

“the demand for meat among the rich was squeezing out staple production for the poor.”

The picture in the U.S.: more than a million farms and ranches raise young beef, while four big companies slaughter nearly 60% of them. Since 1962, the number of huge American beef feedlots, capable of holding 16,000 head of cattle, has risen from 23 to 189. At the same time, small feedlots, holding no more than 1,000, have dropped by 117,000.

The big operations have no trouble getting government support, such as guaranteed minimum prices, government storage of surpluses, feed subsidies, import levies and product insurance. The Organization for Economic Cooperation and Development reports that in 1990 government programs in the industrial democracies gave subsidies to animal farmers and feed growers worth \$120 billion.

What is the answer? The *Los Angeles Times* states: “The Seeds of Change [a group based in Santa Fe, NM] philosophy holds that adopting a plant-based diet is the best solution for improving individual health and lessening the toll of the human race on our Earth’s limited resources.”

Seeds of Change founder Gabriel Howearth recommends:

Bush acorn squash and bush buttercup squash, both high in vitamin A and free amino acids. Jerusalem artichokes, a native North American food plant with a varied vitamin balance and useful digestive enzymes. Hopi blue starch corn grown without irrigation in the Southwest and a traditional staple of the Hopi Indians . . . Okra, containing high amounts of vitamin C and amino acids, good in vegetable soup, stew and gumbo. Amaranth, a high-protein garden grain.

Howearth’s goal “is to get all kinds of people, even those who work and have limited leisure time, to grow their own food—in their backyards, on their balconies, or on their rooftops.”

This is not a goal everyone can follow. What many can do is change their diet from heavy meats to more vegetables and fruits. They will be less likely to become ill, and they will help save the planet Earth.

NOTE

1. From *The Worldwatch Institute*, quoted in “World Food Supply: The Damage Done by

Cattle-Raising.” *The Washington Spectator* (Jan. 15, 1993).

STUDY QUESTIONS

1. Review the information that Coffin presents about the damage caused by raising cattle. Do you find his assessment of the situation convincing, or might it be less dire than he suggests? Explain your answer.
2. If the raising of cattle and other livestock is having a catastrophic effect on the environment and our health, what should we be doing about it?

Vegetarianism and Treading Lightly on the Earth

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The meat-based diet that is the prevailing choice in affluent, industrialized parts of the world is unhealthy and environmentally unsustainable in a number of ways. These claims are explained and documented in some detail in this essay. The negative effects of meat production on species diversity in particular are illustrated with special reference to rain forest destruction for cattle grazing. Also investigated here is the link between animal agriculture and the manipulative or dominating mind-set that encourages viewing animals and ecosystems generally just as resources to be exploited at will. In contrast, it is argued, a vegetarian food system would enable us to take greater responsibility for our actions by minimizing our impact on the planet and help us regain a sense of being part of nature rather than existing apart from it.

MOVING AWAY FROM MEAT

I begin with a basic assumption: Scientific evidence increasingly reveals that a vegetarian—even a vegan—diet is, from a nutritional standpoint, at least as healthy as, and in all probability healthier than, one that features meat (Anonymous 1988a; Anonymous 1988b; U.S. National Research Council 1989; Barnard 1990; Chen 1990; Lappé 1992; White and Frank 1994; Melina and Davis 2003; Rice 2004; Saunders 2003). But beyond this important finding, many people are coming to understand that the

amount of meat they consume individually and collectively has a profound effect on the way we use and manage natural resources—forests, land, water, and nonrenewable energy. To put it simply, the greater our dependence on meat and other animal products, the more we overexploit these resources to satisfy our food preferences. And if (as I argue here) the prevailing form of agroindustry significantly abuses and damages the environment, then it follows that the more meat we consume, the more the well-being of the planet, and consequently our own well-being, will suffer. This insight leads to an awareness that the dietary orientation of unhealthy,

meat-dependent societies needs to change, not only for the good of each of their members, but also for the benefit of nature as a whole.

Many of us live in societies that encourage individuality, self-reliance, self-development, and the cultivation of personal taste. These are good things, to be sure. However, we are bombarded all the time by messages that encourage us to pursue the construction of selfhood by means of consumer choices—that is, by acting out self-centered desires and fantasies in our role as powerful purchasers within the global market system. We are all conditioned to view what we purchase as consumers simply as an expression of personal freedom, of consequence to ourselves alone. Numerous vested interests energetically promote this outlook: business leaders, industry spokes-persons, the media, politicians, advertisers, and image-makers, to name a few. It therefore takes major effort to develop a contrasting form of awareness, namely, one that acknowledges that what we decide to buy has wider consequences. Many of these consequences have an impact on the environment. When we begin to appreciate the connections between our purchases and the environment, we start to question our choices and the influences that helped bring them about. Being sensitized by ecological issues, as a growing number of citizens are today, opens our minds to the possibility of change through the formation of new values. The process of becoming a vegetarian is often part of this creative ferment.

THE ENVIRONMENTAL IMPACT OF DIETARY CHOICE

The eco-destructive side of the meat industry's operations has been demonstrated with ample documentation from both government and non-government sources (Robbins 1987; Fiddes 1991; Durning & Brough 1995; Hill 1996; Fox 1999; Rice 2004; Gold 2004; Tudge 2004a, 2004b). These effects include:

- toxic chemical residues in the food chain
- pharmaceutical additives in animal feeds

- polluting chemicals and animal wastes from feedlot runoff in waterways and underground aquifers
- loss of topsoil caused by patterns of relentless grazing
- domestic and foreign deforestation and desertification resulting from the clearing of land for grazing and cultivating animal feed
- threatened habitats of wild species of plants and animals
- intensive exploitation of water and energy supplies
- ozone depletion caused by extensive use of fossil fuels and significant production of methane gas by cattle

A brief case study will help place these complex problems in context and help us comprehend their interconnections.

Canada is a typical Western industrialized country with a population only one-tenth that of the United States. Since the time of white settlement, expanding agriculture has been the major factor in an 85% reduction of wetlands (Government of Canada 1991: 9–9, 9–15). Agricultural acreage has increased fourfold since 1900, and the total area under irrigation more than doubled between 1970 and 1988 (Government of Canada 1991: 26–6, 9–14). We infer that the consumption of meat is a powerful force here, given that in North America some 95% of oats and 80% of corn crops end up as livestock feed (Animal Alliance of Canada 1991; Government of Canada 1991; Agriculture Canada 1994).

Farm animals in Canada produce 322 million liters (85 million U.S. gal) of manure *daily*, an overwhelming proportion of which comes from cattle. Each marketed kilogram (2.2 lb) of edible beef generates at least 40 kg (88 lb) of manure, and each marketed kilogram of pork 15 kg (33 lb). These wastes, plus the runoff of water used to clean farm buildings and equipment and pesticide residues and other agricultural chemicals, are often poorly handled, causing the contamination of waterways and soil, as well as air pollution (Government of Canada 1991: 9–26).

Now consider that to produce each quarter-pound hamburger costs the environment 11,000 L (2,904 gal) of water. This amounts to 96,800 L (25,555 gal) per kilogram. Meanwhile, a kilo of rice or cheese requires 5,000 L (1,320 gal) of water to produce, and a kilo of wheat only 1,000 L (264 gal) (Pearce 2006). Which is a better investment in the earth's future?

Finally, reflect on the accelerating demand for meat worldwide. As an example, whereas annual meat consumption in China averaged 4 kg (8.8 lb) in the 1960s, it is about 60 kg (132 lb) today (Porritt 2006).¹ This trend has prompted the prestigious World Watch Institute to focus attention on global problems of meat production in the its *State of the World* report (Starke 2006).

Obviously not all of the environmentally negative effects of today's unsound agricultural practices can be blamed on livestock management. And clearly some of the abuses already listed can be reduced or eliminated by a dedicated approach to recycling animal manure (and even human waste) into fertilizer, the use of natural means of pest control instead of harmful chemicals, and like measures. So it has been argued that the proper target of criticism is not meat production per se, but rather the intensive rearing methods used by contemporary agribusiness. There is some point to this rejoinder, and those who obtain meat from their own or others' free-range, organic, or biodynamic operations surely contribute less to the environmental toll on the planet. But, given the rate at which smaller-scale family farms are being forced out of competition (and out of existence) by larger and larger corporate conglomerates (Berry 1996), the opportunities for obtaining "environmentally friendly" meat are extremely rare. Taking current agricultural trends into account, then, only a tiny fraction of the population can conceivably exercise this option, and an even tinier group desires to do so in the first place. But the bottom line is that vegetarians are able to live more lightly on the land than do meat eaters of any description.

Is there evidence to back up this assertion? The short answer is yes. Consider the following observations.

Substituting a grass-feeding livestock system (using only ruminant animals) for the current grain and grass system was found to reduce the energy inputs about 60% and land resources about 8%. . . . [In addition, it] would free up about 300 million tons of grain for export each year. This amount of grain is sufficient to feed a human population of 400 million a vegetarian-type diet for an entire year (Pimentel 1990: 12).

All the grain fed to livestock could feed five times as many people. (*Proponents of intensive animal agriculture claim that we only put animals on land that could not support plant production. But we could grow more than enough plant food for human consumption if we used even a fraction of the land that is now used to grow plant food for livestock consumption.*) (Animal Alliance of Canada 1991)

Merely making animal agriculture more ecologically efficient would greatly reduce resource depletion and increase global food supplies. Imagine what a gradual and complete conversion of the meat economy to a vegetarian economy worldwide could achieve.

One of the accomplishments of environmental philosophy in its relatively short history is the establishment of ecologically informed ethical thinking. If this phrase stands for anything, it certainly must entail that an overarching goal of human life ought to minimize the harmful impact our existence—as individuals and as collectivities—has upon the biosphere. It follows that we also ought to make lifestyle choices that help secure this objective. Now a diet that relies heavily on meat appears affordable and environmentally sustainable only to those who (a) are unaware of the larger ecological costs of meat production; (b) assume that these costs do not have to be factored into our choices and a calculation of their consequences; or (c) believe that the costs can be passed on to others—people in developing nations, our children, and other future persons. We all have to eat and the earth inevitably has to absorb the impact of our pursuing this natural

end, but we should aim to reduce and confine the ecological stresses that are under our species' control. Vegetarianism seems plainly to be the best way to manage the environmental harm and degradation caused by humans' quest for nourishment. Some of the eco-destructive effects of the meat industry listed earlier are not caused by plant-based agriculture, and with respect to other results, the effects are less severe. By enabling us to eat lower down on the food chain, a vegetarian regime makes more efficient use of solar and caloric energy inputs. (For example, by concentrating on plant sources of protein—such as soya, beans, and nuts—we get at it more directly than we do by eating animals who have processed cellulose into protein for us.) As an energy-saving diet, vegetarianism lightens the exploitative load we place upon the earth's ecosystems.

MEAT PRODUCTION AS A THREAT TO BIODIVERSITY

We have seen that the global environmental consequences of the meat production system are serious. They are also pervasive. To show this, I want to shift attention now to the effects of animal agriculture on planetary biodiversity and on our attitudes toward nature as a whole.

There are many causes of species extinction, both natural and human. In relation to human factors, no single activity accounts totally for the sort of ecocide that undermines species viability. We should not expect, therefore, that the process whereby the flesh of animals appears on our tables explains by itself why certain ecosystems and the life forms they support are either under threat or beyond recovery.

Let us begin by getting some idea of the scope of species eradication by humans. According to E. O. Wilson, who has conducted one of the most detailed studies of the problem, rain forest extinctions for which our species are responsible occur at between 1,000 and 10,000 times the natural rate (Wilson 1993). Wilson approximates that 27,000 species per year (74 per day, 3 per hour) are perishing

at our hands. A more recently completed twenty-year study by the World Conservation Union shows that “at least one in eight plant species in the world—and nearly one in three in the United States—are under threat of extinction” (Stevens 1998). This appalling pace of destruction stems from several major dynamics, including the clearing of foreign and domestic forests for agricultural purposes and development, drainage and filling of wetlands, damming of rivers, use and abuse of coral reefs, and relentless high-tech ocean fishing. Among these, deforestation and overfishing are the most evident areas in which a relationship between human diet and species extinction is to be discovered. I shall focus here on the devastation of the irreplaceable rain forests of Latin America.

Most people who follow the news are conscious that global rain forests perform unique functions within the regulative cycles of the biosphere, helping to maintain global temperature, providing fresh supplies of oxygen and water to the atmosphere, and sheltering the most complex web of life imaginable. It is reported that 40% to 50% of the world's plant and animal species dwell in rain forests (McKisson & MacRae-Campbell 1990). This superabundance of life forms yields a wide range of raw materials used in the manufacture of all manner of consumer goods and pharmaceuticals, upon which the quality of human life crucially depends. Products of great value include hardwoods, rattan, natural rubber, waxes, essential oils, fruits, and nuts. One-quarter of all drug compounds obtained from pharmacies contain rain forest ingredients, whereas for most of the world's people, traditional medicines extracted from plants are used exclusively to treat ailments (Collins 1990; U.N. Food and Agricultural Organization 1995). Notwithstanding all this, a Smithsonian-sponsored research team found that an area of Amazon-basin rain forest equivalent to seven football fields is being cleared *per minute* for grazing land (Smithsonian Institution 2002). Sadly, “fewer than one percent of tropical rain forest plants have been chemically screened for useful medicinal properties” (Collins 1990: 32). Meanwhile, “studies in Peru, the Brazilian Amazon, the Philippines and Indonesia suggest that harvesting

forest products sustainably is at least twice as profitable as clearing [the forests] for timber or to provide land for agriculture” (U.N. Food and Agricultural Organization 1995: 62).

That the rain forests are the earth's principal networks of species diversity seems unarguable. But why does this diversity matter so much? Thomas E. Lovejoy, a conservation biologist, places the matter in perspective:

Assuming that the [earth's] biota contains ten million species, they then represent ten million successful sets of solutions to a series of biological problems, any one of which could be immensely valuable to us in a number of ways. . . . The point . . . is not that the “worth” of an obscure species is that it may someday produce a cure for cancer. The point is that the biota as a whole is continually providing us with new ways to improve our biological lot, and that species that may be unimportant on our current assessment of what may be directly useful may be important tomorrow. (Lovejoy 1986:16–17)

Wilson has commented that “biodiversity is our most valuable but least appreciated resource” (Wilson 1993: 281), and Collins remarks that the rain forests comprise a unique “genetic library” of virtually untapped information (Collins 1990: 32).

Solid, human-centered reasons for preserving biological diversity are to be found in these reflections. But might there not be additional good grounds for promoting species diversity? We have no difficulty in valuing other species instrumentally—in terms of what they can do for us. Perhaps we can also value them for their own sake—that is, for having a marvellous way of being that is worthy of celebrating quite independently of any actual or potential use we might make of them, and no matter how remotely related to ourselves they may be.

We are now in a position to consider the role that animal agriculture plays in undermining species diversity on the planet. Former U.S. Vice President Al Gore has written that “at the current rate of deforestation, virtually all of the tropical rain forests

will be gone partway through the next century” (Gore 1993: 119)—that is, the century we live in now.² It is difficult to establish a precise correlation between animal agriculture and rain forest decimation, but it should be noted that the World Watch Institute has observed that “the human appetite for animal flesh is a driving force behind virtually every major category of environmental damage now threatening the human future” (World Watch Institute 2004). Rain forests are cleared by humans seeking firewood, settlement space, farm plots, monocultural plantations, expanded land holdings, oil, minerals, pastureland for cattle, and, more recently, soybean cultivation.³ Hydroelectric projects, roads, and other development schemes also take their toll. Even though these pressures are numerous and diverse, grazing may be identified as a major threat (Greenpeace International 2006a).⁴

Conversion of tropical rain forests to pasture land for cattle has proceeded at a remarkable pace in Central America since the middle of the twentieth century. The inherent nature of rain forests is such that when they are cleared, only poor quality, unsustainable pastureland remains, and this contributes to the dynamics of expanding destruction as new grazing areas are sought to replace older, exhausted ones. Norman Myers contends that from Mexico to Brazil “the number one factor in elimination of Latin America's tropical forests is cattlegrazing” (Myers 1984: 127). Most of the beef produced in this region is exported to the American market, although an increasing portion goes to Western Europe and Japan (Myers 1984; Rifkin 1992). The United States contains only 5% of the world's population, yet it produces, imports, and consumes more beef than any other country (Myers 1984). The beef imported from Latin America ends up as fast food burgers, processed meats, and pet foods.⁵ Myers notes that “convenience foods . . . constitute the fastest-growing part of the entire food industry in the United States”; 50% of all meals are now consumed in either fast food or institutional settings (Myers 1984: 130). These patterns demonstrate forcefully the connection between meat eating and rain forest destruction. We cannot save the forests just by saying no to fast-food hamburgers, but

we can help turn things around if enough of us set an example by reducing the meat in our diets and if, in this way, we set an example for others.

MEAT PRODUCTION AND THE DOMINATION OF NATURE

The case of rain forest decimation for cattle grazing is a typical ecological horror story. But viewed through a slightly different prism, what we encounter here is one of the many forms of the human domination and manipulation of nature. I mean to point out here that the range of our activities starkly displays our species' tendency to treat nature and natural biological systems purely as instruments for achieving human and often very narrow, short-sighted objectives.

According to the manipulative mindset, nature or parts of nature (such as members of nonhuman species) merely constitute resources or materials for our use and disposal as we see fit. The slash-and-burn practice that seals the fate of rain forests as obstacles that are "in the way" of profit to be extracted from low-cost meat provides but one example of this mentality at work in the world. Whereas the rain forests are treated as dispensable, the animals subsequently bred on this land are themselves no more than commodities destined for some distant stockyard—just further contents of the organic cash till that is nature.

But the attitude evident here, which permits the ruthless exploitation of cattle from rain forest regions, is in reality no different from that which endorses the widespread practice of animal confinement on factory farms. Animals there have manifestly become machines or artefacts of production and reproduction (Mason & Singer 1990; Rice 2004; Gold 2004). New developments may yield even more ominous scenarios. Researchers have considered or are actively considering the application of genetic techniques to create freakish monster animals and to clone superproductive animals (U.S. Congress, Office of Technology Assessment 1985; British Medical Association 1992; Fox 1992;

Spallone 1992). Other scientific fantasies include animals with modified physiologies that experience little or no stress (Mason & Singer 1990), animals with no pain receptors (Rollin 1995), and the manufacture of synthetic meat (Edelman et al. 2005; Reuters 2005). Greed is driving some of these developments; the thinking behind others must be that if the experiments are successful and lead to economical avenues of meat production, then it will be alright to treat the animal artifacts that result as mere things, and hence the major ethical objections to factory farming will simply melt away.⁶

What does all this add up to? The meat industry, itself feeding off human demand for certain types of food, is ushering in an era of activities that are totally lacking in compassion or a sense of connection with nature. Although we seem to be learning to connect to nature on one level—concern over ecological issues—on another level we have become out of touch with what matters most. The vast majority would not wish to visit a slaughterhouse for any reason,⁷ and from what people know of modern livestock production processes, they would never want their pet or any animal they cared about to be treated the way food animals routinely are, let alone how they may be treated in the future. But at the same time, the consumers' selection of meat and meat products as foods of choice goes on with apparently little thought. In this manner, we accustom ourselves to accept the domination and manipulation of nature that as sensitive, caring people we ought to be aware of and reject. We thus find ourselves caught in a trap of our own making. We can, however, seek a way out by being reflective and deciding in favor of a lifestyle that does not rest upon the subjugation of the earth and the suffering of non-human forms of life. This is the vegetarian option, which is where I started.

CONCLUSION: A VEGETARIAN ETHIC

Vegetarianism encourages us to think of ourselves as *part of* nature rather than *apart from* nature. The

vegetarian outlook recognizes the importance of ecologically sustainable human activity and affirms the requirement that we seek to minimize our impact on the planet, and this recognition includes the amount of harm we do in the course of looking after our essential needs. Mindfulness of both short- and long-term consequences of individual choice and collective behavior are hallmarks of a commitment to vegetarianism as a way of life. This choice also entails compassionate cohabitation with other species and respect for the earth to the greatest

extent that these precepts can be followed, both in one's personal activities and in social policy and planning. The vegetarian way of life offers us a chance to re-establish contact with the land, eat locally grown foods, and recover connections with nature. Finally, vegetarianism is liberating in the sense that it frees us *from* the exploitation of animals and nature, while it frees us *to* discover who we are in more positive, life-affirming ways that are healthy for both humans and the planet that is our home.

NOTES

1. Also of interest here, it has been reported that nearly 15% of the Chinese population is now overweight, and childhood obesity in China has increased by 28 times over the past decade and a half, the causes of this being cited as greater meat consumption and lack of exercise (*Guardian Weekly* 2006).
2. See also his acclaimed environmental documentary film *An Inconvenient Truth* (2006).
3. Rain forest destruction for the purpose of creating soya plantations will cause concern among vegetarians, but this process is in fact geared toward supplying feed for livestock animals, not food for humans (Greenpeace International 2006b).
4. The radical transformation and degradation of American land by animal agriculture should not be underestimated and likewise presents a tragic story (Berry 1996; University of Washington Students n.d.).
5. Fast-food giants Burger King and McDonald's have pledged to stop using rain-forest-grown beef; others have made no such commitment. Greenpeace has recently charged that McDonald's beef and Kentucky Fried Chicken's chicken are fed on soya grown in cleared Amazon rain forests (Greenpeace International 2006c).
6. The case of synthetic or laboratory-grown meat is represented by smug journalists as a big "problem" for vegetarianism because its ethical position in regard to meat eating would supposedly be undermined by the prospect of animal flesh being produced without pain, suffering, and killing. But first, this view shows little understanding of what vegetarianism is all about (see the final section of this article and Fox 1999). Second, synthetic meat is merely a possibility today; we are very far from seeing it drive conventional factory farms out of business. And if it did, this would cause as big an economic upheaval as a large-scale transition to vegetarianism. Third, if meat eaters so desperately want meat that they will queue up for fake, laboratory-cultured versions, let them do so and leave the fresh, healthy, naturally grown plants to the rest of us.
7. I have, and it is a profoundly disturbing experience. For readers with strong stomachs who might be willing to "visit" an abattoir through the pages of a book, I recommend Coe (1995) and Eisnetz (1997).

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STUDY QUESTIONS

1. Fox argues that our food choices have consequences that extend beyond our personal lives and that we should take responsibility for them. What do you think of his argument?
2. If you were convinced that eating meat is morally wrong, would you give it up? If you are already a vegetarian, what ethical and empirical factors have influenced your dietary choices?
3. Toward the end of this reading, Fox alleges that humans have a "manipulative mindset" in relation to the natural world. Is animal agriculture part of this mindset? Discuss.
4. What sort of diet, in your opinion, would be consistent with the principle that humans ought to minimize their impact on the biosphere? Explain your answer.
5. If synthetic meat (meat made in laboratories) were widely available, would there any defensible moral objection to eating it? Defend your answer.