

Interview with Margaret Davis

Interviewed by Ann Pflaum

Interviewed on October 14, 1999

Margaret Davis - MD
Ann Pflaum - AP

AP: This is Ann Pflaum. Today is October 14, 1999, and I am interviewing Professor Margaret Davis of the College of Biological Sciences, who is a Regents Professor.

Professor Davis, the way these interviews generally begin is we ask people to give a little bit about their own background, where they did their undergraduate work, how they got to the University [of Minnesota] before zeroing in on your experiences as a faculty member at the university.

MD: I did my undergraduate work at Radcliffe College. Then, I had a Fulbright fellowship in Denmark for a year, after which I returned to Harvard where I got my Ph.D. in biology in 1957. I had a number of postdoctoral years at Harvard and at Cal Tech [California Institute of Technology] and at Yale University. Around 1960, I went to the University of Michigan where I was a research associate for quite a long time. In 1966, I was promoted to the faculty in a split appointment that was partly faculty and partly as a research associate. I was appointed to full professor in 1970 and in 1973, I left Michigan and went to Yale University where I was a professor of biology. I came to Minnesota as a professor of ecology and head of the Department of Ecology and Behavioral Biology in 1976. I remained a department head for five years and then became a regular faculty member. I was appointed a Regents Professor in 1983.

AP: One of the sort of catch phrases that we've picked up for the book runs something like this—like all catch phrases, it may not be at all accurate—that the immediate post war years were years where physics made an enormous contribution, but that as you move more into the middle of the last five decades, molecular biology and the biological sciences play just an enormously pivotal role in the whole scientific enterprise. Is there any truth in that?

MD: Those aren't my fields so it's a little bit hard for me to give a very complete evaluation; but I think that would be my perception. Molecular biology was just coming into its own around the time I got my degree in 1957 with the discovery of the structure of DNA [Deoxyribonucleic Acid]. It was becoming tremendously important in those years and biology departments were switching over from an emphasis on more organismal biology to molecular biology. So I'd have to agree with that

perception that molecular biology was making a tremendous impact on science in general during those years.

AP: Help us understand your particular disciplinary area.

MD: I'm an ecologist. I've always been interested in the interaction between organisms and the physical environment and the interactions among organisms as well. During the years that I've been an ecologist, there's been a switch within ecology from an emphasis on organism/organism interactions. The work of [Robert H.] MacArthur and many of the people who were influenced by him during the 1960s and 1970s dominated the field of ecology, resulting in a stronger emphasis on competition and predation as major structuring factors in biological communities. My orientation was always a little bit different because I was interested in the physical environment, particularly on the role of climate change in affecting plant and animal communities. I've always had strong connections to the field of geology and particularly Pleistocene geology, which was the study of ice ages over the last 2 million years.

Over the last fifteen years, really, there has come a general recognition that the environment of the whole globe is being very much influenced by humans, that we are participating in major geochemical cycles on the earth, that humans now through industrial processes fix more nitrogen than natural processes do. We also are participating in the carbon cycle in a major way by releasing carbon, which has long been buried in fossil fuel, thus changing the chemistry of the atmosphere. We're also mobilizing a lot of phosphorous from the minerals of the earth. These changes now are of major impact on the surface of the earth. Because there are so many people now, we're taking over the land cover of the earth and changing the surface of the earth in major ways, which are having direct influences on the climate. Right now, the emphasis in ecology is swinging towards a recognition that the environment is changing rapidly due to human effects and that we really need to study the environment on both local and global scales and understand how human actions are changing it. Since I've always been oriented in the direction of organism environment interactions, this is a very interesting subject for me and one which is inherently interdisciplinary. We can't consider how organisms behave without considering also atmospheric sciences and chemical interactions in the atmosphere and the way the climate is affected by various forcing factors. I feel quite at home in this field, once I get used to the idea of thinking on these very large scales. I've become very much interested in global ecology within the last decade.

AP: Is that a subject that is taught routinely now in biology courses at the college level or even at the high school level?

MD: No, it's not taught and it should be, because the public remains quite unaware of what's happening to their world. We have a course at this university for non-science majors at the freshman level, called Our Changing Planet, which is an introduction to this area, and I teach an upper level course. But this is not a required part of the curriculum. I think that references to global change come into many courses, so most science majors, and I think the general public, are aware of the fact that carbon dioxide is increasing in the atmosphere; but the sweeping effects of that change are something the public is only dimly aware of.

AP: As you look at your own research, are there one or two particular pieces of research that you would point to, that you're proudest of, or you feel are most important?

MD: I think the research with which I'm identified is the recognition of the importance of climate in structuring the forest communities of Eastern North America. As we look at the record of the last 10,000 years, we can see that many species, which survived the last glacial period far to the south, moved northward as the climate changed again. They moved at different rates and in different directions, so the forest consisted of different combinations of species at different points in time. Before we recognized this, we had thought of the forest as being made up of certain combinations of species, which were strongly adapted to one another and which were sharing an ecological space to which they'd become adapted; but once we had looked at the fossil record, we could see that combinations of species were quite ephemeral. In fact, many forests had only had their present species composition for 1,000 years or so only a few generations of trees. This changed the way in which we viewed these ecological communities. They were collections of species rather than co-adapted groups of species.

I think maybe the research that I'm proudest of, though, is more recent research in which I've worked on a very small scale in forest communities, tracing the history of individual forest stands back into the past, using very, very small sites within the forests. We've done a lot of work to find out how pollen is dispersed inside forests and how much of an area of forest was represented by the fossil pollen record in these tiny bogs that we're working with. They're really little swales on the forest floor. Once having learned about the area of the forest that we were monitoring with our fossil record, then we could get an idea about the size of the patch that we were following through time. So, we've been able to show, in the area of Michigan where we were working, that the forest patchiness, which is quite striking there, has alternate communities dominated by sugar maple or dominated by hemlock. We were able to show that those were set up about 3,000 years ago when hemlock moved into the area as the result of a climate change. It invaded certain communities which were dominated by white pine and it didn't invade other communities where deciduous trees were common. That patchy invasion set up the distribution of communities that we see there today. This kind of study is unique because we have this long time series enabling us to see how the patches originated. There are other studies of vegetation mosaics in which people have tried to understand how the mosaic is maintained and whether or not it's a permanent fixture, but it's very hard to know how it originated in the first place. With a fossil record like ours, we were able to see the actual origin of the mosaic and to see how it had changed over thousands of years. That was a very exciting application of fossil pollen to an ecological problem. I've enjoyed that work very much and I like the ecological studies in those forests, which are just a remnant of the original forest, one of the few that we have left in the Middle West.

AP: Do you work with research teams on this?

MD: Yes. At the time I was working on this forest research, I had quite a large number of graduate students, several of whom were very much involved with this research. A post doc was particularly important in developing theory concerning the area of forest that was represented in these deposits.

There also were a large number of undergraduates involved in mapping the forest and surveying the locations of trees. We have permanent plots in the forest, which we hope will be monitored into the future.

AP: That sounds very exciting. That's very interesting.

I believe you're a member of the National Academy of Sciences, is that correct?

MD: That's right.

AP: A small number of faculty members, I believe, have that honor. What does that mean in terms of, do you go to a meeting? Do you get a plaque? Do you advise on science policy?

MD: The National Academy is a small group of scientists, somewhere between 1,500 and 2,000 scientists, chosen out of the whole country, so it's certainly a great honor to be elected. The elections to the academy are made by the members themselves, who nominate people for election and vote each year on a number of new members that will join the academy. The academy was originally set up as a group of scientists to advise the government on science matters and they do function in this way. The Academy now has a National Research Council, an organization with a staff that assists committees set up to deal with various scientific issues. So, if a government body or, say, the American Medical Association is interested in getting an objective opinion on some controversial issue, they can ask the National Academy Research Council to set up a committee of scientists that will consider the issue and come to some sort of opinion. I'm on a committee right now, which has been asked by the National Science Foundation to identify major environmental challenges that face the research community in the coming decade. This is a committee made up of scientists from the whole country, and there are a few academy members on the committee, contributing to the work. Academy members probably get put onto more committees than other people. A few academy members serve on every committee, but there aren't enough of us to staff all the committees that are asked for and the science community as a whole contributes. Committees write a report on whatever question it is that we're asked to consider. Those academy reports have been important, I think, in giving an objective and balanced opinion about controversial questions before the public.

AP: Can I ask you now about your experience in the college? You were in the College of Biological Sciences?

MD: That's right.

AP: What was it like to come? The college, of course, was founded in 1963. Changes are being made right now in terms of combining the Bio-Medical Departments more closely with the College of Biological Sciences. One of the things we've been studying is that when the college was established, not all of the combinations that are going to be occurring informally occurred at that time. Am I making any sense of the experience?

MD: Yes. As I understand it, the idea was that here we were a major university with both a School of Agriculture and a School of Medicine and that the College of Biology could somehow, as a free-standing college, bridge between those two institutions and provide basic biology training and research, which would contribute to both medicine and agriculture. So, the college was supposed to bridge between these two organizations and part of the college was on one campus and part on another. At the time I came here, the Ecology Department was moved to the Minneapolis campus where we and the Bell Museum, to which we're closely connected, sort of represented biology on that campus, in addition to the general biology teaching staff who taught the freshmen course on that campus. Most of the rest of the Biology College was located over here in the biology building on this campus. About five years ago, a building was built for Ecology here on the St. Paul campus and our department moved over here; so, we've been more closely connected with the rest of biology. I think we became quite estranged from the rest of the college as long as we were on the Minneapolis campus and they were on this campus because it was hard to keep in touch, given the fact that the campus transportation, at that point, was kind of awkward. It took about a half an hour to get from one campus to the other. It's much better now with the new bus system.

I think in a university with as much biology as this university has, it's just very hard to find a perfect organization that will combine people who have something in common. I think it's to the credit of biology as a discipline that it has continued to move with the times; freshmen biology courses have been designed and redesigned every few years ever since I can remember. Unlike the other basic sciences, the curriculum of the basic courses has continued to change from year-to-year trying to keep up with the field. I don't think we regard a certain basic aspect of biology as fundamental knowledge that everybody should know. We keep changing our mind about what that fundamental knowledge is as the field itself keeps discovering new things and decides that they're more important than what we used to teach students. Certainly, what's taught in a freshman course now is very, very different from what was taught when I took freshman biology years ago; whereas, in other basic sciences, my perception, which may not be very acute, the freshman courses are really rather similar to ones I took when I was in college long ago.

AP: That leads me to ask: Could you sketch in just a few particulars of examples of those differences? I think our readers would find that very interesting.

MD: Certainly, all of molecular biology has developed since I took freshman biology; so, while we were getting a big dose of descriptions of all the different kinds of plants and animals and how they were put together and what their physiology was like, students now are taught about DNA and its importance in controlling the physiology of the cell so they learn some biochemistry right off and some genetics as an important element. Now, recently in the college, it was recognized that the freshmen weren't getting enough information about organisms and so now a full year-long course has been developed with one semester that deals with evolution and introduces them to different groups of plants and animals so that they have some idea about whole organisms. Then, the next semester, they go on to study about sub-cellular phenomena. As I said, we keep changing, trying to find the perfect way to introduce people to biology and, of course, there isn't any perfect way, but we keep chasing the ideal. I think it's to the credit of biology that biology continues to do this and doesn't just sit back complacent that they've found the perfect way to teach the subject.

I think that this university still has to recognize the importance of environmental biology, which has now become very global in its scope and multi-disciplinary. Our Ecology Department is still a conventional ecology department in that we're teaching people about the evolution and behavior and ecology of plants and animals, but we're giving them very little understanding of global problems and multi-disciplinary environmental problems and how to solve them and how to predict what's really happening on the globe in the future. Those of us who are paleo ecologists have very strong connections with the Geology Department, so we have do have a global view of how we teach about environmental history. We teach about climate changes during the Pleistocene and how these have affected organisms and I teach a course in which I talk about the whole geological record with examples of connections between the biosphere and the geosphere. I'm just this afternoon giving a lecture about how the evolution of land plants affected the climate of the world and, in fact, had a tremendous influence on the conditions in the in-shore of oceans at the time and affected atmospheric chemistry and ocean chemistry. This kind of perspective is not given in our ordinary ecology classes and I think we need to change our ecology curriculum so that it includes more of this kind of a perspective on the world.

One of the great advantages of a university like this is its diversity though it makes the university very hard to organize and very hard to administer. There are so many different departments and they're quite different from one another in what their mission is and who their students are and what the faculty are chosen for. But diversity is also an advantage when it comes to environment biology because there are so many assets to draw upon. You can find a course in almost any subject that you think your students ought to be exposed to. I'm continually discovering new faculty members who are tremendous assets. They know about data sets that I don't know where to find. We're interested in how seeds are dispersed within a forest. My research assistant told me this morning that she had gone to the state climatologist—he's in the building next door—and asked about data on wind direction and in walked a faculty member who is working in atmospheric sciences. He said that he had some data and it turns out that the data set that he has is just really appropriate for what we need.

It's this kind of diversity this university has which is a tremendous strength for both research and intellectual stimulation. I've found it a very stimulating place to be because I keep discovering new people and new programs and new laboratories and new assets, so that my scientific horizons keep widening as I learn more from all of these people.

The other side of the coin is that with all this diversity, it's just very hard to find a perfect organizational structure. Biology now, in combining some of its departments with the Medical School, is trying to make the most of its resources; but at the same time, we need to reach across to the School of Agriculture and Natural Resources and develop similar connections there. We haven't figured out quite how to do that yet, but I hope that that comes about in coming years, too.

AP: It's an interesting topic to try to write about for the general public: this combination of courses and which department is in which college. I think it's not readily apparent to the person in the street why this is so important.

MD: I think that they certainly can understand the idea that the diversity of the university is its strength. To me, it has been intensely stimulating to be here because of the diversity of the assets of the university. I think that anybody could understand that, given the different missions of different colleges within the university, it's hard to get a single set of rules which is appropriate for all of the different colleges and different groups of students. That's what makes the university hard to administer. I feel sorry for anybody who is trying to organize the place because it's difficult to find uniform policies and procedures that will really work well across such a broad diversity. I think I can tolerate a good deal of administrative confusion recognizing the tremendous asset that this diversity is to us when it comes to following new scientific developments and training graduate students. There are so many different people for them to interact with in different departments.

I might say something else, which I feel very strongly about. One of the assets of this university is the Graduate School and the way the Graduate School is organized. We have graduate programs here that are freestanding programs. They're often strongly associated with a department, but they're not strictly identified with the department. They actually answer directly to the dean of the Graduate School. The faculty on a graduate program, say in ecology, can include people from any department. So, if we wanted to train students in ecology, we can elect to our graduate faculty faculty from any part of the university and that means that we can mobilize the resources that exist throughout the university. When a new field comes into existence, a committee of faculty can get together and petition the Graduate School to start a new program that encompasses that field. For instance, we have a program in Conservation Biology that brings together faculty from many different departments, both social sciences and natural sciences. It includes people from economics and from the Humphrey Institute and from science departments in order to train students in this new and growing field of conservation biology. Most universities can't do this because their graduate programs are tied to departments. If they wanted to offer a degree in conservation biology, they'd have to start a whole new department of conservation biology. That's administratively difficult and expensive and causes a whole lot of upset. So, it means that they're much more conservative than we have to be in how they train graduate students. The Graduate School and the way it's structured is a tremendous asset; it has enabled us to get interdisciplinary programs going that have not developed at other universities. We have a graduate minor, for instance, in Quaternary Paleo-Ecology. We're one of the larger graduate minors. Some of the students who are taking their graduate degree in archaeology through the Department of Anthropology or the program in Interdisciplinary Archaeology Studies, minor in Quaternary Paleo-Ecology. ALL of my students are getting their degree in ecology, with a minor in that program.

AP: Could I stop you for a second? We will be having a transcriber do this and the spelling of the word... I can hardly pronounce it.

MD: Quaternary?

AP: Yes.

MD: Q-u-a-t-e-r-n-a-r-y. Quaternary refers to a geological period. It's the last 2 million years.

AP: Then, the other phrase you used with it was?

MD: Paleo-ecology. That's p-a-l-e-o and ecology.

AP: Thank you.

MD: That means the ecology of the past. So, we're talking about the ecology of the last 2 million years, the Ice Age and up to the present time. We're in an Ice Age now. We're in inter-glacial. This is a warm period in an Ice Age. Most of these warm periods have lasted about 10,000 to 15,000 years, and we're already 10,000 years into ours. Given the amount of carbon dioxide we're putting in the atmosphere, it's unlikely we'll move into another Ice Age. We might get warmer still. We're going into new unknown territory, putting all these greenhouse gases into the atmosphere.

AP: I think your comments were very insightful about the flexibility of the Graduate School and what that does. You have been at Harvard and you've been at Yale and you've been at Michigan. One of the obvious differences between those other research universities is that none of them is a Land-Grant university.

MD: That's right.

AP: Can you describe a little bit how the particular culture of Minnesota as urban research and Land-Grant has affected your work—if it has?

MD: The broad spectrum of courses is certainly different. At Harvard, I took some geology courses but there weren't any courses in soil being offered, nor were there any courses in aquatic ecology. But no one had any misgivings about the idea that I should take some courses in geology, and I had a geologist on my graduate committee. Because it was a smaller university, it was flexible in that regard. At Yale, also, I was an honorary faculty member in the Geology Department and my students took courses in geology. But there wasn't the broad spectrum of courses in different kinds of ecology that they could take here because there were only a small number of ecologists in the Biology Department. The Forestry School had some good ecologists so they could take courses from them, but, still, the breadth of courses in systematics and various aspects of ecology were just simply not offered. I had students working in a broad range of subjects, not all of which I was very familiar with myself.

At Michigan, there was a broader range of courses available, but there was a certain conservatism about students working with people outside the department. Individual departments were quite jealous of their students' time and attention and they did not encourage them to work across departments. The atmosphere here has been quite different and I think it stems from the way the Graduate School is organized with the graduate programs independent of the departments. The students belong to the programs. They don't belong to the departments. It's always been much easier here, somehow a more welcoming atmosphere, for students who want to spend time in a laboratory in another department.

I started to list the different departments that students are in who minor in the Quaternary Paleo-Ecology graduate minor program: Anthropology, Geography, Soils, Geology, Geophysics, and Ecology, and Plant Biology, Conservation Biology. There could be others, too...forestry, for instance. All of these different departments have students who are brought together in a minor program which shows their breadth of interest, but which doesn't dictate what the major thrust of their research should be. These interdepartmental connections are encouraged at this university, so it's a different atmosphere than other universities I've been where the department is the major unit and people who spend a lot of time in another department are thought.

AP: Are there intellectual leaders or mentors, since you've been here, that have been helpful to your own scholarly development or, conversely, people that you have, perhaps, mentored that have given you a lot of pleasure?

MD: I wouldn't put it in a mentor/scholar relationship. I've certainly had some colleagues here who have taught me a great deal. I enjoy teaching courses with other people. I always learn a great deal that way, listening to their lectures and hearing their perspective on things. There have been many connections of that sort. I think this is a different answer to the question you're asking.

AP: That's just fine. One of the things we're finding, for example in the 1960s, is the extraordinary characteristic of very close town/gown interactions on the university and very tolerant across the barricades, so that people that are one side of the Vietnam War or on the other side of the Vietnam War didn't become permanently alienated from each other. They were able to somehow keep up a dialog and keep up a sense of community. It was certainly strained and there was one day in 1972 when the whole thing nearly collapsed; but, basically, this seems to be a place where people can talk across differences rather effectively. We're realizing that that's not an absolutely common characteristic in other universities.

What you're telling me about the Graduate School is very helpful. Are there deans of the Graduate School that you think have been particularly helpful or other administrators?

MD: Every dean of the Graduate School has been very supportive, with a clear over-view of the research thrust of the university. Dean [Warren] Ibele was certainly very supportive to me when I was department head. He was certainly very supportive of our graduate programs and of our efforts to support the younger faculty and help them get going in research, providing resources for their research. Dean [Robert] Holt was very helpful in supporting our efforts to get a research training group started in paleo records of global change. He helped us with matching funds and talked very persuasively to the National Science Foundation on our behalf. The Graduate School, yes, has been very helpful in my stay here. I've considered them a very important source of support for the interdisciplinary research that I've wanted to do and they have helped implement the graduate training that has flourished here.

AP: One of the general trends is something of a decline in federal support dollars. How has that played out on your field and your own research?

MD: Yes, it's terribly competitive now and it's hard for young faculty to get going and get their first grant. It's hard to sustain research funding. There's no question but what tremendous amounts of energy go into writing proposals and writing yet more proposals trying to get money to support research. Supporting graduate students is a major problem.

AP: One of the issues that the university faced is trying to create opportunities for women faculty and to increase the numbers of women faculty. Do you have any comments you'd like to make on that topic?

MD: Despite the liberal attitudes in the state, I think the university has been rather backward on women's issues. There certainly has been great disparity in wages paid to women faculty and to male faculty and that's very discouraging, very disheartening, for women. Since I've been here, the [Shyamala] Rajender Agreement resulted in some improvements. The subsequent suit alleging unequal pay was fought by the university for years. Finally, the university had to cave in and admit that there were inequities. The amount of money they were willing to apply to the problem was not nearly enough to establish really equal salaries. I'm not convinced that they have an effective system in place now to monitor discrepancies in pay between men and women, which I think continue to exist. They always become worse because the women faculty are less aggressive than the male faculty are in lobbying for pay raises. I think the university ought to be mature enough to figure out a way to pay people on the basis of merit, such that men and women faculty of equal merit would be paid equal wages. It seems a fundamental aspect of the university that's been neglected.

AP: Do you have any sense of why this dichotomy? We apparently were a reasonably good leader in anti-war issues, a reasonably progressive leader in some aspects of diversity. Do you have any feel, having been in other cultures, what the dilemma was in terms of gender here?

MD: There just aren't very many women on the faculty, not enough to really lobby effectively. In the Engineering School, the number of women still is extremely small. The Agriculture Departments also have very few women on the faculty. When a woman faculty member is the only woman in her department, she really is on the defensive and doesn't have any local support and certainly doesn't have energy enough to work on university-wide issues. She has enough problems just within her department. As long as women are as thinly scattered as that, it's very hard for them to be very effective in working for change. At the University of Michigan, which was the first place where HEW [Department of Health, Education, and Welfare] really cracked down on equal wages and on equal work conditions, there were quite a large number of women on the faculty, actually enough to make an effective protest group and to lobby effectively for change. Here, the women faculty seem to have been in a small minority for a very long time. I think that's been a problem. Since I've been here, there have been very few women holding high-level administrative positions. I hope that President [Mark] Yudof is able to redress that situation. There are a large number of women now who have administrative experience and an academic career, so to argue that there aren't any people available would be ridiculous. But we have had very few women in our administration and where we've had them, they haven't stayed here very long. I think that those problems need to be looked at very seriously and redressed—addressed, I guess I should say. I really don't know whether the administration is keeping track of wages for men and women across the university, or whether it will

again require a group of women who are willing to take time away from their careers and analyze the salaries at the university and, again, bring a law suit. That seems to be the most effective way to get anything done, but it's just ruinous to the career of an academic woman to have to spend her time that way.

AP: That's a sobering thought.

At this point in the interview, I always ask people, is there something that we have, perhaps, not asked that we ought to that would be helpful for this record?

Oh, I had this question: Are there exceptional students that you've had over the years?

MD: I've had excellent students. I've had some really outstanding graduate students. I think there are simply stunningly bright undergraduate students here at this university as well. I think the diversity of students in their academic preparation is rather wide and that often makes it difficult to teach courses because you have to carry along the students who aren't fully prepared and that tends to make the whole lecture less sophisticated than it would be if they were as good as the brightest students. Also, I've met a good number of students who are very bright who were not well prepared by high school. They weren't challenged in high school. Some of them said they never did any work in high school, that they could easily get A's just by doing all their homework during study hall and they never did any work when they went home. Students who are bright and who have found high school very easy don't have good work habits. When they come to the university, it's quite a shock, the amount of work that's expected of them. Some of them flounder and, then, if they catch on and start working hard, they do very well. It seems to me that high school could be more demanding, more challenging for them, and more interesting.

[End of Tape 1, Side 1]

[Tape 1, Side 2]

MD: ...to draw upon. I hope the state will fund the university well enough so that they can really provide a program that's worthy of those high ability students. That doesn't mean that we shouldn't also put forth our efforts for the students who aren't so able or who are very disadvantaged by their background. We need those programs as well. I'm not arguing against those, but we should also recognize that the high ability students need to be challenged as well.

AP: That's kind of a high school problem as well as a lower division undergraduate problem, I gather.

MD: I think so, yes. Certainly, our whole school system needs to take account of the diversity of students and offer all of them a good educational program. That requires appropriate resources in our school system as well as our university system.

AP: This is an extremely helpful interview. I appreciate it very much.

I had to turn the tape over just as you were commenting to my question, "How would you compare the students at Minnesota with students you've had at other institutions?" Could you repeat those couple of sentences?

MD: If I were to compare them, say, with the students at either Yale or the University of Michigan, I would say that the brightest students are equally bright. But there's a greater range of students in all of the courses here, so that there are some who are very well-prepared and very sophisticated and others who seem rather poorly prepared and have difficulty dealing with the challenge of drawing together material from disparate sources or to deal with abstract concepts. I think the range of students in all of the courses we teach here makes teaching more difficult.

In general, the students are quieter and this is just a Minnesota cultural thing. The student may have a lot of questions or they may dislike you intensely and they don't say anything. They just sit there. So, when you teach, it takes a lot of energy trying to get a response from the students. Students at Yale, on the other hand, were very outspoken and did a lot of complaining. [laughter] I always knew if they were unhappy. They certainly came and told me so. With students here, you may find out in the course evaluation that they were intensely unhappy, but they may not say anything during the course. It's a matter of establishing some rapport with them so that they will feel easy about speaking up and complaining. That's a problem, I think, with a university where many of the students are not residential at the university, they spend a lot of their time elsewhere, don't know other students well, and don't feel as easy here as students who are residents, as, for instance, the students at the University of Michigan.

The best students are just excellent and as good as any student I've ever seen anywhere. Then, there are some students who are not well prepared here. That's what's different from, say, Yale, which didn't admit those students at all. I agree with this university, that they should be admitted, that they should come to college, that they're very capable of getting a college degree, and it's certainly the responsibility of the university to educate them. It's difficult when they're all in the same course at the same time.

AP: The ratings game of graduate programs, undergraduate programs, higher education... How would you explain to a colleague the way Minnesota tends to be rated as an institution? How do you interpret that for people?

MD: I think those ratings are terribly inaccurate and arbitrary, frankly, and often kind of out-of-date. They often, for example, will ask, "How do you rate different botany departments?" and "How do you rate different zoology departments?" They're not asking, "How is the University of Minnesota in regard to an ecology program or in regard to a cell biology program?" They're asking for rather conventional departmental designations. They haven't even asked about ecology, so it's kind of hard to know how those ratings relate to our department.

AP: In other words, something that is interdisciplinary and new isn't even measured and, yet, from what you were saying earlier, this is one of the great strengths of this university, to be on the cutting edge of a new field?

MD: That's often the case. I don't know that the ratings have a whole lot of statistical merit. They seem to be more or less people's impressions.

AP: If I'm a citizen of this university and we're 150 years old and we're trying to think about the university, how would you describe its overall quality? Pretty good? Very good? You, who practice in the university, how do you think about us?

MD: The university has some really strong departments, really outstanding, nationally obvious. Often, I'm on committees and I find that in a given symposium or a given committee, there are two people from Minnesota on the committee, while very few other universities have more than one representative. Certainly, in my area, it's very strong and diverse and, often, we're called on to provide expertise in a number of different areas on some subject. I think other parts of the university may not be so strong; but, of course, I don't know as much about the areas that aren't my own as I do about my own area. I think that the reorganization of biology that's underway right now will take the assets that we have and make them much more visible and make them more able to have an impact because they'll be able to work together instead of separately. For me to give an overall ranking of the university is just about as bad as what I've been criticizing: people giving their subjective impression. I can understand that the citizens of the state want to know how well we're doing, so that's why they pay attention to these reviews.

Resources have been dwindling for this university over a very long period. For the last ten years, the university has had a rough time, with dwindling resources and repeated cuts. This has been very demoralizing for the faculty. The fact that we've survived that period is a measure of the overall strength of the university. But I don't think it can sustain itself if that trend keeps on much longer. The fact that the legislature has been a little bit more kind to us in the last year has certainly helped to raise morale among the faculty at the university. I will say this: I feel we could be a great deal better than we are. That involves more resources to support graduate students and faculty research, more resources so that we could have better teaching for undergraduates, more laboratories for them. Those are expensive kinds of teaching because it's very one-on-one, but I think the students would learn more. More individual teaching of undergraduates... I think that's really what we need more than anything, more faculties. A higher faculty to student ratio would help and that takes money. If money is poured into the university, there will be a big payoff for the state in a higher quality education for all of their students.

AP: That's probably a very happy thought to end on: hope.

Are you pleased with the initiatives that Yudof is doing in the biological initiative? I gather, from what you've said, that you are pleased with that.

MD: Yes, I think it's a good idea. I hope that he is not finished and that we can also have an initiative that includes ecology and environmental sciences. Until we make those stronger and better integrated with the programs in other parts of the university, I think we're not done with the job at all. All we've done is strengthen the ties between the college and the Medical School, but we haven't

done anything at all, as yet, about the environmental sciences and that definitely needs to be done. We particularly need to develop an initiative in global science; we don't have that yet. We have some faculty here who are involved but no coherent program yet. I hope that that will be developed within the next few years. We have the ingredients here, but we need more resources and a more coherent program. This is sort of the wave of the future in ecology and if we're going to participate in it, we have to get moving and I haven't seen any movement so far.

AP: We can all hope for that. Thank you very kindly.

It will take about ten days for the transcription to be made and, then, I will send it to you and you'll have a chance to look at it. I'll send the human subjects research permission. If you're comfortable after changes are made in the transcript, then we will put it in the archives.

MD: Very good.

AP: Thank you very kindly. Take care. Bye.

[End of Tape 1, Side 2]

[End of the Interview]

Transcribed by:

Hermes Transcribing and Research Service
12617 Fairgreen Avenue, Apple Valley, MN 55124
(612) 953-073 bhermes1@aol.com