

# **Environmental Responsibility in Academic Institutions**

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## **Abstract**

If environmental responsibility is defined as the fostering of awareness, knowledge, technologies and tools to create an environmentally sustainable future, it is clear the degree to which environmental responsibility is practiced and promoted within colleges and universities varies considerably. This paper presents examples of efforts toward environmental responsibility at five U.S. academic institutions (Tufts University, Carnegie Mellon University, Occidental College, Yale University, and the California Institute of Technology) and examines the factors that appear to be most influential in determining the degree of institutional commitment to environmental responsibility. That a correlation may exist between institutions that have strong environmental academic programs and institutions that are committed to promoting environmental awareness on their campus is addressed, and the relative participation of students and faculty in initiating and administering a strong institutional commitment to environmental responsibility is explored. Finally, an attempt is made to interpret findings to aid students, faculty and staff as they work on improving the degree of environmental responsibility in academic institutions.

## **Introduction**

Environmental responsibility involves considering how our human behavior impacts the environment and acting in a way that minimizes that impact. Environmental responsibility can be attempted at many levels: by individuals, institutions, or businesses that are striving to integrate environmental considerations into their fundamental decision-making framework. What the term "environmental responsibility" means to individuals will vary immensely, depending on a given individual's background, beliefs and understanding of how individual decisions affect nature.

According to the Green Business Letter, a journal for environmentally conscious companies, "environmental responsibility" for businesses includes having a comprehensive view of one's operations, strategies, and facilities with an eye to eliminating waste and emissions, maximizing the efficiency of all assets and resources, improving the quality of products and services, and enhancing

reputation.<sup>1</sup> For institutions, the term "environmental responsibility" may include many of the same issues, and will vary depending on the type of institution. Dr. Anthony Cortese, President of Second Nature, a nonprofit organization that helps colleges and universities expand their efforts to make environmental responsibility "a foundation of learning and practice"<sup>2</sup> defines environmental responsibility for academic institutions as follows:

*Colleges, universities and professional schools educate most of the people who develop and manage society's institutions and train the teachers who educate.... For these reasons, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future. Universities have all the expertise necessary to develop the intellectual and conceptual framework to achieve this goal. Universities must play a strong role in education, research, policy development, information exchange and community outreach to help create an equitable and sustainable future.*<sup>3</sup>

Thus institutions of higher education have the capacity to influence society's perception of the environment and its responsibility for minimizing our impact upon it. Through course-work, research, and the conduct of their own operations in ways that provide models for society at large, colleges and universities enjoy unique opportunities to promote environmentally responsible practices. There are 3,700 institutions of higher education in the United States, with 14 million students, annual budgets over \$150 billion, and endowments in excess of \$100 billion.<sup>4</sup> By adopting ecological guidelines for campus management, academia may do more than reduce a portion of

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<sup>1</sup> Green-Business-Letter, 2001. The Green Business Letter. <http://www.greenbiz.com/gbl/subscrib.cfm>.

<sup>2</sup> <http://www.secondnature.org/>

<sup>3</sup> Cortese, A.D., Sc.D., 1992. Education for an Environmentally Sustainable Future: A Priority for Environmental Protection. *Environmental Science and Technology*, 26(6): 1108-1114.

<sup>4</sup> Orr, D.W., 1998/1999. Breaking Ground. *YES! A Journal of Positive Futures*, Winter: 24-25.

society's impact on the environment; perhaps more importantly, academic institutions potentially may influence the public's perception of environmental responsibility.

David Orr, chair of the environmental studies program at Oberlin College and an ardent supporter of environmental education and campus environmental responsibility, suggests that in addition to the formal curriculum described in its catalog, every school, college, and university has a hidden curriculum consisting of its buildings, grounds and operations. Like the infrastructure of the larger society, this hidden curriculum structures what students see, how they move, what they eat, their sense of time and space, how they relate to each other, how they experience particular places, and it affects their capacity to imagine better alternatives. Orr's research shows that colleges and universities can reduce environmental impacts, improve services, reduce costs of campus operations, and do so in a way that is an educational asset.<sup>5</sup>

Some academic institutions have proactively made extensive, voluntary commitments to increasing efforts in environmental awareness and reducing the environmental impacts of their campus, while other institutions have to date made little or no effort in this area.<sup>6</sup> The National Wildlife Federation's (NWF) Campus Ecology Program, founded in 1989, provides practical advice on how academic institutions can become more environmentally responsible, and has become the major conservation initiative in higher education, "working to transform the nation's college campuses into living models of an ecologically sustainable society, to train a new generation of environmental leaders, and to ensure a strong future for America's environmental movement."<sup>7</sup> Despite efforts supported by this program and others, such as Second Nature, that have been formed to give assistance to campuses nationwide to become more environmentally responsible;<sup>8</sup> despite

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<sup>5</sup> Ibid.

<sup>6</sup> Smith, A.A., 1993. *Campus Ecology, a Guide to Assessing Environmental Quality & Creating Strategies for Change*. Living Planet Press, Washington DC.

<sup>7</sup> <http://www.nwf.org/campusecology/index.html>

<sup>8</sup> Cortese, A.D., 2001. *The Vision, Education for Sustainability: The University as a Model of Sustainability*, Second Nature Web Page. <http://www.secondnature.org/vision/vision.nsf>.

efforts by The Alliance for Sustainability Through Higher Education, a multi-institution coalition formed to foster awareness and programs related to education for sustainability;<sup>9</sup> and **despite** much recent literature that has advocated for increased environmental responsibility within colleges and universities,<sup>10</sup> many colleges and universities have yet to make an institutional commitment to environmental responsibility on their campus. Within and amongst different academic institutions, what factors influence the relative degree of environmental responsibility are not obvious.

This paper presents examples of efforts toward environmental responsibility at five U.S. academic institutions (Tufts University, Carnegie Mellon University, Occidental College, Yale University, and the California Institute of Technology) and examines the factors that appear to be most influential in determining the degree of institutional commitment to environmental responsibility. State-sponsored colleges and universities were not included in this study because state-sponsored institutions may have more specific mandated environmental guidelines than do private institutions.

The paper is divided into two parts: Part I presents examples of environmental programs and efforts to encourage environmental responsibility at each of five academic institutions; Part II compares the institutions in an attempt to identify factors that contribute to the level of institutional commitment to environmental responsibility. The role assumed by individuals promoting environmental responsibility will be compared to the role played by institutional culture and history, and whether or not a correlation exists between institutions that have strong environmental academic programs and institutions that are committed to environmental responsibility will also be addressed. The role of students, faculty and administrators in the initiation of campus environmental responsibility programs will also be discussed.

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<sup>9</sup> <http://www.islandpress.org/economics/energy/greencamp.html>

<sup>10</sup> Keniry, J., 1995. *Ecodemia. Campus Environmental Stewardship at the Turn of the 21st Century*. National Wildlife Federation, Washington DC.

## **Part I – Examples of Environmental Programs and Efforts Toward Environmental Responsibility at Five U.S. Academic Institutions**

### **Tufts University**

At Tufts University in Medford, Massachusetts academic programs exist in environmental studies, environmental health, environmental engineering, environmental management, and environmental leadership. In addition to these programs, the Tufts Institute of the Environment, an interdisciplinary, university-wide education and research institute facilitates and coordinates environmental programs at the University. To ensure all students graduating from Tufts are environmentally literate and responsible citizens, whether they are students in the Schools of Engineering, Liberal Arts, Medicine, Veterinary Medicine, Nutrition, or the Fletcher School of Law and Diplomacy, Tufts has established the Tufts Environmental Literacy Institute (TELI),<sup>11</sup> which assists faculty in a wide variety of disciplines to incorporate the teaching of environmental issues and perspectives within their teaching specialties.<sup>12</sup>

A strong effort has also been made at Tufts toward reducing the environmental impact of campus operations. A program called Tufts CLEAN! (Cooperation, Learning and Environmental Awareness Now!) was initiated in 1990 when a research group lead by Sarah Creighton at Tufts University's environmental center was awarded a grant from the U.S. Environmental Protection Agency. The program has been designed around the premise that because Tufts is a microcosm of the larger community, the manner in which it carries out its daily activities is an important demonstration of ways to achieve environmentally sustainable living. Under the direction of the Tufts CLEAN! Program a university environmental policy was signed in April 1991; one of the first

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<sup>11</sup> Eagan, D.J. and Orr, D.W., 1992. The Campus and Environmental Responsibility. *New Directions for Higher Education*, No. 77.

<sup>12</sup> Cortese, A.D., Sc.D., 1992. Education for an Environmentally Sustainable Future: A Priority for Environmental Protection. *Environmental Science and Technology*, 26(6): 1108-1114.

of its kind at a major university, the policy was designed to be similar to policy statements from a number of U.S. corporations.<sup>13</sup> By practicing what it preaches, the university engages the students in understanding the “institutional metabolism” of materials and activities and has them actively participate in minimizing their environmental effect on both Tufts and the larger communities.<sup>14</sup> An active student environmental group called “Tufts ECO (Environmental Consciousness Outreach)” also promotes environmental awareness and energy conservation measures on campus.<sup>15</sup>

Tufts University's commitment to environmental responsibility has also extended beyond the campus. Former Tufts professor of engineering, Dr. Anthony Cortese, is now the president of Second Nature, a nonprofit organization that helps colleges and universities expand their efforts to make environmentally sustainable and just action a foundation of learning and practice.

Sarah Hammond Creighton, the project manager of Tufts CLEAN!, authored a book entitled "Greening the Ivory Tower, Improving the Environmental Track Record of Universities, Colleges, and other Institutions."<sup>16</sup> On a more global scale, in October 1990, Tufts University president, Jean Mayer, convened 22 university presidents from 13 countries at the TUFTS European Center in Talloires, France, to discuss the role of universities and, in particular, the role of university presidents in working toward an environmentally sustainable future. The conference resulted in a declaration of actions to be taken by participants to make environmental education and research a central goal of universities around the world. Since that time, 125 university presidents from 32 countries have signed the Talloires Declaration.<sup>17</sup>

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<sup>13</sup> Eagan, D.J. and Orr, D.W., 1992. The Campus and Environmental Responsibility. New Directions for Higher Education, No. 77.

<sup>14</sup> Creighton, S.H., 1998. Greening the Ivory Tower. Improving the Environmental Track Record of Universities, Colleges and other Institutions. The MIT Press, Cambridge, MA.

<sup>15</sup> <http://www.tufts.edu/~eco/index.html>

<sup>16</sup> Creighton, S.H., 1998. Greening the Ivory Tower. Improving the Environmental Track Record of Universities, Colleges and other Institutions. The MIT Press, Cambridge, MA.

## **Carnegie Mellon University**

In 1998, Carnegie Mellon adopted a Green Practices Program. Several faculty members proposed this program during Carnegie Mellon's university Strategic Planning Effort, and the President and Provost bought into it with enthusiasm.<sup>18</sup> The president of Carnegie Mellon, Dr. Jared Cohon, an environmental engineer by training who spent 19 years on the faculty at Johns Hopkins University and then 5 years as Dean of the Yale School of Forestry and Environmental Science, appreciates and understands the importance of environmental responsibility. A primary reason for undertaking the Green Practices Program was to provide informal environmental education for the entire campus community. Another important reason was to ensure that Carnegie Mellon practices what it preaches; the university supports significant research efforts in green product design, green process design, and green chemistry.<sup>19</sup>

To implement the new program, Professor of Civil and Environmental Engineering David Dzomback chairs the Environmental Practices Committee, a committee composed of faculty, students and staff who are leading the effort of the Green Practices Program on campus. When Carnegie Mellon recently instituted a search for a new Vice President of Facilities, a criterion was that the candidate for this position have an interest in sustainable practices.<sup>20</sup> In addition, a new full-time position has been created for an Environmental Coordinator within the facilities group on campus. Carnegie Mellon also has an active student environmental group, "Earth," which is working toward better education and awareness of environmental issues throughout the campus. Projects undertaken by this group include increasing student environmental awareness, Earth Day events, and field trips.<sup>21</sup>

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<sup>17</sup> Cortese, A.D., Sc.D., 1992. Education for an Environmentally Sustainable Future: A Priority for Environmental Protection. *Environmental Science and Technology*, 26(6): 1108-1114.

<sup>18</sup> Dzomback, D.A., 2001. Professor of Civil and Environmental Engineering. Personal Communication

<sup>19</sup> <http://www.cmu.edu/epc/>

<sup>20</sup> Dzomback, D.A., 2001. Professor of Civil and Environmental Engineering. Personal Communication

<sup>21</sup> <http://www.andrew.cmu.edu/org/earth/>

## Occidental College

Occidental College, a small liberal arts college in Eagle Rock, California, offers an interdisciplinary program in environmental science studies, which allows students from any major to study the scientific, economic, and policy aspects of environmental issues by adding an environmental "Coordinate Major" to their curriculum.<sup>22</sup> One of the courses offered in this program, "Environmental problem-solving: campus and community as a laboratory for change," was developed by Professor of Urban and Environmental Policy, Dr. Robert Gottlieb, and it requires students to work on specific environmental problems on campus.<sup>23</sup> This strategy of incorporating real problem solving in the curriculum is also recommended by David Orr:

*I propose that we engage young people and faculty together in the efforts to solve real problems. I do not propose such efforts as "service" projects alone but as ways to integrate learning with service. Opportunities are all around us. Virtually all schools and institutions of higher education are located in places that are losing biological diversity and the means for right livelihood, rural and urban places alike that are polluted, overexploited, and increasingly derelict.*<sup>24</sup>

Through this course and other environmental programs at Occidental, including the Pollution Prevention Education and Research Center, the Occidental Community Food Security Program and a program called Eco-Oxy/Eco-L.A, Gottlieb has been instrumental in developing a heightened environmental consciousness and a strong sense of and commitment to environmental responsibility at Occidental College.

Professor Gottlieb and his students worked closely with the National Wildlife Federation's Campus Greening effort and hosted a Campus Greening Conference in February of 1999, attended

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<sup>22</sup> <http://departments.oxy.edu/registrar/catalog/ess.html>

<sup>23</sup> Gottlieb, R., 2000. Professor of Urban and Environmental Policy, Occidental College., Personal Communication

by over 100 students and faculty from several colleges and universities in the Southwest. Occidental is also involved in the Environmental Justice and Community Health Research Project, a collaborative partnership “which combines analytical research, community organizing, public education and technical assistance with a goal of improving public health in low-income communities of color in Los Angeles County by identifying and evaluating urban environmental hazards and developing strategies to reduce community exposure to these hazards.”<sup>25</sup> Occidental also has a Council for a Livable Campus (CLC) whose mission is to foster a more livable campus by reducing its impact on the physical environment and by improving the safety and health of all who live and work on campus and in neighboring communities.<sup>26</sup> The Occidental College Environmental Advisory Committee works to promote environmental awareness of the students, faculty and staff on campus.

## **Yale University**

Yale University in New Haven, Connecticut, a larger institution than the others previously mentioned, has various environmental research and education programs as well as a very active student environmental group. The university offers the Graduate School of Forestry and Environmental Studies, the Yale Institute for Biospheric Studies, an undergraduate secondary major titled “Studies in the Environment”, a Population Seminar Series, and related teaching and research in a variety of disciplines. The University maintains a comprehensive recycling program and promotes energy conservation. A new Environmental Science Facility (ESF) will provide opportunities for students to become environmental experts. Despite these initiatives, many students

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<sup>24</sup> Orr, D.W., 1994. *Earth in Mind*. Island Press, Washington DC.

<sup>25</sup> <http://www.oxy.edu/departments/ess/proj.htm>

<sup>26</sup> <http://www.oxy.edu/oxy/resources/clc.html>

at Yale believe that Yale could improve its treatment of the environment both in its curriculum and its operational practice and are working toward that goal by proposing the Yale Green Plan.<sup>27</sup>

The YSEC (Yale Student Environmental Coalition) recognizes that some of Yale's successes in environmental education and performance go unnoticed and environmental initiatives go unrecognized. But they state that the Yale Green Plan originates from a desire to ascertain and convey the state of Yale's environmental presence, its education and performance, and to offer carefully considered student recommendations that, if adopted, would make Yale a truly visible environmental leader.

One thing the students are asking for is a stronger commitment from the administration. Within the Green Plan they ask the Yale Corporation for a clearer commitment to improving Yale's environmental education and performance. In one specific example, the students are asking the Yale Corporation to purchase recycled paper. The students have talked to faculty, staff and administrators and almost everyone has acknowledged the potential benefit of an advisory committee on the environment. They also have asked the Yale Corporation to sign on or endorse one of the national or international declarations and guidelines for sustainability for large corporations and higher educational institutions, like the Talloires Declaration, or develop its own environmental mission statement.

In addition to these attempts at promoting environmental responsibility within the Yale community, Yale hosted the "Campus Earth Summit: Initiatives for Higher Education" in February 1994, which brought together 450 faculty, staff and student delegates from 22 countries, 6 continents and all 50 states. At this summit, the delegates crafted the Blueprint for a Green Campus, a set of recommendations designed to help institutions of higher education worldwide to work toward an environmentally sustainable future. The Blueprint is based on the principle that as multi-billion

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<sup>27</sup> <http://www.yale.edu/ysec/>

dollar consumers of higher education's services, students have the power and right to demand more environmentally responsible options and decisions both on campus and in the curriculum. Faculty and staff contribute to influencing society by turning out environmentally literate citizens and by demanding environmentally sound goods and services. Since colleges and universities educate most of the people who run society's institutions and train the teachers who educate children, it becomes clear that transforming campuses into catalysts for environmental sustainability is a good first step toward changing the world.<sup>28</sup>

### **California Institute of Technology**

The California Institute of Technology (Caltech) is a small campus in Pasadena, California, with an emphasis on scientific research. It has a strong academic department of Environmental Engineering Science and plans to increase the current level of environmental research by promoting a new Global Environmental Science Initiative. Environmental research at Caltech, particularly in the areas of air and water quality and atmospheric science, has focused on current societal environmental concerns, and in so doing has played an influential role in developing solutions to many environmental problems. Despite this strong research program in environmental science and the influential contributions of many individual researchers at Caltech, the institution of Caltech has not made a strong effort toward ensuring all campus operations are environmentally responsible nor has Caltech made a concerted effort of promoting environmental awareness within the Caltech community.

The Caltech Environmental Task Force (CETF), an organization composed of students, faculty, and staff, advocates the implementation of improvements in specific areas, including more comprehensive campus-wide recycling, reduction of energy and water use, and green purchasing.

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<sup>28</sup> <http://www.yale.edu/ysec/history.html>

CETF has also attempted to convince the administration of the importance of a strong institutional commitment to environmental responsibility.<sup>29</sup> To promote environmental responsibility on a specific campus, it is critical, according to the National Wildlife Federation's Campus Ecology Program for the administration to demonstrate a firm commitment to working toward that goal. For over a decade, CETF has repeatedly proposed an increased campus-wide commitment to environmental responsibility, which would include proactive efforts to improve environmental awareness and resource-use reductions. Although general campus-wide support for a higher degree of environmental responsibility has been demonstrated<sup>30</sup>, and the idea has been presented to various administrators, the Caltech administration has yet to make any commitment to improve environmental responsibility on campus.

Although Caltech, like the rest of society, is more environmentally responsible than it was ten or twenty years ago, many of the measures that have been taken to improve environmental responsibility on campus, for example the building of the recycling center, precautions in hazardous waste disposal and rideshare and carpool programs, were mandated, i.e. required to comply with regulations. Although Caltech is viewed as prominent and influential in scientific research (its environmental engineering science department was ranked third in the nation in U.S. News and World Report 2000), Caltech has not yet taken on a leadership role in the wise and conscientious application of science on its campus by making a commitment to environmental responsibility.

## **Part II – Discussion**

### **The role of individuals versus institutional factors**

Based on the examples of the five academic institutions discussed above, two key factors appear to influence attempts toward environmental responsibility: (1) the institutional history of

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<sup>29</sup> <http://www.its.caltech.edu/~cetfers>

environmental concern, i.e. a culture of environmental interest, and (2) the participation of environmentally active individuals in promoting institutional responsibility. At Tufts and Yale, environmental awareness on campus has perhaps developed from a long history of institutional interest in environmental issues. Both universities have numerous well-established academic programs in environmental science and policy, some of which have been in place decades (or in the case of the Yale School of Forestry, for a century).<sup>31</sup> Environmental science and policy studies in many institutions are relatively new academic areas. Caltech and Carnegie Mellon share institutional histories strong in physical and technical sciences; environmental concerns have not been generally a part of their culture although individual scientists at both of these schools have been contributing to solutions to environmental problems for many years. Carnegie Mellon, as recently as 1998, recognized the absence of a commitment to environmental responsibility and has been acting to change this. Caltech has yet to recognize the inconsistency of having very strong environmental science research programs with many influential environmental scientists, but not promoting environmental responsibility in a general way within the campus community.

The participation of environmentally aware and active individuals appears to be another key factor contributing to the relative degrees of environmental responsibility. At Carnegie Mellon, for example, several interested faculty members proposed the Green Practices Program and found the administration to be supportive. At Occidental, the course development and research ideas of one professor, Dr. Gottlieb, have increased the level of environmental responsibility and awareness on that campus.

The relative contributions of individuals within an institution, as opposed to the contributions of an institution's culture, are difficult to separate and quantify. Participation of individuals committed to making an institution environmentally responsible is obviously crucial to reaching a

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<sup>30</sup> <http://www.its.caltech.edu/~cetfers/>

high degree of environmental responsibility on any campus. At Tufts University, a grant awarded to Sarah Creighton, director of Tufts CLEAN!, facilitated changes to campus operations making them more environmentally responsible; here individual efforts were clearly, instrumental. On the other hand, the already established academic departments of environmental engineering and environmental policy made Tufts particularly susceptible to campus greening since faculty and students in those departments were fundamentally interested in working on environmental problems.

At Carnegie Mellon the role of individuals seems to have been even more pronounced than at Tufts, since a culture of environmental interest was not historically well established. At Occidental College one professor in particular seems to have been responsible for much of the increased environmental responsibility on campus. Professor Gottlieb inspired the involvement of hundreds of students and many staff members in various environmental projects on campus. Although other faculty are involved and supportive, without his ideas and coordination of projects, it seems unlikely that Occidental College would be as successful in its efforts to become an environmentally responsible campus.

### **Correlation between environmental academic programs and environmental responsibility**

Of the five academic institutions previously discussed, all but Occidental have strong environmental academics and research programs offering graduate degrees in environmental areas. Of these, the administrations of both Tufts and Carnegie Mellon have instituted proactive programs to promote environmental responsibility within their campus community. Both of these institutions have put into effect measures designed to ensure that they “practice what they preach.” Individuals at both Tufts and Carnegie Mellon have realized the inconsistencies, not to say the hypocrisy

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<sup>31</sup> <http://www.yale.edu/forestry/about/mission.html>

inherent in supporting strong environmental research and education programs without ensuring that campus operations are carried out in an environmentally responsible way.

The administrations of Yale and Caltech have yet to make an institutional commitment to strive toward environmental responsibility, although both of these schools have strong environmental academic programs. It does not appear, therefore, that schools with strong environmental academic programs necessarily are also committed to environmental responsibility. Environmental groups at both Yale and Caltech are trying to convince their respective administrations of the importance of being a leader not only in research and academics, but also by example to the entire campus community by ensuring environmentally responsible practices in campus operations. Yale and Caltech (particularly Caltech as it promotes its new Global Environmental Science Initiative) may yet realize the potential of their leadership role, and eventually commit to investing in campus-wide environmental responsibility.

### **The relative roles of students and faculty in institutional environmental responsibility**

The role of students in promoting institutional environmental responsibility is somewhat difficult to assess. According to David Orr, schools, colleges and universities are beginning to respond to the environmental challenge more often than not as a direct result of student interests and pressures.<sup>32</sup> Although each of the academic institutions examined in this study has a student environmental advocacy group on campus, it seems that efforts successful in implementing environmental responsibility have resulted from action by faculty, not students. The influence of student pressure on those faculty members that actively worked toward promoting environmental responsibility is hard to measure; however, in the cases of both Carnegie Mellon and Occidental faculty action is what lead to changes in the institutions' attitudes to environmental responsibility.

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<sup>32</sup> Orr, D.W., 1994. *Earth in Mind*. Island Press, Washington DC.

Faculty participation in promoting environmental responsibility therefore, is crucial to persuading the administration to support it.

At Tufts and Carnegie Mellon, it seems that faculty members recognized that consistency within the institution demanded environmental responsibility as an institutional goal to go along with their strong academic programs. At Occidental, although student involvement is present, the students themselves do not seem to have actually initiated efforts to increase environmental responsibility. The efforts at Occidental are due primarily to one particularly active faculty member who encourages and advises the students. Yale's long history of involvement in natural resource issues has been driven primarily by the research interests of faculty members, yet none of these faculty have yet convinced the administration of the importance of making an institutional commitment to environmental responsibility. Similarly, at Caltech although several faculty members are supportive of the causes advocated by the campus environmental group, they have not yet been successful in persuading other faculty and the administration that environmental responsibility is an important goal.

It should also be noted that administrators in each institution play a huge role in determining the success of individual efforts by faculty or students advocating environmental responsibility. The level of administrators' understanding of environmental issues is, therefore, also a factor to be considered influential in determining the relative degree of a specific academic institution's environmental responsibility. According to Derek Bok,

*The most obvious key to progress is effective leadership from those who preside over universities and their faculties. Presidents and deans are in a better position than anyone to perceive the social problems that will benefit most from education and research and to encourage faculty members to respond accordingly.*<sup>33</sup>

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<sup>33</sup> Bok, D., 1990. *Universities and the Future of America*. Duke University Press, Durham.

So if, as in the case of Carnegie Mellon, a university President is aware of and interested in addressing environmental concerns, and is therefore responsive to those advocating for an institutional commitment, the task of identifying ways of implementing environmental responsibility can be entered into with an invigorating spirit of cooperation. Conversely, however, if, as in the case at Caltech, the administration is not responsive, appears to lack interest in environmental issues on campus, and thinks the institution has no reason to make such a commitment, the promotion of an idea of campus-wide environmental responsibility is a more difficult task.

## **Conclusions**

This discussion of environmental responsibility in five U.S. academic institutions demonstrates that the action of individual faculty members, the institution's history of environmental concern, the administration's understanding of the importance of environmental issues, and the realization that one should "practice what you preach" are the primary factors that contribute to the institution-wide adoption of a goal striving for environmental responsibility. Given these examples, a general correlation does not appear to exist between institutions that have strong academic environmental programs and a commitment to environmental responsibility, because some institutions with strong environmental research programs have not yet made environmental responsibility on campus a priority.

Although several of the academic institutions used as examples in this paper have made strong efforts to promote campus environmental responsibility, nationwide, many colleges and universities have yet to take action to improve the environmental impact of their campus operations. The observations discussed in this paper help in understanding why many colleges and universities have not addressed their environmental responsibility. Whereas some trustees and administrators understand environmental problems intellectually, yet do not feel passionately enough about them to

act for change,<sup>34</sup> other factors, such as the institution's history, its environmental academic programs, and the sheer force of persuasive faculty members in promoting change also play a role.

This discussion may be helpful in facilitating efforts of those who work to promote a higher degree of environmental responsibility at every level in an academic institution, and although many of the factors identified as being most influential are, unfortunately, difficult to change, possibly identifying them may lead to changes.

David Orr, in "Earth in Mind," proposes a different ranking system than that of US News and World report, a ranking system based on whether or not the institution and its graduates are environmentally responsible and, therefore, moving the world in sustainable directions. He suggests the ranking of academic institutions based on the following five criteria: 1) resource use per student, 2) institute management policies for materials, waste, recycling, purchasing, landscaping, energy use, and building, 3) does the curriculum provide basic tools for ecological literacy? 4) does the institution use its buying power to help build sustainable regional economies and to what extent are their funds invested in enterprises that move the world toward sustainability? 5) what their graduates do in the world<sup>35</sup> (most colleges make serious efforts to discover who among their alumni attain wealth, but most colleges don't survey its graduates to determine their cumulative environmental impacts).

If a comprehensive ranking of all academic institutions using Orr's criteria were in place, colleges and universities would be held accountable for their environmental impact. Given how sensitive academic institutions are to comparative rankings, surely they would respond to such rankings by increasing their levels of environmental responsibility.

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<sup>34</sup> Perrin, N., 1992. Colleges are doing pitifully little to protect the environment. *The Chronicle of Higher Education*, 39(10): B3.

<sup>35</sup> Orr, D.W., 1994. *Earth in Mind*. Island Press, Washington DC.

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