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Editor's Note: The following three articles are based on papers read at the Dordt College Bioethics Conference held February 19-20, 1996. Dr. Vander Zee's was the opening presentation.

Bioethics: Overview and Context, a Landscape of Issues



by Delmar Vander Zee

Bioethics, biology, biosphere—life. All of these words have to do with life—human life and other kinds of life. How do we see, understand, and relate to this living world? How do we view the other living creatures in the world? Who are *we*? What is ethics? Why should we care?

Valuing Life

Is this world a stage for the human drama, with living and nonliving parts serving as props to be used, moved around, arranged, dismantled and reassembled at will—always serving the purpose

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of the play in progress? Is the physical and biological world to be seen only or primarily as so many goodies—raw materials, to which value is added by artisans, craftsmen, industrial fabrication and development? Is nature, the rest of creation—including its biota and the wild systems that support them—here solely to serve humankind?

Do the creatures around us have intrinsic value, not autonomous value, but value other than that derived from their usefulness to us? If creatures have value that is not derived from their usefulness to us, what is the nature of that value? If these creatures have value, do they also have rights? Are rights autonomous, or given, or based on their sentience, or capacity for pain?

Do higher levels of biological and ecological order (organization) have value? or rights? For example, wetlands, forests, rivers—should their *integrity* be maintained? Do we have an ethical responsibility toward them? Admittedly we more easily assent to individuals—trees, deer, birds—as having value or even rights, but it is harder to claim the same for higher ordered systems such as wetlands or forests. And value for these is easier to accept than rights because value draws us into the picture. But do not human groups and organizations, as well as states, have “rights”? So why does it seem strange to think of an estuary as having rights; estuaries certainly have value.¹

To get at this issue we must probe more deeply into the nature of “otherkinds.”² Do they exist individually or communally? Independently or dependently? Is not their value dependent on several levels of ecological relationships? Consider the fol-

lowing. If a great-plains cottonwood (*Populus deltoides*) in place by a prairie swale has value, to whom? for what? Value implies a relationship. Does value mean usefulness? Yes, in part, but not just in a narrow, crass, consumptive sense. If usefulness is seen holistically, maybe. This tree might be a habitat for thousands of insects, dozens of birds, a few mammals. It might be shade, a pleasant sight, a landmark, a windbreak. It is a source of soil humus as its annual deciduous leaves join the decomposers around its roots. It is one of thousands of fellow creatures that are engaged in the great gaseous cycles of carbon dioxide and oxygen. Its bark produces a natural analgesic and its roots are symbiotically tied to a soft mesh of mycorrhizal fungi which speed up the recycling of nutrients. It can reproduce and connect to future generations across time. It serves as a metaphoric witness of what the righteous are like (Psalm 1). If its capacity for fruitfulness is sustained, then it might even be useful for wood and fiber products to be made from its cellulose-laden boughs. And when we see the cottonwood in its wholeness, we know of another value, a divine usefulness—the trees of the field can clap and sing for joy in doxology (Psalm 96, 98). Take this picture and multiply it by all the kinds of creatures, connections, and interrelationships in a community or ecosystem and one begins to sense the inadequacy of focusing on mere individuals, even though individuals all play key roles.

One could make these same observations and reflections about every creature under the sun—many of which have yet to be named, a project begun by Adam at God's direction. And, then, there is humankind, another biological creature, in many ways the same as those other kinds. Her cells, for example, function essentially the same way as the cells of all other creatures, bacteria excepted. His body, organs, tissues, and limbs are remarkably similar to those of other vertebrate animals. So are we just another creature on the landscape? A naked ape? A clever tool maker? In what lies our uniqueness? Why are we concerned with ethics—with bioethics?

Are we special because of our reasoning capacity? Because of our creativity? Because we can communicate? Some have said, yes, herein lies mankind's uniqueness; something structural about

us is different, something in our minds, in our bodies. Another view speaks of the relational distinctions. We are *imago Dei* because God said, "Let us make man in *our* image." The creation blessing of Genesis 1:28 tells of our position, a relational one, one where humankind is placed to represent God in His creation, a position where humans in their lives will show who God is. In that sense, Adam and his descendants are the servant dominion bearers. Herein lies the uniqueness of humankind. No other creature is called to represent God; no other creature has the choice of obeying or disobeying; no other creature is accountable.³ All humans will image a G(g)od, some god. Their lives witness to where their knees bow and to "whom" their praise extends.

Now it should be clearer why we are concerned about bioethics. In Genesis 2:15 we are called to *shamar*—to keep—the garden. Just as the Israelites were told in the Aaronic blessing (Numbers 6:24-26) that the Lord would "keep" them—in wholeness, in health, in right relationships, in *shalom*—so we hear Jahweh say, "Adam, when you keep the garden, keep it as I keep you."

Some views from Scripture and contemporaries. When one reads the Scripture, it becomes obvious that both humankind and other kinds are taken very seriously, that the lives of all creatures are not trivial but highly valued by God. Consider these passages. "If you come across a bird's nest beside the road, either in a tree or on the ground, and the mother is sitting on the young or on the eggs, do not take the mother with the young. You may take the young, but be sure to let the mother go" (Deut. 22:6-7). Or, "Is it not enough to feed on the good pasture? Must you trample the rest of your pasture with your feet? Is it not enough for you to drink clear water? Must you also muddy the rest with your feet?" (Ez. 34:18). And, ". . . but during the seventh year let the land lie unplowed and unused. Then the poor among your people may get food from it, and the wild animals may eat what they leave. Do the same with your vineyard and your olive grove" (Ex. 23:11). Furthermore, "But ask the animals and they will teach you, or the birds of the air, and they will tell you; or speak to the earth, and it will teach you, or let the fish of the sea inform you. Which of all these does not know that the hand of the Lord has done this? In his hand is

the life of every creature and the breath of all mankind" (Job 12: 7-10). To Jonah the Lord said, "You have been concerned about this vine, although you did not tend it or make it grow. It sprang up overnight and died overnight. But Nineveh has more than a hundred and twenty thousand people who cannot tell their right hand from their left, and many cattle as well. Should I not be concerned about that great city?" (Jonah 4:10-11). Such is God's final statement to the recalcitrant Jonah. God is concerned about pathetic sinners, but their livestock as well. When God chides Jonah He does not see the city as just people, He sees the city holistically, the cattle, too, are included in his compassion.

Moving from biblical wisdom to the present situation, we note a more recent prophet, one who did not openly acknowledge the Lord, but nevertheless one acting as Cyrus, doing, I believe, the Lord's bidding. "The first ethics dealt with the relation between individuals; the Mosaic decalogue is an example. Later accretions dealt with the relation between the individual and society. The Golden Rule tries to integrate the individual to society; democracy to integrate social organization to the individual. There is as yet no ethic dealing with man's relation to land and to the animals and plants which grow upon it. Land, like Odysseus' slave-girls, is still property. The land-relation is still strictly economic, entailing privileges but not obligations." So begins Aldo Leopold in his essay on the Land Ethic in *A Sand County Almanac*.⁴ Although Leopold made his observations nearly 50 years ago, his assessment still stands.

Gottfried implies the same assessment of modern life when he writes that this objectification of the land relationship "... allows us to do the same to anything else—minorities, women, children, unborn, future generations, species, ecosystems, and entire landscapes."⁵

A transition to our own views. Having considered some general views of dealing with living things, and a few examples from the Biblical literature, we now need to examine our own views of how to treat life. But as we do this, we can easily demonstrate that each person already has some kind of ethic that determines how he or she views, responds to, reacts to, or feels about a given living subject/object. We all, whether a professional biol-

ogist, ethicist, or otherwise, have an embedded, perhaps unspoken and unexamined bioethic. We have views or attitudes toward other creatures around us—ways of evaluating, responding, reacting, anticipating, wondering, fearing, ignoring, seeking, wanting, voting.

We can easily demonstrate that we have attitudes and views that determine how we relate to and respond to other people, to other creatures, and to our own bodily physiology. All one has to do is to identify any of several biological or ecological entities. Consider what comes to mind when the words listed below are read.

*We all have an embedded,
perhaps unspoken and
unexamined bioethic.*

- | | |
|-------------------------|-----------------------------------|
| -Kiwi fruits, kittens | -acne, ozone |
| -poison ivy, wolves | -frogs, biodiversity |
| -salmon, spiders | -weeds, pests |
| -virus . . . AIDS virus | -corn, cactus |
| -penicillin, aspirin | -great horned owl,
spotted owl |

What comes to mind is not just cognitive—what these things are—but also attitudes or affective responses. What is the origin of these responses? Our responses are probably based more on our cultural and social past than on any formal training or coaching. Do our attitudes/views make any difference? Or are they just a private thing—as some people happen to be afraid of spiders? Or, consider "drugs." We all have a view of drugs. Drugs can blow our minds, steady our hearts, retard disease, control ovulation, induce hair growth, destroy cancer cells, induce labor, foster immunity, reduce swelling and pain. We expect that with drugs we can control/regulate our discomfort, satisfy our expectations, and make up for indiscretions.

But what we want to examine more carefully is whether or not our feelings and responses are those of image bearers. Too often we have a Baconian view of how to relate to our own biological function. How often have we not heard or said, "Why don't you see a doctor, maybe he can 'give you something'?" We exhibit a very similar view when confronted with a garden "pest." "Why don't you 'put something on it (the pest)'?"

“Taking something” or “putting something on” seems much easier than changing life habits or gardening methods.

The point of the above mental foray is to demonstrate that everyone has in some sense a bio-ethic. We have ways of dealing with other biological creatures, with our own bio-physiology.

Our present situation, the ethical landscape

In this paper I will more formally and critically analyze how we ought to relate to other creatures, for their health and well-being, and how we ought to relate to our fellow folk for their health and well-being. What fills our agenda is really more than a mere topic, and more than an issue. There is a field of issues—what could be called a landscape of issues. The terrain is at once breathtaking and challenging, if not downright scary. Much of it is unexplored except by specialists. Even the language describing the technologies and issues can be esoteric and jargon. What lies before us is an ever increasing capacity to alter the biological aspects of creation at rates and at quality levels unknown just a few decades ago. And we are not only capable of altering biodiversity and ecosystems, but we can also alter genetic blueprints of any creature we choose, including humans. We can play God in a sense, but do we also know how to image our God properly and obediently? Or, whose god are we imaging?

In this paper and the ones following we will not pretend to have all the answers; in fact, it is more our intent to learn how to ask the right kinds of questions. We will no doubt raise more issues and questions than we will answer. That is not just the nature of an academic discourse prone to theorizing, rather, it is the nature of the historical situation in which we find ourselves. We and our scientific technologies are moving faster than we as a moral society can adequately comprehend. We have a gut feeling from what remains of our moral compass that we need to take stock of our coordinates, our position. We need to be informed of some hard questions and realities. And, because we have not done much in the way of developing a land ethic (as Leopold called for in 1949), our ethical and legal abilities have to catch up with our technological capacity.

Bioethics, the origin and use of the term. Bioethics as a field of study emerged only rather recently, in the early 1970s. Ethics itself has a longer history, and a field known as medical ethics emerged in the 1950s, probably identifiable with a book by Joseph Fletcher called *Medicine and Morals*.⁶ Bioethics as a term and field of study finds birth about 25 years ago. Van Rensselaer Potter proposed the following: since the two “cultures” of science and the humanities are unable to speak to each other, we need a bridge, a new discipline, and he proposed to call it *Bioethics*. Furthermore, he noted,

Ethics constitutes the study of human values, the idea of human character, morals, actions, and goals in largely historical terms, but above all *ethics implies action* according to moral separated from a realistic understanding of ecology in the broadest sense. *Ethical values* cannot be separated from *biological facts*. We are in need of a Land Ethic, a Wildlife Ethic, a Population Ethic, a Consumption Ethic, an Urban Ethic, an International Ethic, a Geriatric Ethic, and so on. All of these problems call for actions that are based on values *and* biological facts. All of them involve Bioethics, and survival of the total ecosystem is the test of the value system.⁷

Note that though this was written in 1971, it sounds very modern and very urgent. We have not completed the agenda set out a quarter-century ago by Potter.

But Potter’s reflection also helps us focus on something else. Whether we speak of humankind or other kind, we are talking about the health and well-being of both. I believe the Scriptural term for this is “fruitfulness.” The blessing given in Gen. 1:22 and 1:28 speaks of fruitfulness and multiplying. Genesis 1 recalls repeatedly the ordinance of “according to or after their kind.” This in essence means to be able to be what God intended for each kind; life was to continue, generationally. Genesis 1 tells us that fruitfulness is a blessing of Jahweh, not of the fertility gods. Following each note of “after its kind,” we hear God declare, “good,” and finally for everything, “very good.”

Potter goes on to say in the opening of his book that because life support systems continue to deteriorate, we need to be increasingly concerned about survival. It is particularly here that Potter calls for a “*science* of survival, and it must start

with a new kind of ethics—bioethics.”⁸ We should understand survival to mean not merely life hanging on minimally, but life flourishing—human life (the immediate concern of most medicine), and also whole species or populations. More recently a concept has emerged that is in principle related to or equivalent to survival ethics, namely sustainability. Its use is more common in environmental and agricultural literature.⁹

The origin of the term “bioethics” is deeply rooted in ecological thinking, but today there is a tendency to equate bioethics with medical ethics. The near equation of bioethics with medical ethics has its roots in a conference at the Institute of Religion in Houston, Texas, where Paul Ramsey spoke on “The Patient as Person,” published a few years later by the same title.¹⁰ A theme issue of *Christian Scholar’s Review* called “Christianity and Bioethics,” published in March of 1994 (guest edited by A.D. Verhey and J.D. Cox), essentially equates bioethics with medical ethics, an indication of the way the term is increasingly used in North America. However, I believe that we need to use the word “bioethics” according to its more literal etymological meaning. Bioethics certainly intersects with medical ethics, but biotic concerns of humanity are much broader than medicine: the landscape has many features, medicine certainly being a prominent one.

Some basic definitions. *Ethics* is an “intellectual discipline that reflects upon a dimension of human experience, the dimension . . . denoted as ‘moral.’ It attempts to analyze the necessary conditions for moral activity and to indicate normatively what moral principles and values ought to govern human action.” *Medical ethics* is simply the ethics that restricts its interest to the moral dimensions of human action in the arena of medicine.¹¹ So, then, what is *bioethics*? By extension it could be defined as the ethics related to the moral dimensions of human activity in the arena of the biotic—where human beings in their work, their play, and their technology interact with other living creatures.

This definition certainly suggests many questions. Most of us are comfortable thinking about or at least recognizing the place of ethics in medicine, because we are used to thinking and dealing with other humans in a moral sense. But acknowledging a moral and ethical dimension

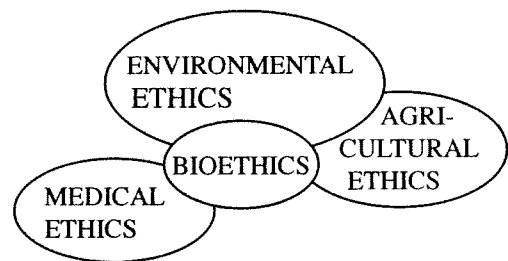
between humankind and other kind does not wear quite as well. We are not as familiar with its scope, its terms, its implications, or maybe even its validity. But recall above where we demonstrated that we all have a set of core beliefs or responses to many biotic things. So, perhaps this dimension or ethic is not as strange as we might first imagine. Perhaps we can establish that connection and develop some insights into how to respond obediently to some of these other larger issues.

Broadening the definition. I will now define bioethics more broadly, not only to clarify basic terms, but to suggest that bioethics is more comprehensive. When we discuss the ethical treatment

*Our technologies are moving
faster than we as a society
can comprehend.*

of life forms other than humans, the discourse becomes qualitatively different. As long as bioethics is equated with medical ethics, the discussion is essentially anthropocentric, human to human. When the definition is broadened, the discussion becomes more biocentric—humankind to other kind. Precisely here we must explore areas of discomfort.

Bioethics at its core intersects with three related ethical areas: medical ethics, environmental ethics, and agriculture ethics. Because of this core



intersection, bioethics cannot and should not be limited or reduced to medical ethics, as this diagram reveals. Furthermore, each of these three areas of ethical consideration connects to other fields, social and political ethics, for example. In the questions and examples that follow, the biological core of medical, environmental and agricultural ethics will become more evident.¹²

Our cultural context. Where do we find ourselves culturally, and how does this position affect

our moral reflection? I believe several characteristics of our culture make moral reflection and action difficult.

1. The rapid development of technologies in the medical sciences and practice, with parallels in food and agriculture, and the effect of modern life on the broader environment: Interest in medical ethics and bioethics grew about 50 and 25 years ago respectively. This is not to say that there was no medical ethic before that. One only has to refer to the Hippocratic Oath and its 2500 year tradition to realize that moral considerations in medicine have a very long history. I believe that the increasing interest in ethics in medicine, biology, ecology and agriculture is directly related to the many new technologies and the uncertainties attending these. Our new technologies involve culturally untempered ways of dealing with people and other creatures. And the rate at which these changes are coming into practice, or potential practice, is faster than the pace of religious-cultural-political adjustment or alignment.

Having said this, however, I must also note that technologies do not arise in a vacuum or in a neutral social ethos. Discoveries and developments do not just happen. They emerge in the context of social paradigms or worldviews.¹³ For example, in the West we have a view of medicine that is heavily influenced by the germ theory of disease and chemotherapy. But when joined with a Baconian (to master is to obey) and Cartesian (rationally reductionistic) view of the world, a medical ethos (underlying spirit of a culture or behavior) emerges that expects that we can control or fix the parts. We tend to spend more research money on remediation than on prevention.

2. Esoteric new medical technologies make clear understanding of what is happening difficult for the layperson: It is one thing to have informed consent when one is getting a broken arm put into a cast. It is quite another for a person to comprehend talk of probabilities and cost-benefit when entering a complex or experimental procedure. The latter are more the jargon of the research lab, yet patients are expected to sign off on procedures they do not understand. This understanding gap also exists for what farmers are encouraged to put on their land or feed their livestock. The means are in the category of "trust me," the end result is what

we all want, improved health (we hope) and higher yields. This is called aim ethics or consequential ethics. Given this ambiguity, wherein lies accountability?

3. The problem of unanticipated spinoffs, boomerangs, synergisms—or the limitations of a faith in technological fixes: We need to make the painful admission that technological fixes are limited. We need to focus on this point, because we don't hear much about it. We prefer to hear and brag about the success stories. However, most new technologies have side effects that emerge as new problems which were unanticipated, and often these problems are more intractable than the one originally solved. A few examples should illustrate: 1) Green revolution seeds increased food production but they also led to a) loss of native land races, b) dependencies on purchased inputs, c) loss of local markets, d) increased vulnerability to disease epidemics. 2) CFCs were a great inert refrigerant, until we discovered what these chemicals do to ozone in the upper atmosphere. 3) Pesticides kill "pests" but they also a) select for resistant strains of pests, b) kill non-target organisms, c) get into the food chain and water table, and d) some act as estrogenic compounds and affect fertility of non-target species. These do not enter the calculus of the story of "success."¹⁴

4. The centralization of social life and its institutions, including medicine, makes it difficult to trace accountability and culpability: In much earlier times when societies, economies and technologies were decentralized, the community, village, or indigenous culture would deal with emerging new technologies locally as they developed over long periods of time. Today, the locus of the cultural ethos is increasingly centralized, not community (neighborly) based. The overwhelming paradigm of how we deal with "delivering the goods" today is the industrial model. That is increasingly the case in practicing medicine as well as in producing food. So today, we not only have many different technologies but are also faced with different spatial and time scales. Some examples: 1) A fast food chain is found to have poor quality meat. Where does it come from and who should be accountable? 2) Non-point sources of pollution collect down wind, in estuaries, or in the upper atmosphere; again who is accountable?

3) Who is asking for the mahogany veneers which in world markets cause the deforestation of Borneo?

5. We live in a society that is individualistic and market driven: We have come to expect the “market” to deliver what we want. *And* the market tells us what we should desire. This is true in health care, in farm field “care,” and in how we interact with “nature.” We are in a consumptive mode. We even have vacation packages sold so that we can get away to wild nature. We are inexorably urged to follow. There is a smorgasbord of things to consume, and likewise there seems to be coming a smorgasbord of expected behaviors in medicine. Does the phrase “the customer is always right” apply to medical technology? Is it right to research and develop any new medical technology that has a market, or for which a market can be created? Does not then the doctor become the vendor in the health care “industry?” Is not that a significantly changed role for a provider of health care? Even though we do not understand and comprehend all these developments, some of these behaviors and options give us pause; we feel that some things are not congruent with what remains of an internal moral compass.

Likewise, we also have to recognize the cult of individualism and personal happiness. These are engendered by at least three cultural forces: organized religions, the American Civil Religion, and popular culture—all of which continue to tell us that the seat of morality and choice is the individual and her or his happiness. What about family, community, the next generation? We live as if we are *Homo individualis* var. *consumptorissimus*. In the face of this, Christians are called to recognize that we really are *Homo imago dei* (not *Homo sapiens*) in covenantal community; yet we find our moral compass being pulled to directions that are strange and often ambiguous.

6) Environmental uncertainty: Not only are there many options available in the marketplace of the health care industry, but we are also faced with issues that have human-biotic-environmental dimensions as well. Here, too, we have little or no history of knowing how to act, knowing what is right. The uncritically accepted social paradigm that has given impetus to Western life includes the following: there are always new

frontiers to conquer; development and progress are good; wealth trickles down; new technology will bring solutions. On the basis of these assumptions we have acted, but those assumptions may not be sustaining us, or at least that is what earth-watchers are telling us. Robert Gottfried has suggested that the so-called success of Western science and culture might not be the consequence of education and technology; rather, education and technology are merely instrumental in extending our grasp. The plasticity and capacity of the environment to absorb our wastes and externalized costs may be the real explanation.¹⁵

Bioethics intersects with medical ethics, but biotic concerns are much broader than medicine.

The Landscape of Issues

The landscape metaphor is useful because it brings to mind uneven and varied terrain, unexplored areas, cloudy horizons, pitfalls, maybe even cold winds of change. Following are lists of questions and technologies that should help us to consider what is a proper ethical stance for Christians. These are presented as illustrative, not as an exhaustive iteration of issues. The broadened definition will be followed here to include the medical domain, the environmental domain, and the agricultural domain.

A. In the medical domain we will first consider the range of more traditional, or broad issues:

-What is the goal of medical science and practice? Is it whole person health, or longevity at any and all technical expense? is it prevention? or reactive biochemistry? or replacement/repair of worn out parts?

-Is health care for the masses? or for those who can afford it? and who pays? Is this an appropriate role of government? or of third party providers?

-Which heroic measures should be applied at the end of life? What about living wills, advanced directives, informed consent? The time of “clinical death” now becomes a critical factor when considering the legality and ability to “harvest” viable organs for transplant.

-We once thought abortion, euthanasia, physi-

cian assisted suicide, and/or mercy killing were clearly understood. Now many in society and some in the church are giving mixed signals.

A second medical area of ethical challenge is the technological development in tissue and organ medicine.

- We have come to accept tissue and organ transplants from human to human, but what about transgenic organ/tissue transplants (pig skin and heart valves, baboon bone marrow)? Is this ethically the same as artificial organs grown for example on/in mice that are immunologically neutral?

- What about fetal tissue research? Is the banking of umbilical cord stem cells (which are fetal tissues) for treating future blood diseases included in this ethical discussion?

- What about the use of laboratory animals in medical and cosmetic research? Are we bound here to any ethic beyond utilitarian use?

A third major field that calls for rethinking Christian ethics is that of biotechnology in medicine, especially the reproductive technologies.

-The following are possible and becoming practiced: *in vitro* fertilization, super-ovulation, artificial inseminations, gender selection, surrogate mothering, abortifacient "birth control" such as IUDs and RU486 pills. Why the presumed need to develop these alternate reproductive technologies? How do we respond to these Christianly?

Fourthly, there is the emerging area of genetic medicine enabled by biotechnology. Unavailable just a generation ago are the options for genetic testing and screening, the beginnings of gene therapy,¹⁶ and the use of pharmaceuticals derived from genetically engineered bacteria (e.g., insulin). One of the most costly and potentially invasive of all biotechnology projects undertaken is the human genome project. The knowledge and technology gained from this have ramifications socially, psychologically, legally in terms of privacy rights and proprietary rights, and politically in terms of power and control.¹⁷ It is quite clear that our reach and grasp are well beyond our wisdom.

B. The environmental-biological domain: If questions in the medical field seem daunting, this field raises even larger and more ponderous issues. What is offered here is only a sampling. Other references should be consulted for a more compre-

hensive overview.¹⁸ In addition to the emerging Christian consensus that we are to consider ourselves earthkeepers, particular areas transcend personal behavior and choice. What should be a society's stance regarding biodiversity issues, and who is accountable? How many species should be preserved? Who is the proper owner of native germ plasm? This was one of the main hitches at the Rio Earth Summit between U.S. interests and "South" or third world interests.¹⁹ Should genetically altered bio-forms be released into the environment, and what is "safe" prior testing? Do we have a moral obligation for habitat preservation and maintaining integrity of whole bioregions? What about the politicized issue of mitigation and takings, as it relates to habitats and private property? Who should have access and use of the commons—the oceans and their wild creatures, terrestrial wildlife, wetlands, scenic areas, clean air, freshwater? Do animals have rights? Also, wild animals? Is it a human right to have opportunity to steward natural biotic things? There are many more questions and issues that become more pressing as human populations and related consumption impinges on the biosphere of planet Earth.

C. Agriculture and food-system ethics: The biggest and most comprehensive challenge in this domain is to make the necessary transition from extractive agriculture to sustainable or regenerative agriculture.²⁰ This transition is necessary not only to retain soil fertility and prime agriculture land in the face of rising human population but also to reduce agriculture's impact on non-domestic creatures and their rightful habitats.

Since agriculture is in essence a culture's technology for growing and distributing food, its practice involves many complex issues. For example, the marginalization of family farms by tax-laws favoring industrial "farms" effectively hastens the demise of rural culture, with its biological and bi-cultural diversity and space for wildlife. Furthermore, people of color working for low wages on large-scale corporate lands are often exposed to pesticide levels that seriously compromise their health. This is especially an issue in Latin and South America where commodities are grown for the North, but where U.S. pesticide laws do not apply.

Another ethical justice issue is the proprietary ownership of whole seed—herbicide systems (transgenic seed which is resistant to a particular herbicide—both of which are “owned” and distributed by the same “agri-business” multinational corporation). A related “ownership” issue is that of native germ plasm for crop improvement. Most of the West’s domestic crops depend on native genetic stocks that are found in Third World or South countries. When these genes are “taken” by biotech companies to improve or fashion new plants, who benefits and who “owns”?

Because the predominant drive in modern agriculture has been to increase production, several technological developments have ramifications beyond economic efficiency. A few examples will illustrate: The use of biotech growth supplements such as bovine somatotropin (BST) in dairy animals relates to issues of animal health, added costs that serve pharmaceutical companies more than farms, control of production, and ultimately survival of smaller farms and rural communities. The increasingly widespread use of super-ovulation, embryo transfer, and surrogate mothering in domestic livestock will result in narrowing of the gene pool as well as specialized technical control of breeding stock. Even the older but still widely practiced green revolution technology of hybrid seeds and monoculture has its downside, the associated marginalization of land races and the diminution of indigenous agricultural varieties, leaving large landscapes vulnerable to disease epidemics and drought.

Agriculture and bioethics questions are also being raised in the area of animal rights in research and confinement feeding practices, from large hog confinements to veal and poultry confinement. These issues are broader than mere economic efficiency.

Closing Questions

Why have the study and practice of ethics (in general) historically (in the West) dealt with and focused mostly on human-to-human dimensions or relationships? Some ethical thought has extended to human-to-thing relationships (mostly because of property rights), but few have thought about law or ethical spirituality regarding human-to-other kind relationships—except in some cases of domestic animals.

Where do the rhetoric and politics of rights enter in? We hear a lot about human rights and animal rights. Do nonhuman creatures other than large animals have rights? Does it make any sense to talk about the “expectations of the land?”²¹ Or is it more appropriate for Christian ethics to speak of responsibilities rather than rights?

When one is prone to evaluate the human endeavor historically from the paradigm of “cultural mandate,” how does one distinguish between building arks and building towers of Babel? Just what do Calvinists mean when they talk (rather glibly) about the unfolding of creation? Doesn’t this make the technological imperative too easy?

How does one distinguish between building arks and building towers of Babel?

What kind of Christian ethic could be developed that took as its starting point the biblical revelation of humankind as a servant image bearer and took Gen. 1:28 as a “creation blessing” rather than a “cultural mandate”? What is the meaning of the biblical idea of “covenant” and “community” in the larger discussion of bioethics?

What might genetic medicine do to the identity of humankind? What does genetic medicine do to the sense of control and power in society? Will genetic medicine bring new power and hubris that get used against the poor and racial outcasts? How will increasing acceptance of genetic medicine (screening and expected therapy) change the social acceptability of bringing into the world “defective” children, and who pays the social costs of this “burden” when there was a choice to abort or euthanize?²²

We are familiar with the idea of medical malpractice (this is not to argue the merits of or the limits of liability payments), but if ethics applies to land and creatures, does it also make sense to talk of environmental and agricultural malpractice? How can God’s creatures be fruitful (Gen. 1:22) without their supporting environments and habitats?

Surgery has a time-honored place in medical practice. The surgeon deals with flesh, bone, sinew, and nerves. His knives are of steel, quartz, and more recently, laser beams. Then in the 1970s

restriction endonucleases were discovered. These enzymes are naturally occurring molecular cutters that snip DNA at sites peculiar to the kind of endonuclease. Dozens of different DNA snippers are now known and used in biotechnology. With these “tools” molecular biologists can cut and splice DNA to alter its message or to transplant DNA pieces (= genes) from one organism (cell) to another. This is where the venture capital and brightest minds are gravitating. The ethical questions we ponder are these: should these molecular “knives” be considered differently than steel or quartz knives? Or is it the intent of using the tool? Or is it the consequence of using the tool? Or is it the power unleashed? Is it all of these?

A closing thought. We will end where we started, with scriptural insights: “If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them. Come let us go down . . .” (Gen. 11:6) But even before this cosmic intervention into human affairs, the original call of grace was, “Adam, where are you? I placed you in my garden to care for and to keep it (*shamar* in Hebrew), and you are hiding out because you are ashamed, ashamed because of sinful self-interest. You took what was not yours . . . Adam, I came out in the evening to walk and talk with you, to hear the evensong of my birds, but the song of the birds is gone . . . Adam, where are you?” (paraphrasing Genesis 3:9 ff).

ENDNOTES

1. A related point is that in modern society we are very “individual” oriented, and in many respects that is understandable and proper. Humans are individually responsible and accountable. But, regarding nonhuman creatures, it is important to remember that from an ecological perspective the key level of importance is the population and/or community. Whole communities exist only in integrated ecosystems. Therefore, attention to the whole system may be the only correct way to attend to individuals.
2. The term “otherkinds” has been coined to indicate all living creatures other than humankind. It is not intended to mean any position of hierarchy or distance from; it is used mostly for convenience.
3. See *Earthkeeping in the '90s* by Loren Wilkinson (ed), Eerdmans, 1991, Chapter 15 for an elaboration of this idea. Also, D.J. Hall’s book *Imaging God: Dominion as Stewardship* (Eerdmans, 1986) has an excellent discussion of the relational nature of the *imago Dei*.
4. Leopold, Aldo. *A Sand County Almanac*. Oxford University Press, Ballantine Books, Inc, 1966, p. 238.
5. Gottfried, Robert. *Economics, Ecology and the Roots of Western Faith: Perspectives from the Garden*, Rowman and Littlefield, 1995, pp. 61-62.
6. The historical note is from Verhey, A., and Stephen E. Lammers (eds), *Theological Voices in Medical Ethics*, Eerdmans, 1993, p. 1 which cites D. Callahan’s *Hastings Center Report*, “Religion and the Secularization of Bioethics.” Special Supplement: “Theology, Religious Traditions, and Bioethics,” 20, no. 4 (July/August): 2-4.
7. Potter, Van Rensselaer. *Bioethics: Bridge to the Future*. Prentice-Hall, Inc., 1971, pp. vii-viii.
8. Potter, Van Rensselaer. *Bioethics: Bridge to the Future*. Prentice-Hall, Inc., 1971, p. 4.
9. Commenting on food distribution ethics, F. Ferré argues that “Meeting long-term human needs demands sustainability; sustainability over the long run requires justice. Without doing *right* we cannot long maintain the *good*.” From Ferré, Frederick. “No Hiding Place: The Inescapability of Agricultural Ethics.” In, *Agricultural Ethics: Issues for the 21st Century*. ASA Special Publication No. 57, Madison, WI, Tri-Societies, 1994, (p. 16).
10. Ramsey, Paul. *The Patient as Person*. New Haven: Yale Univ. Press. 1970.
11. From Verhey, A., and Stephen E. Lammers (eds), *Theological Voices in Medical Ethics*, Eerdmans, 1993, where Verhey cites (p. 31) definitions from James M. Gustafson’s work *The Contribution of Theology to Medical Ethics*. Milwaukee: Marquette University Press, 1975.
12. There is a sense in which some aspects of medical ethics should be discussed under social or political ethics. Although in some technical sense medicine deals with (human) life, and with so-called life and death issues, some issues also have to do with society, economics, and justice. For example, the just distribution of medical resources is not a biotic issue per se. The reason the poor get less health care is not because they are biologically different.
13. It is heartening, however, to note the increased frequency of the many explicit statements in the ecological and agricultural ethics literature that is recognizing the need, and calling for the proper place for 1) ethics and 2) a flat out recognition that science and technology are not value-free or neutral. One example is *Agricultural Ethics: Issues for the 21st Century*, ASA Special Publ. No. 57, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Inc. 1994, pp. 15, 30, 60.
14. Because boomerangs are recognized to some extent, there is caution in releasing new chemicals and technologies. The arguments usually come under the label of safety. However, the burden of proof of safety is often externalized to the environment. The nature of xenobiotics is not properly recognized. Because there are uncertainties, medical science is cautious, the FDA is cautious, but we should be aware that our relative ignorance greatly exceeds our relative intelligence—especially when it comes to thinking we can manage most things in the world. See W. Jackson’s book *Becoming Native to this Place*, University of Kentucky Press, 1994.
15. Gottfried, Robert. *Economics, Ecology and Roots of Western Faith*. Rowman & Littlefield, 1995, p. 76.
16. The kind of therapy alluded to involved *in vitro* culturing of genetically transformed human cells with subsequent injection of these cells into bone marrow, for example. Actual

gene replacement is still not a perfected procedure in complex organisms such as humans.

17. Suggested further readings in this important area are: *The Gene Wars: Science, Politics, and the Human Genome* by Robert Cook-Deegan, W.W. Norton, 1994 and "Vital Data" by Tim Beardsly in *Scientific American*, March 1996, p. 100 ff.
18. For a balanced overview of issues and related Christian insights the reader should consult *Earthkeeping in the '90s* by Loren Wilkinson (ed), Eerdmans, 1991.
19. Personal communication with Susan Drake who lead the US-UN negotiating team at the 1992 Rio de Janeiro Earth Summit.
20. Here one can refer to Ferré in his chapter "No Hiding Place" in *Agricultural Ethics*, where he argues that if one knows a better way, one is morally obligated to follow. But this is complicated by ends and means ethics. Both sustainable and production models purport to have the same end—healthy and enough food. But, given population increases, will the system sustain the end? Herein lies much of the argument.
21. For an elaboration of this idea see: Wes Jackson et al. (eds), *Meeting the Expectations of the Land: Essays in Sustainable Agriculture and Stewardship*. North Point Press, 1984.
22. Further discussion of these issues can be found in *Christian Scholar's Review*, XXIII:3, "From Clinic to Congregation: Religious Communities and Genetic Medicine," by M. Therese Lysaught, p. 329 ff. Also the recent commentary article in *Scientific American* March 1996, "Vital Data" by Tim Beardsley is helpful.