. Even the fishing was compromised by pollution of the sea near the coast so it was necessary to fish farther out. Added to this pollution is the pollution caused by other structures that are part of production, that is impacts of waste and packaging systems, storage, transportation and marketing. It is an industry that destroys the jobs of professional fishermen and creates few new jobs in difficult and precarious conditions, as well as very poor sanitary conditions. These positions are often held by women and children. It is an industry that promised to reduce the pressure on the sea, but it has not kept its promise because the food required to feed the shrimp is caught by large trawlers and seiners which are known to lead to the depletion of fish stocks. Like intensive breeding, industrial fishing consumes more resources than it produces. It provides extremely unnecessary food for rich countries. It is called "hit and run". The impact on the environment is so destructive that it proved unsustainable in all countries where it was established, not by chance almost always in the Third World. It is subject to frequent outbreaks of epidemics in shrimp and to the changing fashions of the clientele in the rich countries. It has destroyed mangrove forests in Ecuador, Bangladesh, Brazil, China, the Philippines, Honduras, Indonesia, Mexico, Sri Lanka, Thailand

and Vietnam as well as in India. It has seen struggles and bloody encounters in numerous moments of protest. In 11 countries, homicides linked with the shrimp industry have been denounced²³. In India this industry has attacked 7,000 kilometres of the country's coast and even though, in 1996, in response to the accusations of Indian environmentalists and coastal communities, the Supreme Court ordered the removal of all industrial production of shrimp in the areas under regulation, allowing only traditional aquaculture, the government did not carry out this decision (Shiva 2000, pp. 53-54).

The promise of aquaculture industry to help solve world hunger by decreasing the catch and multiplying the number of fish through aquaculture has proved to be false not only in the case of shrimp farming. According to economist Rosamond Naylor of Stanford University, one pound (453.6 grams) of farmed fish requires two pounds of seafood in order to get the necessary food²⁴. For every ton of salmon produced, five tons of fish are required²⁵.

The next leap forward in aquaculture, namely the **genetic modification of fish**, also came in the wake of humanitarian help to solve world hunger. It is a question of creating transgenic fish with two main characteristics: rapid growth and tolerance to cold. The most targeted fish is Atlantic salmon. But, as noted by Shiva (2000, p. 52), and this is a concern raised by several parties, genetic engineering as industrial aquaculture may, because of the ecological risks that it implies, lead to the depletion of fish resources. The faster-growing transgenic fish may require more food to grow faster, the one with antifreeze genes may destroy the other species present in water at those temperatures, the introduction of other genes may affect other physiological processes and interact in an unimaginable way with other species. The transgenic fish could destroy aquatic ecosystems preying on and exterminating the native species and taking their place. They could interbreed with fish from the sea and destroy biodiversity. In experiments carried out, some of these effects have already been verified and there were similar consequences with the simple introduction of exotic species into environments that do not contemplate them. Therefore, it is easy to assume that the likely changes induced by the presence of transgenic fish will mean a loss of resources and jobs for the people. Loss of even small levels

of well-being, loss of health and risk of unpredictable diseases. And it's implausible to listen to the latest humanitarian reason given for further genetic testing on fish: avoiding antibiotics²⁶.

Even here, in this marine scenario, who would ever go on a Sunday outing to see the Frankenstein-like effects of transgenic fish or the tanks full of excrement and antibiotics in farmed shrimp? There remains a dream, "when the fish were flopping in the vegetable garden" as a woman in Bangladesh told me while speaking of her childhood when the floods of the rivers or tides brought the fish right on the doorstep. But it is not just a dream, it is a viable reality that thousands of fishermen and farmers are struggling to recover.

5. Farmers and fishermen

If the foregoing considerations tended to highlight the close concatenation of negative effects around the loss of biodiversity from the industrial approach to agriculture and fishing, most importantly the possibility of loss of livelihood and health, it follows that the protection of biodiversity can only be at the center of the movement for another kind of agriculture and another kind of fishing. The set of negative consequences represents the disintegration of the web of life that was the basis of our existence.

The **movement for another agriculture** was born fundamentally against the Green Revolution and has several significant moments and periodization according to the areas considered. The 1980s were years of drastic adjustment and the start of neoliberalism which saw in many developing countries the outbreak of very hard fighting against the rising cost of living, from food staples to essential services such as health and education. There were struggles "for bread", as well as other things, in Latin America, Africa and Asia. At the same time there were *great fights* on the *issue of land*, against its privatization and expropriation which resulted in the impossibility for rural people to have a livelihood. Not only was the loss of land as a fundamental means of production and reproduction involved, but also knowledge and agricultural systems proven for centuries and characterized by their ability to safeguard biodiversity and, thus, the abundance of

resources offered on earth. This is precisely the fact that conflicts with capitalist reasoning that in order to profit on one side, destruction and misery must be created on the other. In the same way, the economic, social and environmental sustainability characterizing these systems conflicts with the logic of sustainability of the few against unsustainability for the many which further characterizes the capitalist mode of production. One of the highlights of that decade was undoubtedly the demonstration against the International Monetary Fund in Berlin in 1988, when, for the first time people protested in the streets against this institution that was previously only known by insiders. Activists, young and old, from the North met activists from the South and their causes (Caffentzis, 1993). It was an important moment of effusion in the advanced areas on the question of land, which grows more and more dramatic in rural areas.

Another very significant date, at least in my opinion, was the Zapatista insurrection in 1994, because, with the indigenous question, it brought to international attention the centrality of the issue of Earth/land as a common good to preserve and to use in a variety of aspects: as a source of life and abundance for the fruits which it generates, as a source of natural evolution, as a territory where one can live, as a public space, as the environment (M. Dalla Costa, 1999). In 1999, a strange caravan crossed Europe. Starting from Dambeck in Northern Germany, 500 activists from around the world began a journey that would lead them to participate in a series of protest demonstrations and public meetings of debate and counter-information. Making up the caravan were associations of farmers, fishermen, consumers, citizens fighting against dams, representatives of the movement of indigenous peoples, citizens against the WTO, the Sem Terra movement, the Zapatistas of Chiapas, Madres de Plaza de Mayo and others still. Then there would be Seattle and other major events of the anti-globalization movement. The problem of land, primarily the right of access to it and the matter of which type of agriculture, was set firmly in the discussion of this movement of movements. Of course, here I have only mentioned a few of the main dates. It is worth remembering that the 1970s were years of hard analytical commitment and intense activism which saw various countries re-open a discussion

on the issue of land. In France and Italy, and in still other places, new agricultural practices were experimented but they were discourses and practices that remained, especially in advanced areas, minor issues due to the dominance in political debate of other topics. The fact remains that in the 1980s, for reasons already given, the conditions for the existence of the vast majority of humanity became increasingly distressing. The complex of common goods and rights that help provide a base level of life were eroded in advanced societies as well as in the South of the world. A more devastating attack was led on the subsistence economies and their agricultural systems.

Starting from the bitter struggles of the 1980s, a movement on the issue of land, and agriculture in particular, began to take shape resulting in the articulation of networks of the 1990s through the South and the North. In 1992, the Via Campesina came on the scene, and in 1993 they formalized themselves as the most important network, the network of networks, present in all parts of the globe in agreement with the discourse of *food sovereignty*. This means: the right of access to land (that is, respect for community rights or definition of a reasonable price for farmers, redeemable within the agricultural process; agrarian reform); the right to produce your own food in all the varieties that the land where you live can offer and therefore agricultural systems that maintain biodiversity of those places; access to credit at low interest. The question of *quality and variety of food* is raised and becomes the pivotal point of the issue of *quality of life and social relations* as it refers primarily to *agriculture that respects life*. Alimentary self-sufficiency. Alimentary freedom as the other side of alimentary democracy. The latter as the basis of any democracy. The Karnataka Farmers' Union (or Karnataka State Farmers' Association) also belongs to the Via Campesina. It is the largest movement of small and medium farmers and landless peasants in India, which is also part of the People's Global Action network. Other networks of the advanced world also take part, such as *Confédération Paysanne* with José Bové and François Dufour in France who have reopened a full scale discussion on the purpose and meaning of agricultural work, and who, against "productivism", decided that there must be some conditions, perimeter and principles for peasant-based

agriculture. They fixed ten. The ninth states: “The various animal and plant populations belong to the patrimony of humanity. We have a duty to preserve this biodiversity: for historical reasons, because we have no right to stop life processes that have a history of several generations, for economic reasons, because certain species and varieties are particularly suited to our territories and our land. The same goes for the land, we can say that we are borrowing biodiversity from future generations. We must pass it on and enrich it.” Today, an articulation of Via Campesina in Italy is Farmers’ Forum - *Altragricoltura* but numerous others, more or less recent, practice biological or biodynamic farming, or are engaged in significant struggles regarding access to land, against GMOs, pollution of plant and animal food, on issues of milk quotas imposed by the European Union, and on other issues. It is significant that there are networks that carry the fundamental themes of Via Campesina in the United States, the National Family Farm Coalition, the Community Food Security Coalition, the latter particularly focused on the question of the healthiness and freshness of food. The commitment of farmers of the Karnataka Farmers’ Union to protecting biodiversity is so great that it has led to the initiative to set up in Bangalore in Southern India a natural seed bank for distribution to the population. While in various regions of the North and South of the world initiatives to practice traditional agriculture are taking off, bringing back the knowledge and use of cultivation practices and ways of cooking at risk of being forgotten, (Colombian farmers’ networks are especially good at this), in the same way there is a spread of networks expressly delegated to the rediscovery and preservation of seeds that risk disappearing. These are the Seed Savers who, with regard to Italy, are part of *Civiltà Contadina* [Rural Life]. Other experiences are designed to safeguard the biodiversity typical of mountain areas while maintaining agriculture and local food products as the real basis of the economy and life of that territory. One good example of this is the consortium²⁷ for the protection of the forty-day white potato grown in the mountains around Genoa (Angelini, 2001). An old subject is newly returned to the fore: the farmer. In the coming spring, states Peoples’ Global Action²⁸, April 17 will be his celebration.

The problems of fishermen who practice traditional fishing in India and around the world are very similar to those of traditional farmers: conservation of biodiversity, in this case affected by industrial fishing and breeding, which, however, is the base of their economy, life, food and health; the right of access to the sea and its resources; and the right to maintain fishing methods that ensure the reproduction of fish stocks in all its richness and which respond primarily to the needs of coastal populations. The National Fishermen's Forum (NFF) was formalized in India in the early 1990s with the initiatives of the fishermen's movement in Kerala but since the 1970s it has a long history of coordination and support for the struggles of fishermen's communities against industrial fishing and breeding. Its intent was to unify the struggle of the different movements along the Indian coast in a nation-wide network. There were three main issues. The fight against the giant trawlers managed in "joint ventures" with foreign multinationals who plundered the sea and took away the possibility of life for the fishermen themselves. The resistance against large-scale fishing, which destroys the biological diversity of the fishing grounds along the coast and offshore. Pursuing alternatives to industrial-scale production of fish, which prevents the production on a small scale denying even the needs of the local population. With the movements of fishermen from other continents who are fighting against the same problems and feel the same needs, the NFF has created the World Forum of Fishermen. The preamble of the Statute reads²⁹: "We, the Fisher Peoples of the world, united under the banner of The World Forum of Fisher Peoples (WFFP), with the aim of protecting our livelihood, upholding fishing rights, human rights, fundamental rights, social justice and community responsibilities, and preserving and promoting our culture, affirming water as the source of all life, committing ourselves to sustain fisheries and aquatic resources for the present and for future generations, gathered in Loctudy, France, solemnly bind ourselves to abide by this Constitution, we adapt on this day, the sixth of October 2000." Among the objectives of the statute is the recognition, support and enhancement of the role of women in the economic, political and cultural life of fishing communities, ensuring equal participation of women in the Coordinating Committee

correspondent to the level of participation in decision-making bodies of the Karnataka Farmers Union. The people present, representatives of twenty-one organizations from sixteen countries, decided to wed the principles of the Peoples' Global Action network, which aim among other things, to construct local alternatives to capitalism by implementing models that encourage decentralization and autonomy, which meet the real needs of local communities and are sustainable for the sea and for those who live by it. Fishing, too, will have its day of celebration, November 21. But above all we hope that the construction of alternatives, often only needing to be restored, such as the old water works in India that the British themselves thought insuperable, may indicate other ways for other people. And that the fish may go back to flopping in the vegetable gardens and that Milord may be covered with fur and look for grass by grazing in the snow.

NOTES

¹ This means all the small fishing boats including those with a tonnage less than 10 gross tons (GRT) and 12 meters in overall length, with selective gear operating within 12 miles of the coast. By artisan fishing in developing countries we mean those carried out with traditional types of boats and fishing systems. Or in any case, with systems that safeguard the renewability of fish stocks and above all are attentive to the needs of coastal communities.

² Marasmus is particularly serious.

³ The *ghanis* are seed expellers, about one million throughout India, who carry out the bulk of working the seed oil together with twenty thousand small crushers (Shiva 2000, p.23). An important example of the connection to the numerous trades of small economies that give support to so many and at the same time guarantee the visibility of the production process.

⁴ Gianni Tamino's seminar at the University of Padua, Faculty of Political Science on 3 December 2001.

⁵ See Sara Valieri's interviews of Celestino Benettazzo (5 October 2003) and Aldo Paravicini, manager of "*Le cascine Orsine*" [The Orsine Farmhouses] in the province of Pavia and board member of the *Associazione per l'Agricoltura Biodinamica* [Association for Biodynamic Agriculture], in her graduation thesis in Political Sociology entitled "Issues and Movements for Another Agriculture in Italy", from the University of Padua, Faculty of Political Science, March 2004.

⁶ Review in altragricoltura@italytrading.com, 16 July 2003: from *Il Manifesto*, 9 July 2003 "Pesticida miete vittime in India" [Pesticide Reaps Victims in India].

⁷ Review in altragricoltura@italytrading.com, 12 March 2004: from www.greenplanet.net, 26 February 2004, "Pesticidi: in vigore la Convenzione di Rotterdam" [Pesticides: the Rotterdam Convention enforced]. The document opens as follows: "This treaty will enable developing countries to avoid many of the mistakes made by rich countries, where the misuse of chemicals and pesticides has too often caused serious damage to health, and even led to death, as well as having damaged the environment."

⁸ Review in altragricoltura@italytrading.com, 16 July 2003: from *Il Corriere della Sera*, 14 July 2003, "Tre su Quattro: niente Ogm" [Three out of Four: No GMOs].

⁹ Luciano Mioni and Guglielmo Donadello's seminar at the University of Padua, Faculty of Political Science on 16 December 2003.

¹⁰ *VerdiAmbienteSocietà* (VAS) [GreenEnvironmentSociety] press release: "Emergenza Ogm in Piemonte: sementi Ogm Monsanto responsabili dell'inquinamento dei campi da distruggere" [GMO Emergency in Piedmont: Monsanto GMO Seeds Liable for Pollution of Fields to be Destroyed], http://www.vasonline.it/news/2003/07_ogm_piemonte_campi_2.htm

¹¹ The student was Paolo Belloni, now head of the *Associazione Nazionale per la Valorizzazione della Biodiversità Pomona* [Pomona National Association for the Enhancement of Biodiversity], interviewed by Sara Valieri on 12 November 2003, thesis cited.

¹² The liberalization of foreign trade was introduced in India in 1991 with the package of structural adjustment granted by the IMF and World Bank.

¹³ Luciano Mioni and Guglielmo Donadello's conference at the University of Padua, Faculty of Political Science on 16 December 2003.

¹⁴ In order to produce more, the cattle suffer extreme violence being transformed from herbivores into carnivores since they will be fed concentrated feed rich in protein, an unsuitable diet because they need to ruminate. To resolve this need, plastic sponges are placed in their stomachs and remain there throughout their lives.

¹⁵ On 6 December 2002, *La Repubblica* discusses this in the article, "Le mille truffe della carne. Il 5% è a rischio" [Thousands of Meat Scams. 5% is at Risk], which also reported the start of an investigation by the Turin Attorney's Office.

¹⁶ Review in altragricoltura@italytrading.com, 17 July 2003: from *Il Corriere della Sera*, 16 July 2003, "Maxisequestro di pesci e polli" [Maxi Seizure of Fish and Chicken].

¹⁷ www.fao.org/docrep/005/y7300f/y7300f01.pdf

¹⁸ www.marevivo.it/tonno3.html

¹⁹ www.wwf.it/news/242002_6250.asp

²⁰ www.wwf.it/news/242002_6250.asp

²¹ On 9 May 2003, *La Repubblica* illustrates and comments on the event in the article, "Fuga dal Mediterraneo. I tonni sono scomparsi" [Escape from the Mediterranean. The Tuna Have Disappeared.]

²² www.wwf.it/news/2532002_6250.asp

²³ www.theecologist.org/archive_article.html?article=376&category=88

²⁴ www.ilmanifesto.it/php3ricview.php3?page=/terraterra/archivio/1999/Giugno/3b28921564280.html&word=gamberi

²⁵ www.earthsummitwatch.org/shrimp/national_reports/crmall.html

²⁶

www.ilmanifesto.it/php3/ricview.php3?page=/terraterra/archivio/1999/Novembre/3b2892b45c580.html&word=gamberi

²⁷ www.quarantina.it

²⁸ www.agp.org

²⁹ www.agp.org; Monica Chilese translated this statute into Italian for her thesis in Political Sociology, “Il depauperamento delle risorse ittiche: problematiche politico sociali, istanze e movimenti” [The Depletion of Fish Resources: Socio-political Issues, Petitions and Movements] from the University of Padua, Faculty of Political Science, July 2003, helping to find useful data also for this paper.

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