Values In Higher Education
The Crisis and the Promise

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Dr. Evan Pugh, first president of the Agricultural College of Pennsylvania, had great confidence in the power of science and technology to transform agriculture. In a speech presented to the Cumberland Agricultural Society in October 1860, he held that science greatly benefits society. Its progress "impresses results upon the destiny of humanity which are immortal." By producing truth in a sure and reliable fashion, science will help expose frauds and quackery and the deplorable results of "ignorance imposed upon the agricultural community." Indeed, Dr. Pugh felt that the spirit of his own age was best characterized by "the daring audacity with which it seizes upon all ideas and opinions originating in the past and present, and subjects them to certain recognized methods of investigation."[1]

Such ideas were by no means entirely new. As far back as the early seventeenth century, Francis Bacon, prophet of the new science, argued that science could do for us what morality and religion had been unable to do. Science would help us gain power and control over the world about us. "Indeed it is this glory of discovery," wrote Bacon, "that is the true ornament of mankind. In contrast with civil business, it [science] never harmed any man, never burdened a conscience with remorse."[2]

For those of us who live in the age of the hydrogen bomb, cruise missiles, and recombinant DNA, however, these last words appear naive, even quaint. We could wish that Francis Bacon, and even Dr. Evan Pugh, had taken more seriously the Dr. Faust legend or the ancient myth of Icarus and Daedalus, who escaped from the labyrinth of Minos with the help of their fabricated wax wings. These legends powerfully portrayed man's ambivalence toward science and technology, the sense of profound uneasiness about unlocking the mysteries of nature, about playing with the fire of the gods. Science could bring great benefits, but science could also curse mankind if used wrongly.

In the modern world, this ambivalence toward science and technology, although anticipated by novelists and artists, was not felt in its intensity till the post-World War II period, particularly since about 1960. Today, most of us think very differently about science and technology than did our grandparents. Although we have seen the tremendous benefits that science, including agricultural science, has brought society, we experience a deep uneasiness when we hear terms like "nuclear energy," "nydrogen bomb," and "germ warfare." We know that what happened in Michigan with the PCBs could happen again and on a broader scale.

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The Cornell Program

It was with concerns of this sort that I went to Cornell University three years ago and initiated a new program in environmental values. The main purpose of the program was to foster understanding among students and faculty of man's relation to his natural environment in light of value considerations growing out of a study of the humanities — particularly religion, philosophy, and ethics.

The most notable single feature of the program design was that it enabled a humanist to become a resident faculty member in a Department of Natural Resources, thereby facilitating a kind of ongoing interaction seldom achieved in more typical interdisciplinary endeavors. As a full-fledged faculty member in the department, I participated in faculty meetings, departmental decisions, student activities, and the general business of the department. This gradually resulted in an integration of disciplines at the level of basic departmental organization.

My idea was that philosophy, ethics, and religion could be thought of as discrete disciplines with subject matters of their own, or they could be construed as ways of asking questions of other disciplines. That is, the philosopher need not talk only about philosophy, nor must the ethicist discuss only theories about what other people are thinking and doing. I conceived of the program as a way of asking new questions and bringing new input into the whole agricultural/environmental/natural resources scene at Cornell.

Program Content

In terms of its content, the program is fairly conventional. We have studied how our understanding of ourselves affects our attitudes toward and treatment of nature. We have looked at the history of man's attitudes toward nature, how he has treated the environment over the centuries. We have considered the meaning of certain basic terms such as "resource," "nature," and "environment." We have asked how considerations of social justice, particularly those growing out of Western religious and philosophical traditions, bear upon public decisions on energy and environmental matters. For instance, should Americans be willing to tolerate gas rationing when one round trip of a Grumman Gulf Stream II cor-

porate jet between New York City and Los Angeles burns enough fuel to run a Volkswagen Rabbit over 200,000 miles?

We have looked at how various environmental decisions have affected the poor and other minorities in America. Blacks, along with other minorities, for example, are concerned about whether the environmental movement will hinder or help them in their own particular life interests. They fear that they may have to pay a disproportionate share of the cost of cleaning up the environment, and they know that if factories close they, as the last hired, will be the first fired. A black urban leader recently was quoted as saying: "The one thing I don't look forward to is living in a pollution-free, unjust, and repressive society."[3]

Other questions we have asked include: What responsibility, if any, do we have to guarantee future generations a viable resource base? How does one rate considerations of beauty in making decisions about the environment? What professional responsibilities does an agricultural engineer or a specialist in natural resources have to make known to the general public adverse as well as beneficial environmental implications of the projects with which he is associated? In making value decisions about the use of energy and resources, how does one balance national interests against the legitimate interests of people of other nations? Such questions reflect something of the mood and style of the program.

As our values program at Cornell developed, it gradually became apparent that we could not avoid such fundamental questions as: What is education? What are the basic goals of the college or university? What does it mean to deal with questions of agriculture and natural resources in a college or university setting?

Three Educational Models

In attempting to answer these questions, it was helpful to recall that three models of the college or university have tended to dominate the Western world during the past one hundred years. The first of these is what I would call the model of the graduate seminar of the late nineteenth century German university. The goal of the German graduate seminar was the production and transmission of new knowledge. Dr. Evan Pugh nicely conveyed something of the intellectual vitality and creativity which he experienced in such a setting: the whole field of chemistry was bursting wide open and knowledge was mushrooming out into exciting new areas. The American counterpart today is the college or university that focuses mainly on research and scholarly publication. Loyalty to the discipline takes first place. Teaching frequently is downplayed, and the undergraduate student clearly occupies a secondary position. I recall a cartoon I saw some years ago — where, I'm no longer certain — in which the disciples of Jesus were taking his body down from the cross. Everyone looked very disconsolate. One of the disciples was lamenting to the others: "Sure, he was a great teacher, but he didn't publish." Anyone who has endured a tenure review at a "publish or perish" institution can likely identify all too easily with such a scene!

The second model of the college or university I shall call the British model of the traditional Oxford and Cambridge of the late nineteenth century. Here the purpose of education was to educate men to be gentlemen, to prepare men — and increasingly, as the twentieth century unfolded, women — for citizenship. The goal was to prepare individuals to be public servants, to be sensitive and dedicated participants in the corporate life of the nation. Such goals were held clearly in mind at Columbia University, at Harvard, and at Chicago when the role of "general studies" or "liberal education" was discussed. What should we teach our students, and how should we teach them in order to make better people out of them? We might simply refer to this as character education: building better citizens, people who critically, effectively, thoughtfully, can participate in the ongoing life of a democratic state.

The third and last model I would refer to is the American pragmatic model. Here the goal is to train students for jobs and specific careers. Part of the great strength of American education — facilitated by such legislation as the Morrill Act of 1862 — has been its strong egalitarianism. Americans, in effect, decided that education should not be available only to the wealthy or only to those with extremely high IQs. Because it was felt that education could benefit a broad cross section of society, the nation committed itself not only to academic programs but also to education that would teach its young men and women specific skills to prepare them for particular jobs.

Where Are We Heading?

The question that each generation must answer anew regards the appropriate balance among these three different models of higher education. Where are we heading? What do we hope to achieve? However we answer these questions, this much seems clear to me: whenever and wherever educators in the various professions fail to deal with the presuppositions, the methodologies, and the goals of their various disciplines, they are not truly involved in higher education, but are rather producing technicians (and, in the long run, not even very **good** technicians[4]). Even more than that, I would say that where we fail to deal with the value implications of what we are doing, we essentially become upholders or the status quo, uncritical defenders of the present establishment. We end up basically accepting the popular conventional wisdom and values of the society about us. In America today this involves an alliance among business, government, the military, and education; and this is a far closer alliance than some of us feel comfortable with. This is not to put down government, business, or the military. It is rather to argue that the role of education should never be simply to transmit the values of these institutions in an uncritical fashion. The university transmits culture, but it cannot afford merely to acquiesce in the status quo at any given point in history. The university will do well not to imitate the philosopher described by Samuel Johnson in **Rasselas,** who "rose up and departed with the air of a man that had co-operated with

the present system."[5] To be sure, it is not always wrong to cooperate with the present system. But the university must also maintain the role of the critic, must ask questions — even embarrassing ones — about the larger implications of what society believes and does.

Too many courses in such disciplines as City and Regional Planning, Natural Resources, Landscape Architecture, and Agricultural Engineering are purely technical in nature and deliberately ignore important value questions. The student is overwhelmed with unending facts — for instance, regarding legal aspects of land use planning. He has to learn in detail dozens of important court cases dealing with zoning and land regulation. But seldom does the professor challenge him to think about how particular land use decisions are related to some larger vision of the good society (for instance, in the manner of Thomas Jefferson's thinking on this subject[6]). He is not required to think about the justice or lack of justice of a given ruling. Thus, even though a professor may personally hope that a student will not simply uncritically accept the status quo, it may well be that the kind of course he offers will hardly fit the student to do otherwise.

But a college or university, it may be objected, has no business espousing a given set of values. Such an argument is often heard, for instance, in connection with Cooperative Extension work in our Land Grant colleges. The extension agent, according to this view, should simply present the facts. He should stick with the relevant data. He is not to become an advocate. He is part of a college or university, which, as a whole, should remain value neutral.

A Value Commitment

One need not be in favor of politicizing the university to realize the weakness of such an argument. The very fact that there is a university rather than no university represents a value commitment. The fact that one studies astronomy rather than astrology represents a value commitment. To teach agricultural economics rather than religious dance represents a value commitment. As Plato, Aristotle, and almost all of the great philosophers up until the modern period realized, there is no such thing as education apart from value commitments. For instance, the fact that Cooperative Extension at Cornell works with young people through 4-H and tries to increase their sensitivity to the environment represents a value commitment. So the question in the modern university is not whether or not we have value commitments, but what kinds of value commitments do we make, and are we willing to subject these value commitments to critical scrutiny and analysis in open, public forum? Or do we prefer simply to assert them in authoritarian fashion as dogma to be received? Of course, those implicit values that are simply assumed are often the most influential of all.

It may well be that the very existence of our republic will depend on teaching our youth certain values and doing so far more successfully than we have done in the past. The basis of the republic is not personal altruistic sentiment but rather commitment to the "self-evident" truths that "all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty and the pursuit of happiness." But such truths (values!) must be taught afresh to each succeeding generation.

More technically, I would suggest that much of the talk about value-neutral education is related to the popular misunderstanding of the relation between facts and values, the conviction that there is a complete epistemological hiatus between the two. The modern dogma is that we can know only facts, that is, only what is empirically and scientifically verifiable. Values, on the other hand, thus goes the conventional wisdom, partake of none of the reliability afforded by science, but are rather personal, subjective, and arbitrary. When it comes to values, we can have opinions, but certainly not knowledge.

Interplay of Facts and Values

I use the term "dogma" deliberately, for most moderns hold to the fact-value split in a largely uncritical fashion and seem quite unwilling to countenance any challenge to its validity. Most moderns seem quite unaware of how subtle the interplay between facts and values actually is, quite unaware, for instance, that most of what an individual (or a society) considers to be fact is almost completely dependent on already accepted values. One simply does not attend to what he is not interested in. That is, one largely sees what one is looking for, hears what one is listening for, and so on.

The conventional wisdom of the fact-value split so dominates the modern university that most academicians today experience considerable uneasiness about introducing value discussion into the classroom. After all, the classroom is not the place for moralizing and indoctrination!

Philosopher Bertrand Russell well symbolizes the modern period. For him, only science can lead us to truth. All else is opinion and ultimately constitutes subjective and arbitrary preachments. But one of the most curious facts about Bertrand Russell, an aspect of his life on which most people have focused little attention, is that on the basis of his own philosophy most of what he undertook during the last third of his life as a social critic and political activist (opposition to nuclear weapons, propeace, anti-Vietnam War) was arbitrary and ultimately meaningless. In terms of his own philosophical conclusions he would have to evaluate his social activism as based simply on subjective, private, personal opinion. But it is not just Bertrand Russell whose life reflects such an inconsistency. Insofar as modern academia adheres to a complete epistemological split between facts and values it is largely in the same position. Only the scientist can speak with conviction. As for ethics, all is ultimately subjective and relative.

In his book **Modern Dogma and the Rhetoric of Assent**, University of Chicago English professor Wayne Booth contends that we do **know** certain values with practical certainty.

> If my wife says, "I have a sudden terrible pain. Call a doctor quick!" I must and will act at once. Only if I have specific reasons to doubt her — if I know, let us say, that she is a notorious and sadistic practical joker — do I have warrant to intrude doubt into the process of assent. I do not and should not pause for skeptical probings, for proof...
>
> Nor do I take time to bring to conscious testing the moral principle, "When my wife suffers, I ought to try to help." If I know anything, if **anything** about my life and the world makes sense, I know that this principle holds.[7]

Indeed most people probably know the truth of the ethical principle just enunciated with a far greater degree of certainty than they know most scientific laws or formulas, perhaps Einstein's $E=mc^2$ or that the benzene molecule is composed of six atoms of carbon and six atoms of hydrogen. Actually, almost all of what most of us know in the realm of science we know not on the basis of direct personal observation or experience but rather because we believe that certain people are telling the truth. Scientists are part of a community that insists that people tell the truth. It is of paramount importance for science that the integrity of the community be preserved; lying about one's data or "fudging" one's experimental results simply is not tolerated. The manner in which the Roman Catholic Church excommunicates heretics is positively irresolute when compared with the way the scientific community banishes (excommunicates) the liar and the cheat — not the person who wrongly interprets his data but the one who deliberately falsifies it. And, of course, such discipline is entirely necessary, for without it the whole scientific enterprise would face imminent collapse. To be tolerant of the cheat simply is too high a price to pay.

Major Value Questions

What then are some of the value questions that are most in need of attention in connection with agriculture and the environment? Let me simply mention a few, mainly by way of illustration.

One of the most important issues we must address is that of responsibility to future generations. How does one calculate what environmental responsibilities one generation has to subsequent generations? Are we obligated, and to what degree, to maintain the overall capability of our soils, to preserve or even enhance the aesthetic quality of our countryside, or to isolate nuclear wastes from the biosphere till they no longer pose a radiation threat? Is it responsible, one might ask, to produce such wastes at all until we are sure it is possible to **guarantee** such isolation?

In light of possible energy and material shortages in the future, is it justifiable for us today to bequeath to the next generation an agricultural system so highly dependent on abundant minerals and fossil fuels? What about the loss of genetic variety that has accompanied the green revolution? Are we going to find ourselves twenty or thirty years from now with different weather conditions, different kinds of pests, and less easily available chemical fertilizers, but without the genetic building blocks that the pioneers of the green revolution depended on? Are we currently doing enough to maintain a viable genetic base? What about recombinant DNA research? What kinds of risks are appropriate?

Giving Students Handles

I shall not propose answers to these questions. What I am arguing is simply that if we are to be responsible educators we must find ways of giving our students handles on such issues. We must find ways of helping them critically to think about what society is and how one generation ought to relate to subsequent generations. Most students do not have that kind of critical capability. Most students think about values almost entirely on emotional and subjective bases and have given little critical attention to how their work as agriculturalists relates to society as a whole and to the needs and legitimate interests of future generations.

A second area of concern is that of the relationship between the agricultural college and agribusiness. The charge is frequently made that our agricultural colleges are too closely allied with big business, and that small farmers and the general public are not being well served. The Morrill Act of 1862 specifically states that the land grant colleges are "to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life,"[8] but in recent years it would appear that agribusiness has fared far better than the small farmer. Shelf life, cosmetics, and marketability have received more attention, so the critics argue, than basic nutrition. There has been too much emphasis on food production and not enough on alternative patterns of distribution, even though in terms of prices the latter may be of more critical importance to the consumer. I shall not attempt to deal with these issues but rather would simply argue that we must not avoid them in the basic curriculum of the agricultural college.

A third area of concern is the long-term viability of our nation's farmland. As development pressures mount, land becomes more valuable, taxes become intolerably high, and the pressure on the farmer to sell his land becomes acute. In recent years, special farm value assessments have become common throughout the U.S.; and Maryland, New York, and Virginia have passed agricultural district laws which offer the farmer lower taxes and protection in the excercise of his role as farmer in exchange for a commitment not to sell or develop his land and with a tax rollback penalty if he does sell or develop. Such innovations appear advantageous to the farmer and, on the whole, have been enthusiastically accepted by the farmer. But some critics, including myself, are less sure that the interests of the broader public are being well served. Development may be delayed for a time, but when the economic incentives becomes sufficiently attractive the land still will be developed, and thus the loss of prime agricultural lands will continue. It appears that, even with rollback penalties, there will likely also be a significant loss in tax revenues for local government in such circumstances.

A Different Approach

In Suffolk County in New York State a different approach is being tried. The county is purchasing development rights from farmers — at prices ranging up to 90 percent of the market value of the fee simple. The farmer retains ownership of the land, but will be permitted to use it only for farming.

To date, all of the attempted solutions to this problem of preserving the integrity of farmland and retarding or preventing development — including the Suffolk County plan — have presupposed that the individual farmer legitimately owns the development value of his land. Legal and historical precedents support this, even though society has always assumed the right to deny certain kinds of usage through laws regarding public nuisance, zoning regulations, health codes, and so forth.

A philosophical analysis of the issue, however, insofar as it was concerned with considerations of social justice, might well take issue with this assumption. Indeed, I believe a very strong case can be made for the proposition that land, particularly in or near an urban area, in almost all cases becomes valuable for development not because of any inherent characteristics of the land itself nor because of any economic input by the landowner, but rather as a function of the overall socio-political-economic growth of the surrounding community. That is, if there were not roads and highways, fire and police protection, utilities, labor and consumer markets, land in or near an urban area would have no greater development value than rural farmland. At present, development value is simply assumed to be part of fee simple ownership, and if a farmer or other landowner can persuade local authorities to rezone his land for residential, commercial, or industrial development, all of the increase in value goes to the landowner.[9]

As a philosopher concerned with considerations of social justice, I would argue that such an arrangement is basically unjust. If it is society as a whole that creates development value, then public officials ought not to give away such development value to the private landowner for free through the mechanism of zoning and rezoning. Such an action is no more justifiable ethically than for a public official to transfer public funds arbitrarily and for no benefit received to a private individual.[10]

Rather than giving away development value through zoning and rezoning, development rights could rather be leased or sold to the private developer, perhaps to the highest bidder in public auction. This would amount to roughly the same thing as charging for or selling zoning and rezoning.[11]

The implications of such a shift would be substantial:

(1) Much of the financial incentive for land speculation, with all of its attendant social and environmental costs, would be removed, thus paving the way for more rational and ecologically sensitive approaches to land use planning.
(2) Local government would have a significant new source of income.
(3) One of the major sources of corruption in local politics would be removed or at least limited, for to get land zoned or rezoned would no longer carry with it the same financial rewards as previously.
(4) Local units of government would have funds to compensate in full property owners who suffered substantial financial loss because of nearby zoning or rezoning.

Any adequate ethical analysis of the issue of development value and land use would also need to deal with the political question of how such reforms are to be instituted. The great American controversy over slavery eventually resulted in a significant redefinition of property rights but at a terrible cost. Such radical confrontation could have been avoided had there been more openness to the role of compromise in the political realm — not regarding the moral evil of slavery as such but rather concerning how America might have made the shift to a non-slave society. It is quite conceivable that the North as well as the South might have accepted responsibility for the fact that originally the entire nation countenanced slavery and thus encouraged certain expectations in individuals regarding property in slaves on the basis of which substantial amounts of money were invested in good faith. Because of that it would have been appropriate for the entire nation to share in the cost of setting the slaves free, for instance, through a plan of redeeming slaves with public funds. Not only would such a plan have been economically cheaper than was the war, but it also would have prevented the tremendous loss of lives and human suffering brought on by the Civil War.[12]

Ethic of Transition

In the case of land reform, an "ethic of transition" is called for. Such an ethic would permit society to introduce more nearly just land use controls such as have been suggested above but in such a way that as few people as possible would be hurt in the process of making necessary changes. One possible scheme would be for society to assume control of development value in such a way that each landowner would be compensated in full for the first $10,000 in development value he owned, 90 percent for the second $10,000, 80 percent for the third, and so on. Such a pattern would be economically less burdensome to society than full compensation to everyone and would prevent undue economic hardship for any single individual. The plan would represent a compromise between society's simply assuming control of development value with no compensation (an action which would be just on the basis of the fact that society created the development value in the first place, but which would be unjust since society also encouraged certain expectations regarding the individual's "ownership" of such development value), on the one hand, and society's compensating every landowner in full for his development value (a procedure which would be so costly as probably to prevent any action whatsoever). Obviously, new tax procedures would also have to be instituted on already developed land, but the details of that difficult but important issue could be left to economists and others to implement.

Such a fundamental shift in our treatment of development value would directly impinge on the long-term economic viability of America's farm land. Very specifically, it would greatly simplify the problem of determining market value and taxes on undeveloped farmland. Under the scheme here put forward, farmland near a growing urban complex would have no greater market value than similar farmland in a completely rural area, for development value would have been separated from free simple ownership. Thus such complicated, but not very successful (in terms of society's need to control development), plans as agricultural districts designed to keep land taxes on farms low could be abandoned.

My purpose here is not to argue for such a change in our treatment of development value, even though I think such a plan has much merit. A great deal of refinement would be needed, in any case, before political implementation were feasible, including, presumably, close scrutiny of the British experience in this field, particularly since the 1947 Town and Country Planning Act where a similar approach was actually attempted. My point rather has been to illustrate in some detail how one might deal with a particular environmental value question on a fundamental level. By contrast, much of the discussion of such issues in university departments of City and Regional Planning and Natural Resources proceeds on a superficial level, and thus the education students receive tends for the most part to support the status quo.

Technology vs Culture

But the issue is not simply that of how we relate to the status quo. At a deeper level we must ask the question of how modern science and technology relate to culture. As C. S. Lewis argues in his brief essay **The Abolition of Man** and also more dramatically in his science fiction novel **That Hideous Strength,** science and technology may enslave rather than free the human race. What happens, Lewis asks, if society rejects the traditional concept of natural law, that is, the belief that there is an objective dimension of value inherent in the world as given, the conviction that values are not simply subjective and relative creations of culture but are rather part of the objective world to be discovered and known? In such a world what will be the basis of decisions about the use of science and technology?

In attempting to answer this question, Lewis invites the reader to imagine a scenario some centuries in the future when science will have matured to the point where human beings possess the technological capabilities necessary to control man's mind through various chemical and psychological means and at the same time the capability to manipulate the genes in such a way as to completely redesign the man of the future.

What is likely to happen in such a situation, Lewis asks. To begin with, he argues, power over nature, such as is achieved by science and technology, is the power of certain people over nature, and subsequently almost inevitably becomes the power of certain people over other people because of the power they possess over nature.

If objective values, what Lewis refers to as the **Tao,** are rejected, then how will these powerful few — the "Conditioners" — decide what to do with this power? On what basis will they design the man and woman of the future? On the basis of traditional values? No, for these have already been rejected as unreliable. On the basis of feelings? Possibly, but then how will one decide among conflicting feelings? On the basis of some instinct for survival? But even if such an instinct actually extends effectively beyond one's children and grandchildren, which is hardly obvious, why should one prefer the survival instinct over other conflicting values and instincts? It certainly has not been obvious to all thoughtful individuals that survival is to be preferred at any price.

Lewis finally concludes that apart from the **Tao,** that is apart from some binding concept of natural law or objective value, man finally can depend only on the impulse of the moment, just as it comes to him. That is, he is dependent on change, or in other words, on Nature. He concludes:

> **At the moment, then, of Man's victory over Nature, we find the whole human race subjected to some individual men and those individuals subjected to that in themselves which is purely 'natural' — to their irrational impulses. Nature, untrammelled by values, rules the Conditioners and, through them, all humanity. Man's conquest of Nature turns out, in the moment of its consummation, to be Nature's conquest of Man.**[13]

Rather than having set man free, science and technology, apart from obedience to the **Tao,** lead not just to the enslavment of man but to the actual "abolition of man." He ceases to be Homo sapiens altogether. He has become the victim of "that hideous strength."

If we take Lewis' argument seriously — as I believe it deserves to be taken — then substantive values discussion in our colleges and universities, and particularly in our professional schools, is not just a luxury, a bit of frosting on the cake. It is rather that which helps guarantee the preservation and enhancement of what is most deeply human. It is, as our forefathers long ago understood — recall the myth of Icarus and Daedalus and the Dr. Faust legend — what finally prevents our destroying ourselves with our new-found "fire of the gods."

Values and Education

The choice for the professional school thus becomes relatively straightforward — either education seriously wrestles with value questions or it hardly deserves to be called education at all. The refusal to deal explicitly with values certainly does not mean that students will receive a value-neutral education. It rather means that they will uncritically absorb the dominant, mostly unarticulated, values of society, mediated largely by television and other mass media. Fortunately, some students will engage in fairly rigorous value discussions outside of the classroom, for instance through their participation in a variety of voluntary public action groups. At best, that means that some will become reasonably sophisticated in their understanding of values, not because of, but in spite of the university.

If values education is to become a respected part of he university curriculum, help will be needed from those ›rofessionally trained in ethics, philosophy, religion, and :he social sciences. Philosophers, indeed humanists from every field, will need to focus not only on the specialized concerns of their own discipline, but should also engage in active dialogue with scientists and technicians. Universities should give a far more prominent role to "philosophy of" courses: philosophy of science, of art, of politics, of natural resource management — the list is as comprehensive as culture itself.

The model of interaction we have established in our environmental values program in the Department of Natural Resources at Cornell is one promising way of achieving optimum understanding across disciplinary lines. It is a model that, hopefully, will be considered by other professional schools across the country.

Notes

1) Dr. Evan Pugh, "What Has Science Done and May Do for Agriculture," talk presented on October 1860 to the Cumberland Agricultural Society, Carlisle, Pennsylvania; recreated and characterized by Dr. Jerome K. Pasto, Associate Dean of Resident Education, College of Agriculture, The Pennsylvania State University, for the Twenty Third National Conference of the National Association of Colleges and Teachers of Agriculture, University Park, Pennsylvania, June 13, 1977.

2) Francis Bacon, **Thoughts and Conclusions**, in **The Philosophy of Francis Bacon**, B. Farrington, ed. and trans. (Chicago: University of Chicago Press, 1966), p. 92.

3) Norman J. Faramelli, "Ecological Responsibility and Economic Justice: The Perilous Links Between Ecology and Poverty." **Andover Newton Quarterly**, vol. 11, no. 2 (November 1970), p. 84.

4) See Robert M. Pirzig, **Zen and the Art of Motorcycle Maintenance** (Bantam Books: New York, 1974).

5) Samuel Johnson, **Rasselas** (Chicago: A. C. McClurg and Company, 1889), p. 96 [Quoted in C. S. Lewis, **The Abolition of Man** (New York: Macmillan Publishing Co., Inc., 1947), p. 50].

6) Jefferson presents his plan for an agrarian society in **Notes on the State of Virginia** (1781), the only book he ever wrote. Historian Douglas Sheeples writes in "Land, Law, and the Good Society" (unpublished manuscript, 1977, pp. 5-6): "The thrust of American public land law, and to an appreciable extent of property law, followed Jefferson through much of the nineteenth century. . . . In short, land law operated, with property rights more generally, as a means of achieving a larger goal — the ethical goal of constituting and supporting the good society. Law was the intentional device by which to realize a social ideal, using property rights, especially in land, as the material foundation for so doing."

7) Wayne C. Booth, **Modern Dogma and the Rhetoric of Assent** (Chicago: The University of Chicago Press, 1974), p. 104.

8) Morrill Act, Sec. 4, July 2, 1862, c. 130, 12 Stat. 503.

9) In many situations, of course, it is private investment that causes surrounding land to become more valuable for development. For instance, note the effect of Disney World on land values in and around Orlando, Florida. But insofar as the developer could not function at all apart from society's protection, willingness to buy his products or services, etc., it does not seem unjust to insist that any increase in development value of surrounding land be assumed by society. In any case, it remains clear that the owner of such surrounding land did not himself create the increase in development value and thus does not deserve to profit from it.

10) See R. W. G. Bryant, **Land: Private Property Public Control** (Montreal: Harvest House Ltd., 1972) for a wealth of background material on this subject.

11) Marion Clawson, "Why Not Sell Zoning and Rezoning? (legally, that is)," **Cry California**, vol. 2, no. 1 (Winter 1966-67), pp. 9, 39.

12) Cf. Gunnar Myrdal, **An American Dilemma** (Harper and Brothers Publishers: New York, 1944), pp. 225-226.

13) C. S. Lewis, **The Aboliton of Man** (New York: Macmillan Publishing Co., Inc., 1947), pp. 79-80.

Canadian Enrollment In Agriculture And Veterinary Medicine

G. M. Jenkinson

Abstract

From 1973-1977 undergraduate enrollment in agricultural colleges and two-year diploma programs in Canada increased. Enrollment at the M.Sc. level also increased, but it was static at the Ph.D. level.

Student enrollment in colleges in agriculture has increased at a consistent rate of approximately 6 to 9 percent each year in the 1970's. Such increases are general across all of North America. Statistics reported in the **NACTA Journal**, December 1976 show an increase of 35 percent in student enrollment in member institutions of NASULGC during the period 1973 to 1976 inclusive. Faculties of Agriculture in Canada have experienced similar increases.

Undergraduate Enrollment

Enrollment in 4 year programs in Canada (Table 1) increased 44 percent during the period 1973 to 1977. Enrollmen more than doubled at Laval University during this period. Macdonald College increased 86 percent and the University of Saskatchewan increased 49 percent. At the Ontario Agricultural College enrollment increased 33 percent even though "restraints" on student enrollment have been in effect since 1975. The OAC is the largest of the eight faculties of agriculture with 33 percent of the Canadian students enrolled in 4 year programs. The OAC is the only faculty that is presently restricted in admitting all qualified applicants. The University of Alberta and the Nova Scotia Agricultural College are presently operating at full capacity and may be restricted in admitting all qualified students in the immediate future.

Increases in student enrollment in two year diploma programs are less dramatic; enrollment increased 31 percent in the 1973-77 period. The largest diploma program is at the Ontario Agricultural College with 27 percent of the total enrollment in Canada. The admission of students to the Diploma program at OAC is even more restrained than it is in the 4 year program. Increases in 2 year enrollment of 40 to 45 percent have been experienced at Macdonald College, Manitoba, and Saskatchewan during the period under review.

Other institutions offer diploma programs in addition to the faculties of agriculture at Canadian universi-

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