Bioethical Inquiry
DOI 10.1007/s11673-009-9198-6

Biomedical and Environmental Ethics Alliance: Common Causes and Grounds

Lori Gruen · William Ruddick

Received: 30 June 2009 / Accepted: 17 October 2009

Abstract In the late 1960s Van Rensselaer Potter, a biochemist and cancer researcher, thought that our survival was threatened by the domination of military policy makers and producers of material goods ignorant of biology. He called for a new field of Bioethics—"a science of survival." Bioethics did develop, but with a narrower focus on medical ethics. Recently there have been attempts to broaden that focus to bring biomedical ethics together with environmental ethics. Though the two have many differences—in habits of thought, scope of concern, and value commitments—in this paper we argue that they often share common cause and we identify common ground through an examination of two case studies, one addressing drug development, the other food production.

Keywords Environmental and biomedical ethics · Factory farming · Sustainability · Taxol

There are current efforts to bring environmental ethics and biomedical ethics closer together under an expanded, earlier conception of Bioethics.[1] Since their respective concerns, perspectives, and theoretical allegiances are quite different, this might seem a fool's errand, or at least bound to yield very limited results. On reflection, we do not think that either is true. The differences between environmental ethics and biomedical ethics can be mutually illuminating and modified in the interest of making common cause and finding common ground. Given the pressing importance of promoting health care and environmental sustainability, such mutual accommodation should be most welcome.

In what follows we first survey some general differences between biomedical ethicists and environmental ethicists—that we will call Reds and Greens for short—differences in objects of their moral concern, their temporal scopes, their theoretical and

L. Gruen (✉)
Department of Philosophy, Wesleyan University,
350 High Street,
Middletown, CT O6459, USA
e-mail: lgruen@wesleyan.edu

W. Ruddick
Philosophy and Center for Bioethics, New York University,
285 Mercer Street, 9th Floor,
New York, NY 10003, USA
e-mail: wr2@nyu.edu

[1] This is the founding aim, for example, of a new Master's Program in Bioethics: Life, Health, and the Environment at the New York University Center for Bioethics. The work of the Center, including some of the themes of this paper, have been presented at new environmental committee symposia at recent meetings of the American Philosophical Association and the American Society for Bioethics and Humanities, 2008. See also Pierce and Jameton (2004), a pioneering work on Green Medicine reflected in the concerns of the work of the worldwide coalition, Health Care without Harm.

Published online: 06 November 2009

temperamental proclivities.[2] Of course, there are differences of emphasis and focus within each group: not all biomedical ethicists agree with one another, nor is there unanimity among environmental ethicists. Nonetheless, members of each tend to share the general perspectives, attitudes, and range of concerns we sketch at the outset. We then confront Reds and Greens with potentially divisive cases; the production of an oncostatic drug, Taxol, and the farming of pigs for consumption. In both cases, corporate practices provide Reds and Greens with common cause for moral censure, but also occasions for finding common grounds for a deeper alliance.

Let us start, however, by reflecting on a somewhat analogous initially fraught alliance between environmental ethics and animal liberationism. In a 1980 article, J. Baird Callicott rejected the idea that such an alliance could be made (Callicott 1980). He distinguished three general approaches to ethical problems: ethical humanism, humane moralism, and ethical holism. Humanism applies to individual human concerns; the humane approach applies to our treatment of sentient animals, human and nonhuman; holism is his preferred approach to our environmental crises as it takes the good of the system as a whole as a basic value. He argued that human, humane, and environmental concerns were quite distinct and that ethical theories that focused on the former two employed atomistic and reductionist arguments and diverged only in their assessment of which individuals to include in the scope of moral concern. Environmental ethics, on the other hand, employs communitarian arguments and includes individual sentient beings, other living beings, and whole ecosystems, in their moral assessments of policies and practices. Other scholars, as well as activists concerned with environmental ethics, tended to agree with Callicott. The sentiment was made pointedly clear in the title of an article by Mark Sagoff—"Animal Liberation and Environmental Ethics: Bad Marriage, Quick Divorce" (Sagoff 1984). At that time there was a growing consensus that humanism's anthropocentrism made it inadequate as a basis for both animal ethics and environmental ethics, *and* that animal rights theories in their individualism were incompatible with environmental ethics.

As the discussion continued, common ground was explored and many tried to argue that animal liberation philosophy was a type of environmental ethic. Dale Jamieson, for example, pointed out that animal liberation and environmental ethics share common enemies, have common origins, and, most importantly, hold similar normative views and are committed to similar values (Jamieson 2003). Jamieson suggests that the divisions among environmental ethics are just as significant as those between environmental ethics and animal liberation and that animal liberation is one type of environmental ethic. Callicott, for his part in the reconciliation, recognized that while humanism, humane moralism, and holism "are sometimes conflictive … just as often they are convergent and mutually reinforcing" (Callicott 1994).

Differences of Focus and Scale

This earlier debate might be a heartening precedent, but for the fact that some of the Reds' and Greens' differences seem to be deeper, more intractable incompatibilities than between the latter and animal liberation. Reds focus on individual human patients' health and insofar as there is a concern for the environment, it tends to be only for those environmental matters that negatively bear on their patients' health. More precisely, physicians in principle commit themselves to serving individual patients' "best interests". Like a photographer's shallow depth of field, this focus renders a particular patient in sharp detail, with everyone and everything else in a blurry background. They have no inclination or reason to directly value the environment, apart from its bearing on those "best interests". Indeed, as the principle source of pathogens and predators, Nature may seem to be a threat best kept at bay by wholesale antiseptic or other chemical measures.[3] Since Reds tend to focus on the relationships between health care providers and

[2] When we use the terms "Reds" or "Greens" we have in mind biomedical ethicists and those individuals and communities that are the subject of biomedical ethical discussions (e.g. patients, health care providers, medical researchers, health professionals, and the like) and environmental ethicists and the subjects of their ethical discussions (e.g. humans, other animals, ecosystems, environmental professionals and activists).

[3] We will use the word "Nature" to refer to the natural world broadly construed. We do not have a particular commitment to any specific conception or definition of nature.

their patients, this would seem to show them to be the ethical humanists Callicott had in mind.

Greens' focus is wide-angled, with deep depth of field without particular individuals sharply foregrounded. Their concern is not with the survival and welfare of current individual flora or fauna, but with species of flora or fauna and their role in promoting the stability and health of the ecosystem of which they are a part. Indeed, current Greens go well beyond Aldo Leopold's focus on the "land community" to include concern for the whole biosphere, even the whole planetary system on which biota depend. They have also become concerned about animals in feedlots and laboratories far removed from "the land" and other forms of non-human life. To that extent, our Greens' holism includes sentient fauna and non-sentient flora, as well as abiotic components of ecosystems. Against such an encompassing moral landscape human patients and their particular relations to individual health care providers may seem an insignificant few amongst many, and medical researchers and their pharma sponsors appear primarily as despoilers and polluters.

In addition to this contrast in the scope of their focus, Reds' and Greens' temporal perspectives tend to vary. Reds' concern for individual patients tends to be on current patients, while Greens' concerns for groups of biota tend to extend to their offspring and future generations, however unpredictable and divergent in kind. Reds tend to be relatively shortsighted—extending individual human life may be the extent of their range of concern—whereas Greens focus on long-term sustainability and the survival of the planet, even after humans cease to exist.

We should note, however, that these contrasting concerns and perspectives are often not as marked as we have drawn them. In various contexts, biomedical ethicists widen their focus to include the interests of other current or future patients or the public more generally. Most physicians need to ration their time and attention among hospital and office patients, some of whose "best interests" need more time and attention. And when drugs, organs, or staff are in short supply, physicians need to survey and rank patients, first treating the worst off and delaying or denying treatment to others. In checking contagious diseases, they need to think about people not yet exposed, as well as the animals who are or could be vectors. Likewise, in enrolling patients in randomized clinical trials of drugs or procedures, physicians may be as much or more concerned with the large class of future patients who may benefit than with the particular patient being enrolled with less than an even chance of benefit. In actuality, Reds often have the illness and health of others in mind in ways that may compromise the "best interests" of the patient in the bed or chair in front of them. Their usual individualistic focus becomes, on these occasions, wider and more akin to that of Greens, even if not as comprehensive in scope.

For their part, environmental ethicists sometimes narrow their focus to a particular, local group of flora or fauna—a river or eco-niche, a local colony of birds, or even single members or mating pairs of a near-extinct species. Environmentalists working to preserve old growth stands, for example, often focus their attention on a particular tree, one that may be the oldest or the most beautiful. Tree-sitters will anthropomorphize "their" tree and if they are to lose that individual, the loss is both symbolic and personal. While Greens tend to have whole systems as their focus, there are occasions when individuals come to the foreground. So while it appears that Reds and Greens see things in opposing ways, there are times when the scope of their perspectives is comparable.

Different Ethical and Political Commitments

These differences of scale and focus make for differences in the theories and policies to which Reds and Greens incline. Attending to individual patients, Reds are inclined to theories and practices that stress patient and professional autonomy, rights, and freedom from coercion except in emergencies and epidemics. They may invoke the power of government only in the framing and policing of public health policies, as well as for taxation needed to support medical research and to fund medical treatment. Greens, by contrast, are given to framing issues in terms of competing harms, benefits, and values and often look to government regulation as a political means for promoting their values. Greens are critical of the traditional focus on individual human rights, particularly property rights, as they are thought to license exploitative use of natural resources. Though some Greens want to assert the "rights of nature" and some animal liberation theorists would like to extend the class of rights holders

to include non-human animals, Greens, in general, tend to focus on harms and benefits and an appreciation of living beings and systems as "teleological centers" for whom things can go better or worse (see, for example, Taylor 1986 and Plumwood 1993). For Greens, arguing about harms, benefits, and promoting organisms' and systems' telic ends is more direct and compelling than trying to establish the "rights of nature". This also allows Greens to avoid the theoretical complexities of attaching rights not just to individuals but also to potentially diverse collectives. Harms and benefits are part of a more general framework of values, are more easily defined and debated, and have the potential to be more inclusive.

Greens can value human life and can certainly recognize the likely harms that befall humans when the natural world is in peril. Reds can show concern for animals and the environment too, although typically each group gives more weight to the life and health of their usual constituency. And each takes in beings outside their usual scope but, admittedly, only to the extent that those additional beings affect the life or welfare of their primary objects of value and concern.

Different Attitudes About Human Interventions

Reds tend to have high hopes for the good that can be done for current and future patients, and with cause. Apart from electronics and weaponry, there are few, if any, areas of human endeavor whose progress has been as steady and impressive as that of medical and surgical knowledge and practice in the last century. Some skeptics declared the end of the "Golden Age of Medicine" when new, highly contagious diseases—such as AIDS, SARS, and Ebola—suddenly appeared in the late 20th century. But within a short time the pathogens were identified, various treatments discovered, and the spread of the diseases containable with suitable government support. Admittedly, the "war on cancer" has not gone as well as predicted, but there have been some impressive victories and new grounds for predicting further progress against tumors that resist current treatments. New drugs are greeted and prescribed as "promising", even for off-label uses yet to be tested. When drugs fail to fulfill these promises, physicians are confident that better drugs are forthcoming, even if current patients may not live to benefit from them. Even when patients have not responded to a particular sequence of drugs, physicians foster and share the hope that a yet-untried remedy will work, even if it has helped few other patients in the past.

Greens forgo such happy talk and need a larger measure of hope, given far fewer successful interventions. There have been local improvements in water and land quality, remediation of brownfields and contaminated rivers, but initial successes on a larger scale have proved temporary (for example, ozone-hole contraction and improved Californian air quality). Moreover, there are frequent cases of counter-productive projects; for example, a reduction of chemical pollution that unexpectedly fosters predators that decimate the class of plants or animals one is trying to protect. Attempts at reintroducing critically endangered species such as whooping cranes or great apes back into their natural habitats have met with mixed success. Attempts to eliminate invasive species in order to promote or protect native plants and animals more often than not set off a cascade of unintended consequences. Recently, political inability to drastically reduce greenhouse gas emissions, itself a disappointment, has led some to begin discussing geoengineering projects as a solution to global climate change. Suggested interventions include: deflecting a small percentage of incoming radiation from the Sun by placing huge mirrors at the Lagrange point between it and the Earth; fertilizing the oceans with plant life to soak up more carbon dioxide; and capturing vast quantities of emissions from power plants and burying them in sedimentary rock deep underground (for a groundbreaking analysis of the moral hazards raised by geoengineering see Gardiner 2010). Such suggestions, however, find little favor with Greens. Given the history of disappointments and failures, human intervention into natural systems is generally thought to be a very bad idea by most Greens. These failures also contribute to a hopelessness that humans will be able to do anything useful to protect the natural world.

One explanation of this Red–Green contrast lies in the relative complexity of the causal nets in which Reds and Greens are intervening. As complex as physiological systems are, they are relatively intelligible, manageable, and predictable in comparison to ecological systems. Representation of the latter systems requires models, few of which come close

to fitting changes, say, in climate, species, or ocean currents. Projects to manage or preserve ecosystems require large numbers of co-ordinated actions, are rarely achievable without coercion, and may require more knowledge than we currently have—or can expect soon to have.

Given that Reds and Greens diverge in all these ways, one might think that any serious alliance is itself hopeless. We think it might well be if the alliance is predicated on the resolution of extreme conflicts; for example, when the only way to protect human life is by destroying a rare ecosystem. While there may be such extreme cases, there are many occasions in which there is more common ground. By examining two cases in which it may seem that the differences between Reds and Greens will lead to irreconcilable conflict, we can see that, in fact, there is much room for common cause and the potential for common ground.

Taxol and the Pacific Yew

After two decades of scanning flora for natural medicinals, the National Cancer Institute (NCI) discovered a substance, Taxol, in the bark of the rare Pacific Yew tree (Gordon and Walsh 2001). First in animal and then in small human studies, the drug reduced melanomas and ovarian metastatic tumors in a third of the subjects. Consequently, NCI ordered many tons of the bark to provide enough Taxol for large randomized clinical trials and gave Bristol-Meyers a five-year monopoly on the testing, production, and distribution of the drug. Oncologists, of course, hailed this promising drug, for they had little to offer patients with Stage III ovarian cancer. But with the prediction that increasing demand and use of Taxol for other cancers would require over 350,000 trees annually, environmentalists foresaw the extinction of the Yew trees within a few decades.

Reds did not accept such gloomy predictions. Given the high costs of producing Taxol, Bristol-Meyers would surely try to identify and synthesize the effective component, as well as searching for better natural sources. Or, even if they failed, they and other pharmas had ample incentive and prospects for developing other oncostatic drugs—or so thought optimistic Reds. Even if demand grew greatly, so, correspondingly, would supplies of Taxol from other sources—natural or synthetic—and the Yew would no longer face extinction.

As it turned out Greens were right about rapidly increasing uses and demand: doctors did prescribe Taxol for early stages of ovarian cancers, as well as for breast, head and neck, and lung cancers, including Kaposi's sarcoma. But Reds were right about Bristol-Myers finding less costly alternative sources, natural and synthetic. The initial conflict between Reds' patients and Greens' trees was dissolved without the need for any modification of their views or discovery of common ground.

Had they needed to, however, they would have easily found common cause—moral criticism of Bristol Myers. To maximize profits during the remaining years of their monopoly, Bristol-Meyers set the price per treatment at $10K, far higher than most cancer patients could pay. The net profit was $2 billion a year by the end of the original five-year monopoly—profits that Bristol-Myers maintained by holding off generics through fraudulent manipulation of patent law for another two years.

For Greens this would be yet another example of the shortsighted greed that causes widespread environmental devastation such as overfishing, strip mining, and deforestation for cattle grazing. Current publicly owned corporations are especially prone to such greed, given their goal of maximizing short-term profits. Such goals do not encourage corporate managers to think about long-term sustainability of natural resources: two decades of Yew bark would certainly be long enough for Taxol profits. In Reds' moral lexicon, rights and injustice look larger than virtues and vices. For them, Bristol-Myers' greed would be compounded by its violation of the rights of poorer women to a life-saving drug discovered initially at taxpayer expense. Indeed, the greedy are typically unjust, taking more than their fair share.

These co-ordinate censures of greed and injustice make Reds and Greens ethical allies in this and similar cases, but their common cause did not arise from common ground: sharing a common enemy does not make them lasting friends. So, let us consider a different scenario without a corporate villain to attack. Suppose the National Cancer Institute had retained control of the Yews and Taxol production. Could Reds and Greens have found common ground on which to take a common stand against unlimited bark-stripping as demand exceeded supply?

As a start, they both value Yews. Admittedly, Greens value Yews in themselves, and for their role in a larger ecosystem, while Reds value them for the sake of cancer patients. But these are not mutually exclusive or competing valuations: Greens value Yews for their value to other life, for example, for the sake of the Spotted Owls who nest in them. Likewise, Reds can value Yews for their age and majesty, in addition to the awe they may inspire in hikers.

Moreover, both Reds and Greens value human beings, again, for different but not necessarily mutually exclusive reasons. For Reds, even if they hold no principle of the sanctity of human life, nonetheless it is the saving, prolonging, and improving of human life that for them give medicine its mission. For Greens, even if much human activity is ecologically harmful, nonetheless humans are part of Nature and, like most of the animals with whom humans share the planet, humans are sentient beings. To value sentient life, arguably, includes caring about its pain and, where feasible and sensible, pain relief. Recognizing that humans are a valuable part of Nature does not mean that humans have superior moral standing in case of conflicts with other parts of Nature, but it does require attention in environmental interventions.

How far might these shared valuations come to constitute common ground in the Taxol case? Cast as a conflict between a species and a cohort of human cancer patients it would seem that Reds or Greens would have to abandon their primary commitments, but not so. It should be enough that each somewhat alters their usual focus, but in ways consistent with those commitments. Green champion, Al Gore, set Reds an example when charged with caring less for a single woman than for the six trees whose bark might save her. In reply, he said that he was as concerned with future women as with present women—namely, those countless women who would have no Taxol if the Yew were cut to extinction for current patients. That is, Reds need to take on Greens' long-range temporal view, suspending in this case a narrow focus on present patients. This would entail suspending optimism about new Taxol alternatives well before Yew bark requirements threaten the species. But neither modification is a radical change: the long-range view is common in public health; and among optimists only Candide expects the desired outcome in every context.

As for Greens, they need only adjust their focus to bring suffering individuals into clearer view, and so be willing to allow some risk to the non-sentient Yew for the sake of pain-relief among other valued living things. This might entail suspending their pessimistic predictions about future supply and demand, but again, only extreme—mostly fictional—pessimists uniformly predict the worst.

By making these modifications, which are consistent with their basic commitments, Reds and Greens could share rationales for a tripartite policy of Taxol production, research, and distribution undistorted by short-term profit maximization. There are, of course, issues of allocating funds to each of the three activities, but these are no longer framed as Reds' current patients vs Greens' Yew population. They are, rather, practical allocation problems regarding funds for drug production and provision vs research, which in turn is the problem of funds for present patients vs future patients. Of course, these are familiar problems for health policy analysts, as well as environmental agencies supporting conservation, restoration, and research. Importantly, the mutual accommodation and modification of Reds' and Greens' views proceeded without getting mired in predictable sources of contention: appeals to notions of human or non-human rights or intrinsic value, or the ranking of human and non-human life. Thus was the common ground cleared, as it were, of conceptual landmines.

Factory Farming Pigs

Let us turn to a different case, that of factory farming, in which the central characters are: groups of pigs, not species of trees; human meat-eaters, not cancer patients; and, once again, corporate profit-maximizers. Can Reds and Greens find common ground on which to make common cause with regard to restraints on human food production and eating habits?

Factory farming, the primary method for turning animals into food, involves a magnitude of death and suffering well beyond the Taxol case. Worldwide, meat consumption has increased more than fivefold since 1950, and now an estimated 53 billion animals globally are killed each year. Factory farms, the large-scale, intensive confinement operations that government agencies and industry now refer to as CAFOs—

concentrated animal feeding operations—control every aspect of the animals' lives from birth through slaughter.[4] In the United States, roughly 2% of all farms produce 40% of the animals consumed, while their corporate owners are opening more factory farms in countries that have relatively lax regulations and enforcement. For example, Smithfield Foods, the world's largest producer of hogs, expanded their factory farming operations into Romania, one of the poorest countries in the European Union, as well as to Mexico, with notable costs to human and animals alike. By mass-producing pigs, Smithfield Foods is able to manipulate the market, and in Romania, after temporarily lowering prices, roughly 90% of the small family farms were forced out of business in just a four-year period (Carvajal and Castle 2009). Many of the farmers sold their land and left the country to look for work. And its not just livelihoods that factory farming destroys, but quality of life in the communities in which they are located. In Iowa alone, hogs excrete 50 million tons of manure annually, and overall farm animals produce three tons of manure for each American (Bittman 2008). In the US, factory farms are usually located in poorer rural areas where the odor problems are more difficult to combat.

Given this vast amount of suffering that inevitably accompanies raising animals for slaughter in intensive farming, animal liberationists have made excluding animals from people's diets a central priority. But contrary to what we might expect, environmental ethicists early on did not view factory farming as an ethical issue. Many Greens are hunters and see the consumption of animal bodies as a way to bring us closer to "nature". It is not possible for everyone to hunt their own food, so eating animals that are killed for consumption may be considered the next best thing. J.B. Callicott, in the aforementioned article, urged that we draw a "sharp distinction between the very different plights (and rights) of wild and domestic animals". The latter, as transmogrified artifacts, are a blight and would constitute an environmental disaster if liberated to end their use in food production.

Greens now know, however, that the massive production of animals for food represents the real environmental disaster. Globally, factory farms are one of the major sources of greenhouse gas emissions. For example, beef production generates 24 times more CO_2 than the nutritionally equivalent serving of rice and vegetables (Bittman 2008).[5] Factory farms also significantly degrade air and water quality. Waste from factory farms, particularly nitrogen and phosphorus, have contaminated waterways and endangered local wildlife. The Sierra Club reports that in the US, "hog, chicken and cattle waste has polluted 35,000 miles of rivers in 22 states and contaminated groundwater in 17 states" (http://www.sierraclub.org/factoryfarms/). According to the US Department of Agriculture, "Animal waste in the United States has been estimated to contribute about 50% of all anthropogenic ammonia emissions, 25% of nitrous oxide emissions, and 18% of methane emissions" (http://www.ers.usda.gov/Briefing/AgAndEnvironment/animalagriculture.htm). A 2006 report produced by the United Nation's Food and Agriculture Organization, entitled "Livestock's Long Shadow" concluded that:

> [T]he livestock sector is a major stressor on many ecosystems and on the planet as a whole. Globally it is one of the largest sources of greenhouse gases and of on the leading causal factors in the loss of biodiversity, while in the developing and emerging countries it is perhaps

[4] Given that environmental costs (not to mention public health costs) remain externalities and much of agribusiness is significantly subsidized, there is some debate about just how efficient factory farming really is. See "CAFOs uncovered: The untold costs of confined animal feeding operations". A report by the Union of Concerned Scientists, April 2008. Available at http://www.ucsusa.org/food_and_agriculture/science_and_impacts/impacts_industrial_agriculture/cafos-uncovered.html. The relatively new CAFO terminology is potentially misleading as there is much more that happens on factory farms than animal feeding.

[5] Peter Singer (in Flannery 2009) has recently argued that this underestimates the greenhouse gas emissions attributable to livestock production as it doesn't take account of the immediate impact of methane: "discussions about which human activities contribute most to climate change are usually framed in terms of the impact those activities will have over the next century. Taking that perspective, a ton of methane is generally regarded as 25 times more potent, in causing global warming, than a ton of carbon dioxide … The reason why, over the next century, methane will be only 25 times as potent as carbon dioxide in causing global warming is that it breaks down much more quickly … Suppose that instead of taking 100 years as our time frame, we asked which emissions will contribute to climate change over the next 20 years. Then the difference in breakdown becomes less significant, and a ton of methane is not 25 but 72 times more potent than a ton of carbon dioxide in warming our planet" (133–134).

> the leading source of water pollution. (Steinfeld et al. 2006, 267)

The increased attention that factory farming has received by national and international organizations may be, in part, a result of the work that environmentalists and animal liberationists (both activists and scholars) have done to try to expose the problems with modern food production.

But why has it taken so long? Those concerned about the treatment of animals, and a few insightful environmentalists have been trying to bring factory farming to public attention for decades. Indeed, two path-breaking women began that work almost 50 years ago. Factory farms first came under scrutiny in the early 1960s with the publication of Ruth Harrison's *Animal Machines*. Rachel Carson—whose *Silent Spring* (1962) exposed the devastating environmental consequences of pesticides, and argued that "better living through chemistry" is, in fact, not better but calamitous—wrote in the preface to *Animal Machines*:

> Modern animal husbandry has been swept by a passion for "intensivism"; on this tide everything that resembles the methods of an earlier day has been carried away. Gone are the pastoral scenes in which animals wandered through green fields or flocks of chickens scratched contentedly for their food. In their place are factorylike buildings in which animals live out their wretched existences without ever feeling the earth beneath their feet, without knowing sunlight, or experiencing the simple pleasures of grazing for natural food—indeed, so confined or so intolerably crowded that movement of any kind is scarcely possible. (Harrison 1964, vii)

Carson's prescience extended beyond animal welfare and the environment:

> I find it inconceivable that healthy animals can be produced under the artificial and damaging conditions that prevail in these modern factory-like installations … The question then arises: how can animals produced under such conditions be safe or acceptable human food? (Harrison 1964, vii)

Besides the question Carson raised, concerns about safety and the human health impact of factory farming were rarely posed initially. Yet in the past few years the public health risks associated with intensive rearing of food animals have captured global attention. Links between human health threats such as mad cow disease, salmonella, and avian and swine flu viruses and factory farms, not to mention links between the "intensivist" mindset and fast food, and increased rates of obesity and diabetes, have finally provided the impetus for a re-examination of this system of food production.

But let us return to the plight of the pigs. Pigs are highly intelligent, social animals that suffer terribly on factory farms. They are also genetically similar enough to humans that they are susceptible to human flu viruses. They are also susceptible to avian viruses, and have been referred to as "mixing vessels" in which strains of human, avian, and swine influenza swap genetic material to become ever more potent. The potent viruses can jump from pigs to humans and back again. Virologists have suggested that pigs were the intermediate hosts responsible for the birth of the last two flu pandemics in 1957 and 1968 as well as the current influenza A (H1N1) virus (S-OIV) (See Wuetrich 2003; and Smith et al. 2009). Not surprisingly, large concentrations of pigs, as exist on factory farms, increase the risk of human exposure to these viruses because the humans who work on factory farms come in contact with a large number of animals on a regular basis. The first known cases of the 2009 pandemic were reported in the village of La Gloria, near Perote in the Mexican state of Veracruz. Perote is home of Smithfield Foods subsidiary Granjas Carroll de Mexico, a factory farm operation that brought almost one million hogs to market in 2008 and owns 56,000 sows. Although Smithfield claims it found "no clinical signs or symptoms of the presence of swine influenza in the company's swine herd or its employees at its joint ventures in Mexico" and scientists have now reported that the virus probably began infecting humans months before the infections gained attention, there have been heightened calls for increased oversight of intensive animal production. Factory farms are incubators of disease and the regular use of antibiotics to prevent disease is contributing to multidrug resistance, which is making it harder to contain illness. Increasingly, governments, as well as health and consumer protection organizations, are realizing that the way animals are raised on factory farms is directly linked to a negative impact on human health.

Greens might initially find this anthropocentric focus aggravating given the vast destruction of non-

human life and the environment that factory farming has caused and will continue to cause if reforms are not enacted. But it cannot be denied that Reds' concerns do have a direct motivation associated with them: if people are getting sick here and now, then there is a stronger impetus for action. Focusing on the human health consequences of certain environmentally destructive practices, such as factory farming, increases the range of motivation for Green living. When the consequences are immediate, unlike say global climate change or biodiversity loss, then calls for remedy are louder. The force of Reds' focus on immediacy can lead to change and if a concern for human health leads to more sustainable food production practices, which in turn has good consequences for non-human as well as human animals and their environments, it makes sense for Greens to welcome Reds as allies, as in the case of Taxol and the Yew.

But while Reds and Greens can make common cause and demand changes to, perhaps even the elimination of, factory farming practices, is there any common ground for them to stand on? Perhaps a recognition of the dangers of "intensivism" that Rachel Carson recognized long ago might provide for common ground. The mass and fast production of animals for food, much like the mass production of automobiles or soon-to-be obsolete consumer products, is motivated on the part of producers largely by desires for profit, and on the part of consumers largely by desires for convenience and status. These impulses contribute to a failure to engage in meaningful ways with the environment from which these products come, and in the case of sentient beings, the suffering that the animals endure. These desires also contribute to a host of stress related health problems. Intensivism leads to alienation and perhaps Reds and Greens can find common ground in efforts to resist it. The "slow food movement" that works to ensure that good food is produced in a fair way that does not harm our health, the environment, or animal welfare is a vivid example of successful resistance to alienating intensivism. The slow food philosophy might set the table where Reds and Greens can comfortably eat.

A Concluding Moral

We have highlighted the ways in which Reds' focus on immediate health and Greens' focus on long-term sustainability, while seemingly at odds, can actually bring Reds and Greens into common cause. We have also identified ways in which Reds and Greens may even share common ground. Notice, however, that there are a number of divisive concepts our Reds and Greens have avoided: use of the instrumental/intrinsic value distinction, the ranking of lives as superior and inferior or more and less deserving of protection, appeals to rights, and so forth (for a discussion of some worries about "intrinsic value" see Gruen 2002). It is a feature of close associations that associates know what topics to avoid—and do so. We hope we have shown how Reds and Greens have enough in common to build alliances without the need for divisive concepts.

It is a peculiar feature of current moral philosophy that issues are cast as trade-offs or conflicts of competing, incompatible values. Those dualistic contests invite the very divisive concepts we suggest might be eliminated from Red–Green dialogues. There is a deeper reason to avoid these constructed contests—they distort our moral life. We are often called to respond and attend to various needs in serial fashion. Good people develop or maintain sensitivity to the needs and interests of a variety of morally considerable beings, human, non-human, or even divine, and arrange their lives so as to respond within limits to them all. There is no reason why Reds and Greens cannot agree on what things are morally considerable, and on the correlative duties or appropriate virtues in responding in various (but not all) contexts in which their interests are essential to their life and health. Only rarely do we face a stark choice between the life and health of humans and the life and health of a group of animals or an ecosystem, except in current moral theorizing and ethics textbooks.

Indeed, even in warfare are we rarely faced with that conflict of human and non-human life and health. Modern tactics and weaponry kill indiscriminately not only combatants and non-combatants, but also humans and non-human fauna and flora. Occasionally, as in Vietnam, the US targeted elephants on the Ho Chi Minh trail and sprayed 3 million acres of forest and crops with Agent Orange; those operations took a large, uncountable toll of human and non-human life as well. Sometimes war analysts do keep a separate census, somehow arriving at the figures, for example, that in World War I five times as many animals as

men were killed, including 8 million horses. But there is little moral point in analyzing the carnage of war into human and non-human categories, except to remind us of the pain and suffering of those beings otherwise dismissed or overlooked as "collateral damage". There is surely no call to assign relative weights to human and non-human death and multiply the numbers. Reds and Greens can, without such moral mathematics, simply consider carnage without refinements. They may not agree to pacifism, but they could plausibly arrive at a mutual anti-militarism, as well as an anti-nationalism, which fuels and is generated by war. Just as more and more doctors have to subscribe to the principles of Doctors without Borders, just so most environmentalists are almost by definition Environmentalists without Borders, all of them rightly concerned about the increasing spread of disease and declining health among populations of both humans and non-humans alike.

In summary, Reds and Greens tend to differ in perspective, concern, temperament, and expectations—but these differences need not produce conflict or animosity. Moreover, their differences can be moderated by a shared view of what deserves moral consideration and/or protection. Their moderated differences only rarely generate direct conflict, dilemmas, or the need to rank human and non-human life for a resolution. This is not to say that biomedical ethicists and environmental ethicists cannot properly disagree, but when they do they can reach a better understanding of the objects of mutual concern. That is, Reds can come to a greater appreciation of non-human life and Greens of human life, as well as of the varying threats to both that corporate, militaristic, and nationalist assumptions and practices increasingly pose. An alliance so motivated would please Van Rensselaer Potter who, in the 1960s, called for a new field of Bioethics that would lead to better-informed political leaders and international treaties to restrain this industrial–military domination (Potter 1971). Arguably, there is an ever-greater need a half-century later, and perhaps more grounds for hope.

Acknowledgement The authors would like to thank two anonymous referees for comments, and Dale Jamieson for illuminating discussions of the concerns of this paper.

References

Bittman, M. 2008. Rethinking the meat-guzzler. *New York Times*. January 27, 2008.

Callicott, J. Baird. 1980. Animal liberation: A triangular affair. *Environmental Ethics* 2: 311–338.

Callicott, J. Baird. 1994. Preface to animal liberation: A triangular affair. In *Environmental ethics*, ed. R. Elliot. Oxford: Oxford University Press.

Carson, R. 1962. *Silent spring*. Boston: Mifflin.

Carvajal, D., and S. Castle. 2009. A U.S. hog giant transforms Eastern Europe. *New York Times*. May 5, 2009.

Flannery, T. 2009. *Now or never*. Jackson: Grove Atlantic.

Gardiner, S.M. (2010) Is 'arming the future' with geoengineering really the lesser evil? Some doubts about the ethics of intentionally manipulating the climate system. In *Climate ethics*, ed. S.M. Gardiner, S. Caney, D. Jamieson, and H. Shue. Oxford University Press, forthcoming.

Gordon, J. and V. Walsh. 2001. *The story of Taxol*. Cambridge: Cambridge University Press.

Gruen, L. 2002. Refocusing environmental ethics: From intrinsic value to endorsable valuations. *Philosophy and Geography* 5(2): 153–164.

Harrison, R. 1964. *Animal machines*. London: Vincent Stuart Publishers, Ltd.

Jamieson, D. 2003. *Morality's progress*. New York: Oxford University Press.

Pierce, J. and A. Jameton. 2004. *The ethics of environmentally responsible health care*. New York: Oxford University Press.

Plumwood, V. 1993. *Feminism and the mastery of nature*. New York: Routledge.

Potter, V.R. 1971. *Bioethics: A bridge to the future*. New York: Prentice Hall.

Sagoff, M. 1984. Animal liberation and environmental ethics: Bad marriage, quick divorce. *Osgood Hall Law Journal* 22: 297–307.

Smith, G.J.D. et al. 2009. Origins and evolutionary genomics of the 2009 swine-origin H1N1 influenza A epidemic. *Nature* Published online 11 June 2009.

Steinfeld, H. et al. 2006. Livestock's long shadow: Environmental issues and options. FAO. Available: http://www.fao.org/docrep/010/a0701e/a0701e00.HTM.

Taylor, P. 1986. *Respect for nature: A theory of environmental ethics*. Princeton: Princeton University Press.

Wuetrich, B. 2003. Chasing the fickle swine flu. *Science* 299: 1502–1505.