
Committee Meeting

of

SENATE EDUCATION COMMITTEE

“Testimony of Dr. P. Roy Vagelos with regard to ‘The Report of the New Jersey Commission on Health Science, Education, and Training’”

LOCATION: Committee Room 6
State House Annex
Trenton, New Jersey

DATE: December 9, 2002
1:00 p.m.

MEMBERS OF COMMITTEE PRESENT:

Senator Shirley K. Turner, Co-Chair
Senator Robert J. Martin, Co-Chair
Senator Byron M. Baer
Senator Wayne R. Bryant
Senator William L. Gormley
Senator Joseph A. Palaia



ALSO PRESENT:

Darby Cannon III
*Office of Legislative Services
Committee Aide*

Jennifer Langer
*Senate Democratic
Committee Aide*

Rosemary Pramuk
*Senate Republican
Committee Aide*

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SENATOR SHIRLEY K. TURNER (Co-Chair): Good afternoon.

Would you call the roll, please.

MR. CANNON (Committee Aide): Senator Martin.

SENATOR MARTIN: I'm here.

MR. CANNON: Senator Gormley.

SENATOR GORMLEY: Here.

MR. CANNON: Senator Palaia is on his way -- oh, Senator Palaia is here.

SENATOR PALAIA: Yes.

MR. CANNON: Senator Turner.

SENATOR TURNER: Here.

MR. CANNON: Senator Baer.

SENATOR BAER: Here.

MR. CANNON: Senator Bryant.

SENATOR BRYANT: Here.

SENATOR TURNER: On March 6 of this year, Governor McGreevey signed Executive Order Number 14, establishing a Commission on Health Science, Education, and Training. The Commission had 15 members appointed by the Governor, including the Commissioner of Health and Senior Services. It was the duty of the Commission to accomplish the following: Identify specific gaps and requirements necessary to enhance the overall quality and competitiveness of health education in the State of New Jersey; review the existing nationally recognized medical and allied health care models, and work to design a framework to help guide the relationship between the

medical and allied health care educational institutions -- hospitals and health care agencies -- within the State; determine the appropriate governance structure of the State institutions in medical and allied health care education; and determine any prospective institutional alliances and/or relationships among these schools.

Governor McGreevey appointed Dr. P. Roy Vagelos, retired Chairman and CEO of Merck & Company, as chair of the Commission. The Commission submitted its report to Governor McGreevey on October the 14th. Its major recommendation was that the State create a single New Jersey research university system, herein called the University of New Jersey, or UNJ, that builds on the collective strengths of the eight UMDNJ schools and the schools' programs at Rutgers and NJIT, and, thus, create an effective platform for excellence in both health and nonhealth disciplines.

So we have heard a great deal about this proposal. And we've also read a great deal about the proposal. And we, as a Committee, wanted to invite you in today, Dr. Vagelos, because this proposal, if implemented, could very well change the face of higher education in this State, as we know it.

So we wanted to hear the proposal from you today, and to provide an opportunity for the members of this Committee to ask you some questions regarding the proposal. And since we understand that the Governor will be asking us to vote on legislation, next year, regarding the proposal, we thought this would be an ideal time for us to hear from you. So thank you very much for coming.

P. R O Y V A G E L O S, M. D.: Thank you, Senator Turner. I'm delighted to be here, senators. It is a particular pleasure for me to be with you,

because I know of your interest in higher education. And I think a very good thing for the State is that the -- our new Governor has an authentic and burning interest in higher education, and, specifically, in the research university system of New Jersey.

He approached me early in the year -- late February, early March -- and asked me to pull together a commission to look at three specific areas. One of them was to concentrate, first, on health education and look at the health education system in the State. And the reason for that was that he had a great concern that we were losing some of our top students to other states, and once they leave, they tend to work in other states.

We're losing some patients to these states, when we don't have the expertise in health care delivery in the State of New Jersey, so they will go to Philadelphia, New York, or other states -- other cities. And he was particularly interested in the fact that research funds, whether they're Federal funds or industry funds, are not being collected by New Jersey to the degree that would be appropriate and healthy for the State.

So the first thing was to concentrate on the health education.

The second aspect was to look at the research universities to see whether there could be synergy among the three research universities. Of course, the health university is UMDNJ -- University of Medicine and Dentistry of New Jersey. The two other research universities are Rutgers and NJIT -- the New Jersey Institute of Technology.

And so he said, take a look at those and see whether there could be synergies in education in general -- health education, but education in general.

And thirdly -- and I will not touch on this unless you ask questions -- and that is to look at the involvement of University Hospital in Newark, to see whether it makes sense that the hospital remain part of UMDNJ, because he was concerned that financial difficulties in health care delivery across the country are causing so much anguish to the academic group that, perhaps, it would make more sense to divest The University Hospital from the university, so that the people who run the university and worry about education and research don't have to be concerned about the funding of health care.

There was no implication that the State would step away from The University Hospital, in New Jersey, just that there would be separation of the running of the hospital by the university system.

Okay, so the Commission was -- he asked me to pull together a Commission, which I did. And the bios of the 15 members of the Commission have been distributed. I hope you've had a chance to look at them. They are top educators and research people of the region -- principally the region -- but they include some of the top people in the country, or the world. So we were very fortunate to have great expertise. In addition, we recruited a small group of staff, from McKenzie, (phonetic spelling) who staffed the work as we went forward.

And the way we did it was that we initially focused on UMDNJ, and we traveled and visited the eight schools. And you'll understand that UMDNJ has three medical schools -- two research medical schools: one in Newark, New Jersey Medical School; one in New Brunswick, Robert Wood Johnson Medical School; and, then, a school of osteopathic medicine.

Now, schools of osteopathic medicine are necessarily -- they're different in that they don't have large research organizations, although there is some research there. And schools of osteopathic medicine generally are not classed with the other medical schools.

Now, our school of osteopathic medicine is a good one. It's one of the best in the country. But in looking at the health reputation of our medical schools, we focused on the two medical schools, one in Newark and the one in New Brunswick. The way we did this was, we visited the schools -- all eight, but we focused on the two medical schools -- visited with administrators, the senior faculty, and students, and spent time, of course, reviewing all the data that was sent to us and data that we could pick up from the literature.

And, having done that, we then visited many of the top 10 medical centers in the United States -- the top 10 as defined by the usual criteria of expertise and evaluation of organizations -- so that we could compare our organizations with those that are the best in the country. The point of the Governor was that New Jersey should have and deserved to have top health education, and top education in general, in this State. So we had to have a target with which to compare our own schools.

When we did this, we looked at the level, and that was the quality of the education system, the faculty, the students, the research, and also community care. And what we discovered, that in these medical schools, the community care aspect of their mission is being very well served. They're doing a very good job, and they collect awards in that area.

Well, we looked at all the other areas. We concluded that the schools were performing at an average level, as compared with all the other state medical schools in the United States -- average.

Now, to come to that conclusion, we looked at tons of information and measured it, but most importantly, I would focus on the amount of research dollars that are attracted from the National Institutes of Health. And here, what we found was that in the year 2001, our two medical schools averaged \$42 million each. The average state medical school in the United States brought in \$57 million. And the average of the top 10 medical schools was \$181 million.

So the difference between our ability to attract research funds from the National Institutes of Health, and being one of the top schools, which we would like to be, was \$139 million per school in 2001. So, with two schools, that's, like, close to \$280 million.

SENATOR MARTIN: Could you just clarify --

SENATOR TURNER: Excuse me. You wanted to have him clarify something?

SENATOR MARTIN: Yes, please.

SENATOR TURNER: Okay, Dr. Vagelos, could you clarify that for Senator Martin.

SENATOR MARTIN: Just the fact that there were two separate schools that are one, two, does that -- is that a fair way to compare them, or would you combine their -- the amount of research that the two -- that the two campuses -- separate schools. I know Robert Wood Johnson and UMDNJ North operate separately, but is it fair to view them as two separate schools, for

the purpose of research, or one? Oh, how do you deal with that issue that they're, sort of, one university of medicine, but at two separate function schools?

DR. VAGELOS: Senator Martin, the -- I think the best way to think about this is that each school is motivated to be highly expert and to compete for research funds from the National Institutes of Health.

Now, the University of California, which has five medical schools, are each measured as a separate medical school. All medical schools are measured individually. Now, you can combine them, also, but the combined number would be 84 million, which is somewhat higher than the average across the whole nation. But I think what we want to focus on is individual schools, because that's what's measured across the country. Does that answer the question?

SENATOR TURNER: Thank you, go ahead.

DR. VAGELOS: So, we -- so the conclusion was that, after our evaluation of the medical schools, that after 32 years, since the beginning of UMDNJ, and expenditures of something over \$4 billion in expenses, the school -- the system was large. It was complex. But it was average, and that was not -- that's not the objective of the governor. The governor says, how do we get to excellence? And the -- so we examined the 10 best, to say what differentiates these schools of New Jersey from being in the top 10.

And what we found, in looking at structure, was that in every instance, the medical schools that were able to do everything well, and attracted huge amounts of both NIH and industry funds, were each run individually and independently as an institution.

SENATOR BRYANT: Madam Chair?

SENATOR TURNER: Excuse me.

Senator Bryant?

SENATOR BRYANT: I think, in order for me to understand -- you use words like average -- what's average mean? How did you define, and where did you get average from.

DR. VAGELOS: Okay.

SENATOR BRYANT: I mean, are you talking about GPAs that folks came in with, and what they do on their MCAPS? Is that a measure of average, or, so that I understand what you mean that they're, only like, average.

DR. VAGELOS: No, we measured everything that was possible. Actually, the SATs, GPAs are one of, perhaps, 15 different things that are looked at. Outcomes are an important part of it. But if you're talking about students -- I think you're referring specifically to students.

SENATOR BRYANT: You used the word that they were average among others. I need to know what you mean by average. Average doesn't tell me anything. It's a word, but I don't know how you arrived at average.

DR. VAGELOS: Well, we looked --

SENATOR BRYANT: If you're telling me I'm average compared to John, there's some measuring stick that you're doing. I'm saying, what are the measuring sticks, because I might agree or disagree with how you compute average.

DR. VAGELOS: Well, I gave you a specific example in the ability to win awards for research from the National Institutes of Health. Now, the

way those are awarded is that faculty members send in applications to the National Institutes of Health in an area of their expertise, and they ask for a certain amount of money. When they -- when the National -- the NIH gathers these requests, they then invite in a peer review group, who are experts in that area, who come from universities. And they come in and they evaluate all the grant applications at that time, and rank them from top to bottom, in their scientific capability.

And then the NIH will award funds, based on how much they have at that time, to 10 percent or 20 percent or 30 percent of the top. And that -- that determines how much money is given.

Now, what I pointed out was that the New Jersey schools, the two of them, average 42 million. One was something like 37, the other one was 47. It was -- but the average was 42. So that put them -- and then that was looked at in relation to what is the average of all medical schools' research funds in the United States. And the average is 57, as opposed to 42. And so, we're sort of close to the average.

The top schools that I pointed out are a good deal higher, at 181. And the objective of the governor is that we are in a position to bring in that kind of funding.

SENATOR BRYANT: So then, in your discussion of average, average is in relationship to actual research dollars that are brought in.

DR. VAGELOS: Yes.

SENATOR BRYANT: And so, therefore, when you're using that term, then, we're talking about folks who did not -- let me just follow up with that. Based on your recommendations, we combine all these schools, would

the combining of the schools -- and this goes over Senator Martin's question -- do you actually take advantage of the two schools now bringing that 87 million?

DR. VAGELOS: Take advantage of the schools --

SENATOR BRYANT: If they all become one --

DR. VAGELOS: Yes.

SENATOR BRYANT: -- and I've got one making 47 million, and the other making, whatever -- 37 million --

DR. VAGELOS: Yes, yes.

SENATOR BRYANT: -- do I end up, then, looking like I'm better, because I have one school now doing 80 million?

DR. VAGELOS: No.

SENATOR BRYANT: Or are you now projecting that they should do 220 million?

DR. VAGELOS: Well --

SENATOR BRYANT: If you're saying the top ones are doing 130, then the only way this becomes excellent is that if each one of them starts to do 130. So if I combine them -- that's what your report says -- then they ought to be, like, \$260 million worth of research.

DR. VAGELOS: No, no, no. The report would not combine them in that way. The report suggests that the combinations be local, and, that is, the schools in Newark would all get together. So you would not be able to combine the medical school in Newark funds with the medical school in New Brunswick. I will get back to, later, and suggest a way for increasing the research funds by the mechanism that we're suggesting, okay?

SENATOR TURNER: Okay, continue.

DR. VAGELOS: So we arrived at that conclusion, and when we looked at the fact that the best medical schools are judged by all criteria, we're last, locally. So that in each instance, there is a leader on the campus who has a vision of what they believe would be an expert in a wonderful education and research organization, and a strategic plan to do that. When we compare that with the New Jersey system, we found a dramatic difference, in that New Jersey -- UMDNJ is led by one leader, a president, who sits in Newark, and who has a vision and a strategic plan that is implanted on all the eight schools.

So there is one-size-fits-all strategy in New Jersey, and it is very difficult for a person in New Brunswick or Camden or anywhere else to have a vision as a leader of a medical school and make it happen, because there's a straightjacket. It's a very strongly bureaucratic system, which is extraordinarily difficult to bend.

And, therefore, the first idea we had within the Commission was that this was so bureaucratic, as opposed to competitive -- organizations that were competing against -- why don't we just break down the bureaucracy. But before doing that, let's look at the second tenet of the governor's request; and that is, let's look at the other research universities.

So we then spent a good deal of time at Rutgers, and we visited New Brunswick and Newark and Camden, and there we found something that was quite different. The University -- Rutgers is a university that is not average. It is far better than that. It is a member of the AAU, the Association of American Universities, which are the top universities in the country. There

are 34 state universities in this elite group, and Rutgers is Number 14 of the 34. So it's a distinguished university.

As we went around and met with the senior faculty, we started to hear things -- we started to learn about what makes Rutgers so good. And we learned, for instance, that philosophy is very strong. And you may have read recently that the Philosophy Department in Rutgers, along with Princeton and NYU, were rated and ranked Number 1 in the United States, and, in fact, in the English-speaking world. And so it has a very distinguished department. It is very strong in English and History and Chemistry and Physics and Mathematics. And so it's a strong university.

And as we went around and talked to the senior faculty, it became very clear that these people felt very good about their university and felt that it was very good, but not great. And the question was then, why not great?

And what we are learning, then, was that it's not great because they are rather thin in the life sciences, and the life sciences, of course, are what medical schools are about. And, therefore, as we went around to see what people felt was a need to attain this excellence in the State University, it became clear that people were thinking along the lines of, "Wouldn't it be terrific if we could interact more closely and more intensely, and take advantage of the life sciences in our medical schools." And, of course, in Newark, we have the New Jersey Medical School, essentially, on the campus of Rutgers and NJIT. There's one contiguous campus.

And, in New Brunswick, the Robert Wood Johnson Medical School is right plunk in the middle of Rutgers University. And so, what we are

hearing was, that the faculties felt that they should be interacting and taking advantage of what is happening in research today.

Now, many of you know that I am a research person by nature. I've spent most of my career in research, and modern research is part of my being. What we have seen in recent years is that research is not done according to a discipline. Research has many disciplines involved in getting anything done. And so, if you are either making a new electronic gadget or a new medicine or a new vaccine, you are likely to -- let's talk about a new medicine, which is something I know something about -- you will involve biochemists, some chemists and microbiologists and pharmacologists and physiologists and engineers, and ultimately, people in the business end. But the point I'm making is that, in any kind of research project today, it is interdisciplinary. It requires people to cut across, from different campuses and different schools, to work together.

And so, as we talked about that, we learned that a number of departments and people in Rutgers, UMDNJ, and NJIT were, in fact, collaborating. They're collaborating very nicely. There's a Center for Advanced Biotechnology and Medicine in New Brunswick-Piscataway, which is extremely successful. And that involves --

SENATOR TURNER: Excuse me one minute, Dr. Vagelos. Senator Gormley has a question.

SENATOR GORMLEY: If I may, Doctor, in your prior role as head of Merck --

DR. VAGELOS: Yes.

SENATOR GORMLEY: -- and I remember -- the last time I asked, it was 10 years ago, when I asked about the R & D budget, and it was a billion dollars, or up there, a long time ago. And I've always -- I'm attracted to numbers like that. I've always been curious about the R & D budgets of the pharmaceutical industry in this State, because that would really be one of the things we'd be targeting, I assume.

If you could, without betraying any prior confidences in your other life, when these research opportunities came up, what came to mind? What schools came to mind, to you? What interaction did you have with that R & D budget with certain other institutions, and, you know, to be quite frank, you didn't think of -- you might not have thought of the State University, that much, to use it. Who did you use? Where did your focus go to when it came to joint ventures with universities, when you had control of that budget?

DR. VAGELOS: Well, Senator Gormley, that's a very pertinent question. And I would return to it even later. But, of course, when you are an industrial research person, and you have responsibility for coming up with product, you will want to put your investment in this place where you have the greatest confidence, because you are responsible for every dollar you're spending.

SENATOR GORMLEY: Exactly.

DR. VAGELOS: So you're going to put it in a place where you're most likely to get a positive feedback and results, whether it be in discovery of intellectual property, stuff that can be patented, or just information that is basic research that you need to know. And so, you look around the country to see where is the best stuff going on. And the way we can evaluate it, quite

quantitatively, is to see who's getting the NIH funds. And so, the places we went were Harvard, MIT, University of California, University of Texas, University of Michigan, all the places that are the great biomedical research institutions. And those are the places where we put our investments.

SENATOR GORMLEY: And consequently, if you -- because we're looking at a cost differential here to, shall we say, make up the difference in medical school subsidy by the State, approximately today, between the pharmaceutical industry -- the pharmaceutical industry located in and around New Jersey -- what is approximately the total R & D budget? I assume it's, probably, \$10 billion-plus today, isn't it?

DR. VAGELOS: No. No, it wouldn't be that much, because the -- I would rather not give a number, maybe half of that, perhaps five billion.

SENATOR GORMLEY: All right. But it's five billion --

DR. VAGELOS: Perhaps.

SENATOR GORMLEY: -- controlled by boards within a proximate -- geography isn't what drives it, but --

DR. VAGELOS: Geography does not drive it at all.

SENATOR GORMLEY: It doesn't drive it at all.

DR. VAGELOS: Not at all.

SENATOR GORMLEY: But it happens to be that if geography did drive it, we'd be in the ballpark.

DR. VAGELOS: It should. It should. But, you know, the point you're making is one that -- what I think is extremely important. And that is, if one had a choice of with whom to collaborate, you would want to do it

locally, so that you could see them very easily. But you will not do that if the expertise is not here.

SENATOR GORMLEY: Thank you very much.

DR. VAGELOS: Okay. I don't want to lose my thought. So, we're talking about the nature of research, and talking with people around Rutgers University. And what we learned was that the faculty was thinking along the lines, how can we increase the amount of interaction between us -- between Rutgers, whether it's in Camden or New Brunswick or Newark -- and our medical colleagues.

I mention that the Center for Advanced Biotechnology in Edison is one that is terrific. The Cancer Institute of New Jersey is another instance of collaboration, to some degree. In Newark there's a marvelous collaboration, which I would point out was published -- there was an op-ed piece, which I hope will be distributed to you today, which I read this morning, which I was not aware of before. But it's called -- the title of it is: *Proof a Higher Ed Merger Works*. And it is by a Paula Tallal and Ian Creese. Now, what they say is, they came, in 1987, with the idea of doing a joint program in Newark, between Rutgers, NJIT, and the New Jersey Medical School. And, over the years, they have built a collaborative program, which is ideally what you would like to see, using the faculty from all three institutions, to work together, both in education to put on courses for all the students, and in research -- to do joint research.

But let me tell you what they said. After great success -- these are terrific people -- and this is in neuroscience, where they take molecular neuroscience, one person, and put it together with clinical neuroscience, and

the two collaborate together, and they've been able to succeed. But this is what they say, in the midst of this op-ed piece. "Students have opportunities in both basic and clinical research, but you cannot imagine the administrative hassles involved in accomplishing this. The integrated neuroscience program has taken the co-chairmen away from their own research in order to wade through the quagmire of bureaucratic issues: student registration, stipend support, health insurance, tuition remission, parking, shuttle buses, library rights involved in the merger.

"The take-home message from the trenches of neuroscience research: collaboration among Rutgers, UMDNJ, and NJIT is possible, works even under current circumstances, and should be expanded."

Well, that's what we are getting fed back to us by the senior faculty at Rutgers and UMDNJ and NJIT, and that is, what they would like to do is to work together. They would like to have larger research grants -- to get back to your, Senator Bryant, how do you go above the average -- and that is, you allow these interdisciplinary research programs, which require larger concentrations of scientists and engineers to get together and apply for larger amounts of money, because they have more expertise together.

In addition, they can get training grants, which are impossible or close to impossible under the current circumstances, because they don't have critical mass. Where, if you put together the universities, then the faculties can get together and go for these larger amounts of money. And that would, immediately, without even adding additional people, would start to allow them to go for larger amounts of research funds and, thereby, not only do their

research, but be more attractive for the students to work in these research projects.

And so that's one mechanism that was looked at. And that was coming out of our visit to Rutgers.

Now, one could turn it around and say, "Well, I could understand, if you put together the science organizations, you're going to strengthen the life sciences. We can see how the chemists, the physicists, the mathematicians can work together with the scientists and the medical school, but how about the non-scientists? Are they going to be hurt? Are moneys going to be taken away from the social sciences to fund the medical sciences?" The answer, of course, is not. And when we talk with people like the Dean of the Faculty of Arts and Sciences, Holly Smitts, (phonetic spelling), in New Brunswick, her reaction was that there will be two kinds of benefits to the university -- the nonscience part of the university. The first is that many of the disciplines are very anxious to work with the people in the medical school. For instance, the philosophers are getting very much into medical ethics and scientific ethics. The historians are very interested in the history of science. The sociologists are very interested in health care and how it impacts families and cities and civilization in general. The psychologists, of course, want to work with the people in the medical schools.

And so they saw a tremendous benefit to the nonscience members of their university by bringing together the medical school with the biomedical scientists.

There is a secondary advantage, and that is, as the rating and the ranking of the university rises, in general, by the ability of the scientists to get

together and do more interesting things and attract more interesting faculty and more interesting students, that that will generally raise the image and the reputation of the school, and they would be able to attract better students and faculty themselves. So there are two advantages to that.

Well, so much for Rutgers.

SENATOR TURNER: Doctor, excuse me.

DR. VAGELOS: Yes.

SENATOR TURNER: Dr. Vagelos, may I ask you a question?

DR. VAGELOS: Sure.

SENATOR TURNER: I find the proposal very interesting and intriguing, to say the least. But I guess I'm questioning the affordability issue. We have more than \$4 billion in deficit staring us in the face this year. And being that we currently do not spend the amount of money on higher education as those schools that you have been comparing us with, I'm just wondering, how do we finance this? In order to have state-of-the-art equipment, top-notch researchers so that they can compete and bring in all of this research money, how do we pay that kind of faculty and pay for that kind of research work, if we don't have money now to pay for what we have?

DR. VAGELOS: That's a great question, and I wish I had a great answer. Senator Turner, this is something that we thought a lot about, clearly, and I'm glad you brought it up.

First, the economy is lousy, and it's not a great time to be bringing up a new strategic vision. On the other hand, I think it's never too late to start going for excellence. I'm assuming, having been around a long time, that there are economic cycles, and at some point we will come out of this down cycle.

And, therefore, to have a plan and to start a strategy that would focus us, ultimately, on reaching excellence, it will take more money -- there's no question. And people have asked, was the governor's purpose in setting up our Commission a money saving type of objective? The answer is no. The objective has always been, how do we obtain excellence, assuming that with our -- and I'm assuming that with a reorganization that we will be able to take the people that we have today -- the buildings and assets that we have today -- reorganize them in a way they can interact more productively and, thereby, bring in additional grant money.

If you were to go around the country and look at those institutions that we ranked in the top 10, you will find that they do put more money into their schools, but not the medical schools. Our medical schools are paid, per student, enough money to rank us in the top five. In other words, the amount of money that goes to the medical schools is -- I will tell you what it is -- it's \$85,000 per student in Robert Wood Johnson; \$75,000, in Newark. The average of the top five -- the average -- is 78,000. So, we're right up there. It is not underfunding that is causing us to underperform in the medical schools.

That's not the case in the general universities, where we definitely are not competitive with other states. And so, in a sense, we're performing beyond our ability -- the state's payments -- or the universities, Rutgers and NJIT.

Now, going forward, I would say that since we cannot count on additional funds -- a large amount of additional funds up front -- we would foresee that we would undertake a restructuring, which would allow us to more effectively use the assets we have, although there would be a requirement for

some up-front money and funds to take the first step. But we would be looking, long term, to convincing the legislators and our citizens of New Jersey that, instead of targeting 9 percent of our tax money to go to higher education, which is where we are-- The average state university gets -- the average higher education system in all states is at 11 percent of taxes go to higher education, and the average in the top 10 university systems is 13 percent. So we are dramatically underfunding our system.

And one could say that -- if we can show progress and come up with a plan that excites people and gets people to understand that the jobs of the future are largely jobs that are going to require the kind of education that is being provided by the best universities -- that it is extraordinarily important for the State to provide the best education and produce the best students, so that they will do their work in the State, produce the intellectual property that will feed our industry and keep the State as wealthy as it has always been.

SENATOR TURNER: I'm deeply concerned about the affordability issue for our students in this State. We're spending a great deal of money now in terms of educating our students, K through 12. And once they graduate from high school, I think they're going to be -- we'll see more of our students wanting to go on to college, but will not be able to do so because of the high tuition that we have in the State of New Jersey. And it's not affordable, and we haven't been able to keep up with financial need in terms of providing the aid that many of the students, who would do very well if they had the opportunity to go to college, but do not have the financial wherewithal-- By merging these institutions, do you see that providing more opportunities for those people who don't have the finances to go on to college?

DR. VAGELOS: Senator Turner, the people who are squeezed the most are the people -- you know, the people who have the least will get scholarships and loans. And, unfortunately, our tuitions have been rising, and I'm sure you understand the reason for that. And that is, we had a flat budget last year. We had to make up, within the university system, the fact that the union wages were committed to go up. They had to go up. There were no funds -- there were not additional funds from the State, and, therefore, the only source of moneys to run the university was to increase the tuition. And so the tuitions in the State of New Jersey are higher than they are in many other state universities. And I would love to see that come down.

The proposal for the -- by the Commission, I should say -- was that the State should target, to give the universities two-thirds of the cost of the operating the education programs -- two-thirds. Now, that was agreed to a number of years ago, but the State has slowly slipped down because -- for various reasons. That two-thirds target is one that's proposed by our Commission, and I'm hoping that we can get back there.

Unfortunately, there's nothing that is the product of our Commission that can tell people how to reprioritize funds -- tax funds, and things of that sort.

SENATOR TURNER: Well, you indicated earlier that the governor was concerned about the number of students who leave New Jersey to go to colleges outside of our State. And I think that's one of the reasons we're losing a lot of our talent. We just don't have the space here, either, for students who want to attend New Jersey universities. And, also, the fact that

we don't have enough spaces available for all of those who would like to stay at home and attend a college in New Jersey.

So there are really two issues: that of affordability, as well as accessibility. And from what I'm hearing from our colleges, we're not going to have the capacity to accommodate all of the graduating students to go to college, because the space is not there. We need to expand what we have.

DR. VAGELOS: Well, that is absolutely the case, and I have heard the same discussion, Senator. What we hope to do -- and that is, in the next step, after our Commission report and as we get into the implementation side and the planning for the implementation -- is to speak directly to funding and recommend-- All we can do is make recommendations to the Legislature and to the governor, and speak about capacity, as well, because it's a dire situation. And this State cannot afford to lose our people to other states.

What happens is, they go to other states. They're educated in other states, and they tend to stay there. And that's, long-term, that is a brain drain. It's a -- it's debilitating, long-term.

SENATOR TURNER: Along those lines, I -- excuse me. Along those same lines, I've often noted -- in fact, many of the students who attend our universities are foreign students. And many of them are taking spaces that could be used for New Jersey students. And New Jersey is subsidizing those students. And I was just wondering, did you find, in your studies, that there is a high percentage of foreign students who are in those universities?

DR. VAGELOS: Well, of course, the universities in New Jersey tremendously favor New Jersey students. And so, some universities are 90 percent New Jersey students. There are foreign students, as well. And in the

graduate programs, there are more non-New Jersey students than in the undergraduate programs, which are overwhelmingly New Jersey oriented. I don't believe we want to dramatically stop the inflow of other students, because it's good for our students to have a mix. But we must favor, obviously, our own students, and we do.

SENATOR TURNER: I agree with you, we don't want to stop that kind of exchange. But we also don't want to see -- that's one of the reasons, too, why many of our students have to go out of state is, because they can't get the educational opportunity here, in this state.

Now, why is it that we have more graduate students that are not New Jersey residents?

DR. VAGELOS: That's more complicated, Senator. The fact is that the graduate students are extremely competitive. And they -- and the graduate students will gravitate to those universities that are very expert in the area of their -- the discipline that they want to take a graduate degree in.

Our universities do not compete that well for graduate students in the high-tech disciplines to some degree, and, therefore, the universities, in wanting to have a full class of graduate students, will accept more outside people.

SENATOR TURNER: But that, too, works to our disadvantage. Those students will leave and go home --

DR. VAGELOS: Absolutely, absolutely.

SENATOR TURNER: -- and we won't have the talent here that we need to work in our economy and our jobs.

DR. VAGELOS: You've hit it right on the head. Why are they doing this? And that is because our universities are not attracting our top students. They're going to Cal-Tech and University of California and Harvard and Hopkins and University of Michigan, University of Texas. And that's what -- we must stop that. We must stop our top students from leaving our State. They're not leaving because there are no jobs here. They're leaving because they're going to better positions and places of higher ranking in what they do.

SENATOR TURNER: Could it also be they're getting better financial packages?

DR. VAGELOS: The packages are pretty standard, because they're usually based on National Institutes of Health stipend level, which is usually what everybody targets. I don't think that's a major issue.

SENATOR TURNER: Question over here.

SENATOR BAER: Yes.

SENATOR BRYANT: Yes. Senator, can I ask a few questions.

SENATOR TURNER: Senator Bryant, and then Senator Baer.

SENATOR BRYANT: Thank you, Madam Chair.

I'm probably one who read the report with askant eye, and the reasons for that are many. I lived through the part of separate but equal in *Brown vs. Board of Education*, and by the width of a pen, we decided to increase three new sections -- they're all going to be equal. Yet, there's such a disparity in capital -- between the southern region, the middle region, and the Newark region -- not addressed. And there's no way possible I would vote for a merger of anything that's going to end up being separate but equal, and I'm going to

be left with the most unequal piece. My gymnasium, at Rutgers, Camden, they want to use as an outhouse in New Brunswick. So there's no way possible -- I'm not going to let all the sciences go to Newark and New Brunswick, and we have no science base in the City of Camden, not addressed at all. And you can tell, Camden and southern New Jersey was an afterthought. It wasn't even really looked at, scantily even viewed.

I'm mostly worried about code words. Now, folks talk about excellence. I like excellence, but then I start to think about it. What is the main purpose of a public university? And that is to educate students. And it's supposed to provide affordable education for the most students. And does it want to attract top students? Yes. It's not its only goal, and it should not be its main goal. Its main goal is to provide good, basic education for as many students that come from its ranks that it can.

And I don't see the report talking about expansion. And I'm not sure how you got from improving the quality of science to merging all of our universities together. That, to me -- I still have some problems. And usually, when I see a Commission come up, they usually have options. They don't come out with one conclusion. They have options of: Are there other ways to do this. And so that makes me suspect that there was a conclusion going in, and then we made the report fit the conclusion.

I'm not convinced that Texas and California has a great system, with the chancellor system, especially as it relates to minority students. Maybe folks didn't read, on that Commission, what they've done in terms of affirmative action and the transfer system. Now you have one system that can wipe it out with one stroke of a pen. Did not see where, when you talk about

Rutgers -- Rutgers is 20 years old. And it's such a fine school, and it is. And you talk about UMDNJ, and it's 25 years old. And I would never compare a 25-year-old-kid to a 20-year-old-kid and say, why aren't both of them excellent. It doesn't mean they can't get better.

A word, also, about the whole notion that as you go down this line, that one didn't understand the southern New Jersey -- what D.O.s mean, versus M.D.s -- D.O.s versus M.D.s. This is so ingrained in the southern region, and if folks don't know the history of it, D.O.s started in Philadelphia, because they excluded Jewish folk and African-Americans from medical education. That's why it started. So, therefore, to even dream that you're going to just merge those two together in southern New Jersey is a pipedream. It will never happen. And we're not just going to be left with D.O.s without M.D.s. And one didn't even look at the clinical campuses that we've gotten great marks.

Then, when they talk about excellence, and I look at our student averages -- and I saw that they used *World Report*, or somebody's report -- most of the medical folks think that's crazy. They think that's not a true measure, when you use MCATS and GPAs. And when we start to go down that line, I start to say, that's an exclusionary line. That's the code word of how we keep some of these folks out.

You might not know, but Rutgers University -- I mean, UMDNJ is the most diverse university besides historically black universities -- most. The total population gain, in the last two decades in this state, happen to be nonwhite. The State is now about 34, 35 percent nonwhite. Those populations need to be served.

And I don't know if anybody ever looked at the original legislation creating UMDNJ. It talks about nothing which you've talked about today. It talks about -- basically, it says in the enabling legislation that it is to establish a medical, dental, nursing, health related professions and health sciences education in the best interest of the State, to provide greater numbers of trained medical personnel to assist in the staffing of the hospitals and public institutions and agencies of the State of New Jersey.

Now, the question is, has it met its mission? I think, through its diversity in terms of the student body, it's meeting that mission. But yet, I don't see that being part of what we're really talking about in terms of a public institution.

And I wonder, really -- I mean, like you said, when you start to look at all these university systems like California -- and you used Texas -- they've not been very, very good for minority students. And I'm not sure if the code words in this whole report is -- is that, because you've now involved more minority students and have succeeded in them becoming trained doctors -- no one is saying they're not doctors -- they might not be the top flight doctor that you want -- that in some way we've now diminished our educational quality, even though we're serving the community that we're supposed to in New Jersey. And I worry about that when we start to go down that road, what it actually starts to do. And I think Senator Turner was alluding to it.

Part of the problem I see, in New Jersey, is capacity. We're not enlarging capacity. And if our move is just to excellence, so we take the top students, then that means the bottom students got to go. And if that means, in code words, folks who don't look like those who are running the school, that

means some of us are going to go. And, therefore, our commitments are not going to be served.

And I thought the report did a very poor job in terms of how these universities serve the community, as part of an evaluation of whether it was meeting our mission. And I think there's a whole different dialogue you can have on how you get research dollars.

And then, lastly, let me say that one of the things I was very disappointed in: If you're going to go and merge all these universities, if you're going to do that, you have to have a whole discussion on what is the basics to making a university run, and they're not the sciences. There's other subjects, respectfully. You know, there's Business Administration, English, and all those -- nothing in the report about them at all. That is the basic core to undergraduate education in our university system, all across the country. That doesn't mean we shouldn't have better science, but that's the basic core. And there's no discussion as to how this affects the basic core education under the B.A. program.

And so, I want to know whether the Commission at all looked at any other models. Because you can have collaboration of research without merging three universities. And then, how it came to the conclusion you're going to have these three schools competing, when it's clearly -- clearly -- a deficit of capital for them to compete against each other, and how, all of a sudden, one day, you declare that.

And then, lastly, yours was the report that didn't deal with feasibility, and how you move from your report to implementation, as opposed to feasibility, first. Was it even feasible to do this. Then it seems you might

want to talk about -- you're going right from a report that says, "Ah, we're going to implement it." It ought to be at least a feasibility -- what is even feasible for the State to even think about doing this, and what it would cost in that feasibility.

I could go into more detail, when you talk about lines, and what lines you have at Rutgers, Camden, versus New Brunswick, versus Newark, how those things, you know, work out. And I didn't see any of that. So I don't even understand why we're talking about the next phase of implementation, as opposed to feasibility. We skipped a step, a huge step, of what is feasible in New Jersey, based on how resources have been already obligated, whether it's even feasible that you could have three competing universities, functioning, and actually be competitive against each other -- unless you relegated southern New Jersey not to be in a competitive position against its northern and middle regions. Because right now it does not have the capital capacity.

DR. VAGELOS: Okay. That is a lot of questions, Senator. (Laughter) And I will try to take them one at a time, and please bear with me. If I miss any, just come back and ask me again.

And first, on the lack of science in Camden, and that is, if you're to return to your alma mater and talk with Roger Dennis, who is the Provost of Newark, he feels the lack of science, and he says the only way we're going to make it, and become a viable system in the south, is to get together with the medical school and to bring in biomedical scientists, along with the sciences of chemistry and microbiology and biology that they already have. And they see that as a very, very critical part of the merged universities.

Roger Dennis is one of the strongest proponents of this type of merger -- local merger with local autonomy, so that the person who is -- and I haven't quite gotten to the model that we're talking about, but perhaps I can just introduce it now. And what the panel -- after looking at many, many models, by the way, and debating them -- came up with a conclusion that there should be a university system that would take advantage of the interactions that are currently happening, because the interactions are largely within each city and area -- within each region. So that the interactions are quite intense in New Brunswick-Piscataway, between Robert Wood Johnson and the Rutgers University -- the comprehensive university -- and take advantage of that by forming an autonomous university there that would put together their history department and chemistry and English and philosophy with the biomedical scientists, and form an exciting unit there.

The same thing in Newark would put together the NJIT, the people in medicine, and the people in Rutgers.

Now, you know, I believe I shortchanged NJIT, because I never got to that when I started answering questions. So let me interrupt for a minute, in answering your question, Senator Bryant, and say a word about NJIT; and that is, when we did this with that campus -- we met the new president, Bob Altenkirch, and were shown around there. We met some of their people and students.

We discovered that they are an up-and-coming engineering, science, and technology university. And they are, indeed, very aggressively growing into the areas that they think the future jobs in the State of New Jersey will require.

And we asked them about their future, and they saw their future as largely going in the direction of biology and medicine. And they saw the infusion, the importance of understanding -- putting together engineering with medicine and, also, working together with the other schools of Rutgers and UMDNJ -- the law school, the business school, is the mix that they would see. And Dr. Altenkirch quickly started discussing a vision of putting together these autonomous schools, what we would call a managed autonomy.

So what ultimately came as a conclusion to the studies that we did, was that there would be three rather autonomous universities, each of them headed by a president -- a president, who, instead of being straightjacketed by a central body, either in New Brunswick, which we have with Rutgers, or in Newark, for UMDNJ -- a president who would be local. Each of the three universities would have a strong president. Each would be challenged with the idea of coming up with a vision, based on what is already strong, a focus on what they already have in that site, so that one could see, for instance, in Newark, a focus on the trauma, which they are very good at. Epidemiology, infectious diseases, neurosciences -- these are the areas that are already expert, which would be the focus of this new exciting university in Newark that would join the three campuses of NJIT, Rutgers, and UMDNJ -- all the schools of UMDNJ, and include the law school and the business school. So this would be one vibrant university that would have an impact not only on faculty and students, but also on the community.

And I can imagine, with additional -- with student housing in Newark, with students all around and the undergraduates using the laboratories in the medical school, a very exciting university.

And similarly, in Camden, one would put together the programs -- the early focus would be child care, where there's a very strong program. A program on aging, an interest in law -- terrific programs in law and business, and put these together as a university, and tie together -- Senator Bryant, you brought up the issue of doctor of osteopathy versus medical doctor. The history is interesting, but more interesting today is what are the differences in the two kinds of doctors -- in the training of the two kinds of doctors. And there's only one difference, and that is, people in osteopathy are taught manipulations in addition to the other topics that are taken by the medical students. So the subjects that are covered are rather similar, but, in addition, the students in osteopathy take this manipulation. And today they're separate. There's one school in Michigan -- Michigan State University -- that has both -- the capacity to do both osteopathy and M.D. in the same school. And so it's possible to bring them together and allow students to go in either direction. And they're both fine.

The advantage of the school of osteopathy in Camden is that it produces primary care physicians, which we need. They also produce physicians who tend to stay in the State, which we also need. So they're doing a good job, and so that's an important contribution.

You were about to say something?

SENATOR BRYANT: But, Doctor, it's like a drug you're selling us folks. I mean, Roger Dennis, and I love him-- You make me president of something, I feel better if I'm just -- I report to someone else. I mean, let's face it, you're talking about New Brunswick, maybe, being about 25,000 students, Cook College and a whole host of other things. You're talking about Rutgers,

Camden, that has two dormitories -- they must have 30. I mean, how do they compete? I mean, you're talking about trying to have students come to my school. Are you going to give me another 20 dormitories? Are you going to increase mine from 5,000 to 15,000? You're talking about Newark. Newark is about, if you take all three schools together, maybe 10,000 -- one-third the size. You're not going to compete.

I mean, I'm not going down no road where we're not competitive. And you've now labeled the south that we will never be competitive. You see, at least, now, I've got three bites at the apple: NJIT when they come before us. I've got Rutgers, and I have UMDNJ. You're now telling me I'm going to exclude all that. I'm going to give you one bite, but your bite might be very, very small. And because you lag so long, you'll just have to live with your lagging. And then you're going to get folks who say, well, I'll be a president over that. I don't want to be a president.

Look, the largest growing portion of this State happens to be in southern New Jersey. We have the same needs and the same things, and we need -- are we going to build a -- I need to hear, are you telling me I'm going to build a tremendous science-based -- where we have graduate programs and all those kinds of -- I can't vote for anything unless you're telling me you're willing to invest, probably, close to \$300 million to \$400 million in capital in the southern region, so that I can actually have a university that competes with the other three. Because, if you look at it historically, the capital has gone either north with UMDNJ, NJIT, and Rutgers, or it's been in the middle, with Rutgers University. And we've been, sort of, the tail that wagged the dog. And we're down at the bottom.

But I don't see in this report where you're telling me -- if you're going to make me equal, and as I said, we've been there, separate but equal. I want to be equal and equal. I want to have as many lines for faculty members. I want to have as much graduate programs. If I don't have an NJIT, then build me one. And if I don't have an M.D. program -- we have part of it -- and folks ought to understand that the D.O. school is not in Camden. It's in Stratford. Camden has an M.D. program, with Cooper. Are we going to build that to make that-- I mean, those are huge, open questions.

DR. VAGELOS: Right.

SENATOR BRYANT: And what I'm saying, the report doesn't deal with it at all. It's sort of like, we'll just cut them out, and everybody's happy. We're not happy with where we are. We are not happy. So you should understand that.

And just because Michigan did it with the D.O.s and M.D.s, I fought that battle when -- both of them down there. I want to see, since you all have such abilities to make everybody rational, come down and fight the battles between the D.O.s and M.D.s down in my world. That is not one of those things you just, how did you say it, "Oh, well, you guys can study together." That's not reality. So as you go back --

And then, I look at the whole Commission, not one person from southern New Jersey. That tells me something, too. And that needs to be corrected.

SENATOR GORMLEY: They consider Princeton, South Jersey.

SENATOR BRYANT: Who?

SENATOR GORMLEY: They consider Princeton, South --
(laughter)

SENATOR BRYANT: Okay, Princeton is South Jersey, fine. Now I know why we're in trouble, Senator Gormley.

SENATOR GORMLEY: It's got a 609 area code, so they still count it.

SENATOR TURNER: Senator Baer.

SENATOR BAER: Thank you.

I want to get into an area that --

SENATOR BRYANT: He never answered about the minority students, and what they've done in those systems where they've now done away with affirmative action, and how he views our diversity. He never dealt with that. He just kind of let that slide.

SENATOR TURNER: Okay. Let's allow Dr. Vagelos to respond to Senator Bryant.

DR. VAGELOS: Yes. Let me go on, because I interrupted -- I interrupted my answers to your questions to fill out the image of the structure of the university as I see it. And I'll come back to that, but we'll have to go back and forth.

We did talk -- we did, actually, talk about diversity, and congratulate the UMDNJ on the attainment of diversity. I think the -- we found that the panel is very strongly in favor of that. There is the great hope that the university -- the entire university system would be the most diverse in the country. And that would be a wonderful thing to accomplish.

Insofar as not having the capacity, we didn't speak to that, because that was not our charge. But we intend to get back to that with the next steps. You talked about the fact that we did not do a feasibility study. That is a fact. We certainly did not. We didn't have time, nor the expertise. That's going to be done by the next phase, which will look at reviewing the aspects that have already been covered, as well as come up with a feasibility study, a cost structure, going forward -- essentially a business plan, which would be presented to the legislators to see whether it makes sense and what it will cost the State, and then present that to the governor and the legislators, who will have to decide where they want to have their growth.

If I were to guess where the growth would come, I would guess that the growth would come in the south and Newark, as opposed to New Brunswick, which is running out of space. And so -- and, historically, they've been working at it since 1766, as you mentioned.

And so it's time for makeup, and there's space to do it. And if you were to visit and talk with someone like Roger Dennis, which I'm sure you have, you would see the enthusiasm of growth in that area. And there's no reason not to have it there. There's space. There's enthusiasm. There's ability to recruit people. So it's a matter of people making money available and having a good argument for growing it in Camden. And I have no problem with that.

Let me see if I can grab some of these others. Why do we jump from science -- from largely looking at science to looking at the entire university? The reason for that was the charge by the governor. We started

with the health education, and then he said, look at synergies. And so, we took it stepwise.

Now, I would tell you that we were running out of time toward the end, because the -- it became clear, by August, that Rutgers University was about to offer a job for the new president, which, of course, happened, with Dr. McCormick being recruited. The governor was concerned that the job would be offered without the plan being available to discuss with the new candidate. And so he asked, instead of having the plan done by the end of the year, have it done by October 1. So we were short-circuited in timing, and so we didn't have time.

But to bring together the university, the enthusiasm on the nonscience part of the university is quite extensive. And there is a feeling that the historians, the people in English and philosophy and sociology, as I mentioned earlier, will gain by this kind of association with the medical scientists. So that is very real, and I was convinced of this.

Now, you mentioned the age of UMDNJ being relatively recent, as opposed to other universities. And I would just point out that a 32-year-old organization, which is average, I would say -- every person who has looked at the quality of the programs would conclude that it is average -- would be compared with one of the University of California schools, in San Diego, which was started at about the same time, and it's Number 4, nationally, in ranking. So it's not age.

There's another one in Oregon, which is a system, which is also in the same age category, and which is about Number 13, nationally. So it's not time on the job. It is the program that was built. And you're quite right that,

initially, there was the mandate to produce manpower to man our hospitals and man our health care needs. And that is important. But one must never -- one must never substitute numbers for quality, because they can be combined, and they are very often combined very well, because I would argue, with anybody, that I can find high-quality people in any demographic area.

SENATOR BRYANT: But you told me average only related to -- see, that's why I asked the question in the beginning. Average only related to bringing in scientific money. And now you're relating it -- that the students that are coming out of there are average. That's why I asked you what you were talking about when you dealt with average.

DR. VAGELOS: Well, I -- I thought I pointed out that we looked at all metrics, and one that is very easy to quantitate is research funds. But we looked at every aspect of -- whether it was education, faculty, students. And what we looked at -- the spectrum of accomplishments in any of these areas -- it turned out that we're, sort of, in the middle, if you look at the national ranking and where we place our people.

SENATOR BRYANT: Did any of the schools you looked at have any kind of diversity, as the University -- UMDNJ has?

DR. VAGELOS: Oh, yes. The University of California has tremendous diversity. They happen not to be African-American, but they're certainly diverse. They're nonwhites.

SENATOR TURNER: Okay, Senator Baer.

SENATOR BAER: Thank you.

I wanted to focus on an area we haven't discussed yet, but, before I do, I wanted to touch, briefly, on the comments of Senator Turner and of

Senator Bryant, and associate myself with their concerns about diversity and affordability.

Now, in response to Senator Turner's comments, you spoke about the setup in the past year that was responsible for some of the cutbacks in funding, so far as affordability. But I'm interested to know what potential there is, so far as the new setup that would come about that you have recommended. And I noticed that you spoke about visions yet to be defined. So I would be interested in your providing the Committee with information on what could be done to help achieve these goals, in terms of -- to further these goals of affordability and diversity, because, that, I think, is a broadly held concern. I certainly want to associate myself with it. But if you could provide that to the Committee.

I want to go on into another area, one that I've been focusing on, perhaps, in another committee, and it's been getting attention in both houses, from two committees in each house, having to do with medical malpractice. And I wanted to have your thoughts so far as how practical it would be for this new merged institution to devote special efforts, and maybe a special academic subdivision of some kind, to focusing on error reduction and quality control. Whether that's something that you think could be done, which could provide valuable information, not only that institutions in this State could use -- and companies -- but whether that goes beyond the things that you would instructionally provide to people that are in training for their particular professions and what they need to know about error reduction.

So I'll be very interested to know if this merged institution could play an important role in that regard. I would hope that New Jersey, out of this crisis, could become a national leader in this area.

DR. VAGELOS: Thank you, Senator Bryant.

SENATOR TURNER: Senator Baer.

SENATOR BAER: Baer.

DR. VAGELOS: I'm sorry. Senator Baer.

SENATOR BAER: We're often confused. (Laughter)

DR. VAGELOS: That's what happens when you sit next to each other too long.

First, on the diversity and affordability: As I said, the Commission and I, particularly, are totally committed to diversity. So I can't say enough for how important that program is.

Now, the affordability: I would say that you're in a good position to affect that; and that is, the tuitions went up this year simply because we didn't have enough money. When the State budget came out, we didn't have enough money for the university. The only place we could -- the only source for money to pay for the contracts that were precommitted to the unions was increasing tuition. That hurt us as a State.

SENATOR BAER: If I can break in for just a moment, we know about that, and we know the difficulties that have complicated that. But what I'm interested in knowing is what you can do, or what this new structure can do, to help toward the alleviation of that problem?

DR. VAGELOS: Well, all we can do is recommend. And we recommended in the proposal that we get back to the two-thirds -- that the

State handle two-thirds of the cost -- the operating costs of education. That would help a lot, and that's what we're recommending.

Now, we're recommending it at the Commission level. Now, this goes to this implementation group -- this review and implementation group that will make firm recommendations. But it's the legislators and the governor--

SENATOR BAER: Did you say you're recommending at the Commission level, or at the mission level?

DR. VAGELOS: Commission.

SENATOR BAER: I wasn't sure -- that wasn't intended to be a joke, a pun. I didn't actually -- it wasn't actually clear to me what you said.

DR. VAGELOS: Commission -- the Commission, that we just finished, that produced this report.

In our report we recommended that the State target -- that the two-thirds of cost, the operating costs of education, be funded by the State, which is a commitment that had been made earlier, but has slipped. So it's distinctly lower than that, and that's why the tuition continues to rise, and that makes it less affordable.

So if the objective is affordability, we've got to have more money to do that, because we can't make up money.

SENATOR BAER: But before there's funding, I would assume there would be a defining of mission. And that's something that could be done at a very early stage.

DR. VAGELOS: Yes, absolutely. And the -- once we reach what I would hope to be one of the more exciting evolutions in this State in higher

education -- and that is taking these three universities, one in Camden, one in New Brunswick-Piscataway, and one in Newark -- we would be in a position where each president would define their mission. Each president would define their vision, their strategic plan, and you all would get a chance to review that and see the kind of abilities that we could obtain in this State. I think it would be a very exciting time.

SENATOR BAER: Would it be appropriate for -- although each president could define the mission -- that there be certain fundamental givens to that mission, and this goal of diversity and affordability be somehow incorporated at an earlier stage?

DR. VAGELOS: I would certainly think that that's completely -- we would expect that. Now, let me say a word more about the three presidents, and how we see that rolling out. We see the three presidents running a strong, autonomous university, but reporting to someone who would have a State's strategic plan and vision. That would -- we'd call that chancellor, just for a name. That person could be sitting anywhere, but we would like them to be unbiased. So we don't want them at either Camden, Newark, or New Brunswick. So we said, perhaps, that office of the chancellor would be in Trenton, but could be elsewhere. And the chancellor would report to a board of regents. There would be one governing board for the whole university system, and that governing board should be made up of the people who are best capable of running a university system in this state, in the great State of New Jersey.

Now, let me turn to your second question, and that is malpractice and whether the new system could help the State, and perhaps even make --

have a system that would be copied by other states; and that is, what can we do for error reduction? That has two important implications. One is that you have -- that you train people, really, to do the best job possible, and that comes from the training program. And I must say, the target is to have the best trained, anywhere in the world, in New Jersey.

Secondly, automation and computer systems now have a great deal to do with error reduction. For instance, one of the worse things that happens is the inability to read a prescription because of handwriting. And getting physicians to learn how to use a handheld computer so that they can actually type in or write in so that they can actually get a prescription --

SENATOR BAER: I understand, Doctor. But those are error reduction methods that have already been identified and recommended.

DR. VAGELOS: But they're not happening.

SENATOR BAER: And that may be something which we'll have to accept more responsibility for, because I don't know how much authority the universities can have over doctors, once they graduate, or other professionals in the implementation.

But what I was talking about was being an ongoing agency that could find new error reduction methods, not only because there are some that haven't been thought of now that could be applicable now, but also because medicine is continually advancing and developing new procedures, about which the errors have not yet been identified and the means of avoiding those, some of which are systematic -- system errors, which are beyond the authority of any single doctor.

DR. VAGELOS: Yes. Well, that's a good point, Senator Baer, and that is, the practice of medicine, and health care in general, is evolving very rapidly and becoming extraordinarily technological. And there is every reason to believe that, as we become more expert and capable in the research that's required to evolve such systems, such systems which could lead to error reduction could actually be produced -- produced and invented in the State of New Jersey. So that boils down, again, to having an expert education system.

SENATOR BAER: Thank you. I don't want to take more time from my fellow senators, but I hopefully can discuss this with you outside, and we can probe it in more depth. Thank you very much.

SENATOR TURNER: Dr. Vagelos, one additional concern that I had has to do with, again, accessibility and affordability. This institution that you're interested in creating would be a megainstitution, and could very well be thought of as, I guess, a fair-haired child. Would that mean that the other State colleges would become stepchildren, since we have a very limited number of dollars that we can put into education -- higher education -- and we do have just one university? There will be great demand, I guess, for the limited spaces. And those that are not successful in gaining enrollment would have to go to one of the other four-year colleges in this State. And will there be the kind of capacity, and, also, the kind of finances given to these universities so that we can hold the tuitions down, for those students who will be attending those universities or those colleges?

DR. VAGELOS: That's a great question, Senator Turner. What do we do about the State colleges and universities that are outside the three research universities? In my opinion -- and we have people in the audience

here who are more expert than I -- Barbara Gitenstein is here, for instance, the head of The College of New Jersey, which is an excellent, really excellent college, which I visited recently. And really, it was an eye opening experience for me to see both the buildings, the equipment, and meet some of the faculty and students. They're very good, and we should be very proud of what we have. And Dr. Gitenstein is to be congratulated, I think, in, surely, what's been accomplished there.

Now, what will the effect of this research university system, which puts together the three universities, and ends up with three, but different kinds of universities, which would be comprehensive, each one of them with a medical school, two of them with law schools and business schools -- one would not? But how would this affect the universities and colleges that are outside of this system? I believe that what this will immediately do is focus for the world, and certainly for our citizenry, that there's a focus on higher education in the State of New Jersey. It will raise the entire visibility and knowledge base of what is happening in our universities. I think all the universities are in the same crunch: accessibility, affordability, and capacity.

We're all in the same crunch together. I would hope that the citizens and the Legislature will recognize that this is a critical time in our history, and we have to respond as if we are in an urgent situation, that we have to do this. We have to recognize that education is expensive, but, in the long run, it's a tremendous investment for the State and for our State tax moneys. We need to invest for the future, in order to produce the kinds of workers that we want to feed our industry, that these are -- the workers of the future are not going to be the manufacturers, so much as they were in the past,

or the farmers, so much as they were in the past. It will be the high-tech end, which requires the kind of training that we're talking about coming from these three, exciting, new universities.

And so, we're all impacted by the same thing. We need more money in the state. I think the fact that the governor has said that this is a top priority for me, I'm really going to be behind the K through 12, as well as the higher education -- he recognizes the importance of it. Now it's a matter of the economy turning around, number one; and secondly, that the legislators get behind it.

SENATOR TURNER: Thank you.

Senator Martin.

SENATOR MARTIN: A couple of comments, and then a question, too.

First of all, I try not to view this as a parochial issue. I represent an area of the State which is northwestern New Jersey. If we looked at that area's population, we have no public colleges or universities at all in that particular section of the State. It is as fast growing as any part of South Jersey.

I noticed that the commissioners -- I didn't see any who stood out as representing Morris County, Warren, Sussex, or Hunterdon. None of that particularly disturbs me. We look at other schools, like the University of Michigan, they had to base their decision-making on what was good for the upper peninsula of Michigan, always. I don't think they could have established an Ann Arbor if they had not. I think the same is true of the University of North Carolina, and other schools, and we'll leave out the Californias and

Texas schools -- higher ed systems, although they have much to be commended.

But the better universities can't always have equal programs. If every program in every different area of the State -- at least I think some of us would come to the conclusion that that should not be an obtainable goal. Which is not to say that places like Rutgers, Camden, should be left out of any kind of mix about the future of Rutgers University and other higher research universities.

That being said, I also would say that I think what I've seen of the report -- and I have read it, and I've thought about it, and I've had the chance to speak to quite a few people. I think the concept is essentially sound, in that the strengthening of all three geographic areas -- Newark, New Brunswick, Camden -- can be improved by having a form of autonomy. It lets them be able to develop with their, sort of, geographic brothers and sisters at those locations. And I think your conclusion makes a whole lot of sense.

I do know, having been in higher ed, and seen some of the workings of Rutgers, as well as the other research universities, that there's a lot of bureaucratic difficulties, just in Rutgers, let alone trying to combine or create more autonomy. I'm most familiar with the one in Newark. But I do know that achieving a system there that makes sense, even with the autonomy as restructured, I think there would have to be a lot of attention to details, because you don't-- Higher education, sometimes, turf battles can be as difficult even between individual departments, as well as, let alone, trying to combine three separate institutions.

That, I guess -- my questions are really ones that have been discussed, and you have mentioned the issues of cost, which you suggested there would be some up-front costs. I would only really be -- not only -- but I'm very concerned about these details, as you develop them, about this central university with its -- how that relates to the three separate colleges or universities. I'm not quite sure what we'd call them, and I don't want to get into the Rutgers name, but I think, like most of us, we recognize somehow Rutgers has to be salvaged out of this, which would be good for the State as a whole.

And I'm very interested in those final pieces about how the connecting links go, between the existing institutions.

I think that -- last comment -- I think that Senator Bryant has a point about looking to see whether there can be ways to enhance Rutgers, Camden. And you touched on a lot of, I think, worthwhile areas. But I'm familiar with the fact that Robert Wood Johnson, after you complete your initial training, your first year or two -- your first two years of med school at Robert Wood Johnson -- the students are equally divided as to going to either the Robert Wood Johnson Hospital for their clinical -- the last two years of their clinical training -- or to Camden. So I know there's already --

DR. VAGELOS: It's one-third.

SENATOR MARTIN: Is it one-third?

DR. VAGELOS: Yeah, goes south.

SENATOR MARTIN: But I do know there's an existing piece of that hospital system that's already alive in Rutgers, besides the School of Osteopathy.

I think, speaking for one, I think that the feasibility stage is something we should consider, even if we don't have the dollars, as you said -- putting together a plan that, now, looks as to the best way we could strengthen the universities. The difficult issues of diversity, I think we all appreciate that. There's lots of legal issues. The University of Michigan, as I'm sure you know, has a Supreme Court decision which looks upon how they attempt to accomplish affirmative action. The University of Texas tried to achieve diversity by some different barometers, after the *Bakke* decision and etc. has kicked in, in its last few years, with court of appeals decisions and so forth. So there may be some ways to deal with those. But they're complicated. But I think that for all of our interests, we would look to your commission, in that feasibility area, to make more clear the structuring, how it's going to work; and how Rutgers, Camden, could be improved; and how the diversification issues could be addressed.

Thanks.

DR. VAGELOS: Thank you, Senator Martin. I will try and -- first of all, I really appreciate your comments about understanding the concept and agreeing with it in general. And, surely, the costs are something that we will work in this next six to twelve months, in the --

SENATOR MARTIN: Let me just say one thing. I think that, in fairness to my colleagues, that they asked for a clear enunciation as to why the collaborative model is not as good as the actual integration model, as you suggested. I think we need that. There may be some of us, intuitively, who think that it makes sense. But I think that you pointed out that there -- in the piece today -- that there have been some collaborations. Again, from my own

experience in higher ed, I think sometimes you need more than collaborative models. And you mentioned a whole bunch of student issues, like, as much as parking and library cards and all kind of things that you can run into that seem small on their face, but can be -- the whole quality of life of a university can be impacted by a series of these little gnats that all of a sudden reach a very high level.

So I think that that issue of collaboration, if it's not going to be accepted, I think we need to have stronger detail as to why it's inferior to the integration model.

DR. VAGELOS: Yes, well, the evidence can only be, sort of, looking at the results of places that are integrated, versus those places that are trying to do it. The example that we have at home is that we have some interaction going on on every campus, whether it's Camden-Stratford, or Newark, or New Brunswick-Piscataway. There are interactions; there just aren't enough. And the feeling of those faculty is that there are so many administrative hassles that -- they just wear out in time -- they don't have the time, the energy to interact, either in teaching or research, at the level that they could, optimally. And they are the ones that say we've got to do it differently. And it's one article after another, of people -- these people are successful.

SENATOR MARTIN: Isn't that also true in a corporate model, that some of the most recent changes in the way that research is done is largely by, sort of, breaking through, as you said before -- we call them disciplines in academia but you would refer to them as, I guess, departments in the private sector -- to be able to cross-pollinate, I guess, ideas.

DR. VAGELOS: Absolutely. Absolutely. It's the silo mentality versus reaching out and taking advantage of all the disciplines that you need in order to get something done. That's the real world. When our students leave the department of microbiology and they go to a job, or they leave the department of psychology and they go to a job, that job is going to -- it's not going to be all psychologists or microbiologists. It's going to be a job where people have to interrelate and work with all kinds of other disciplines. And the earlier they start doing that, the better adapted they are when they go to their jobs.

And so it is absolutely critical -- the only way to do research today, the only way to succeed. As a matter of fact, I'll just point out that there was -- there was a dramatic breakthrough in cancer treatment. It came from a professor of mathematics at Stanford University, which has a medical school right in the middle of the campus. And that mathematician, by working with people who were molecular immunologists, figured out how to make an antibody against certain parts of cancer cells, which have now been introduced as special new treatments for cancer of the breast, which is the newest, most effective treatment that we have -- came from a mathematician. And why? Because he was exposed to people with biomedical science, right on that campus, and was able to work with them. That's what we need to have.

We need to have the availability of our research laboratories all over the university, open to all our undergraduates. I would like to see -- some of you might know that I was Chairman of the University of Pennsylvania for five years. And there, the University Medical School is right in the middle of the university. And many of the undergraduates go to Penn because of the

availability of this expert medical school. And many of the undergraduates do all the research that they do as undergraduates in the medical school laboratory.

So that is a tremendous factor in excitement in university campuses. And we can do that, because we have the medical schools right on the campuses in two places. As pointed out by Senator Bryant, the School of Osteopathic Medicine, unfortunately, is at Stratford -- unfortunate because there's a 25-minute drive between Camden and Stratford -- I discovered. And, therefore, the collaborationist has to take a car ride to do, but it can be done. But these collaborations are absolutely part of modern education and research. So we cannot -- we can't turn away from it.

SENATOR MARTIN: You know, it may take 25 minutes for someone to go from Piscataway to Douglas or some of the others -- Cook Campus, of Rutgers.

DR. VAGELOS: Right, that's absolutely the case. Let's see if I -- oh, let me say something about control, the central control, because that was the vital part of your question. And that is, we see the three presidents, who would be the head of autonomous universities, reporting to a chancellor. And how much autonomy would you have if you're reporting to a chancellor? Well, we see -- what we are recommending is a chancellor who is a person who has previously run universities, who has great experience. An example is the person who runs the University of California, whose name is Dick Atkinson, who previously was director of the National Science Foundation. And then he was about 15 years as head of one of their campuses -- UCSD -- before he became chancellor.

Now, when you get to that level, you're willing to have a strategic plan, be involved in the overview, select the presidents, oversee their performance, but be hands-off from the point of running the operations in education and research. So the president of each university is pretty autonomous, but he's got someone to report to.

Now, the chancellor, in turn, reports to a board of governors, and the board of governors would be in charge of recruiting that person and overseeing the performance of that person.

Okay, I think I covered the --

SENATOR BRYANT: Does the president have a board of trustees or a board of governors, like, say, Rowan would have, or whatever?

DR. VAGELOS: I'm sorry?

SENATOR BRYANT: Each president, would they have their own board?

DR. VAGELOS: Yes. That's a good question, Senator Bryant. There would be one governing board. The governing board would be the board of regents -- we're calling it that. But each university would have a board that would, perhaps, be called the board of trustees, that would be involved in helping the president do his strategic planning, help in recruiting of students. Most importantly, be involved in fund-raising and building the endowment for each of the universities. So each university would have a group, which would be local and focused on that one university, in that location.

SENATOR TURNER: Well, thank you very much, Dr. Vagelos. We appreciate your time and your candor and all of the information you've given to us, here, today.

We're looking forward to, I guess, the next step. The next step is when you will be dealing with how this merger will impact upon existing contracts with faculty, administrators, and staff.

When do you foresee that being completed?

DR. VAGELOS: I thought you were going to say started. We hope to --

SENATOR TURNER: Oh, you haven't started yet?

DR. VAGELOS: No, we have not. We took a pause, after delivering the Commission's report, because we wanted an opportunity for each of the universities to have feedback from their faculties, and to have responses. And to my delight, the feedback, now, is coming back very positively. There's a lot of excitement at many of our campuses. And people are looking forward to getting started.

Now, the governor will be putting out an executive order to start what we call a review and implementation planning task force, or steering committee, very shortly. And that will start a process which will take six to twelve months of very hard work, which will come out with a roadmap, which will come out with recommendations for every part of the university.

Now, there will be a steering committee at the top of this group, which would be the governing part, and then three independent, individual university committees. Each university committee will be asked to put together the university in Newark, the one in New Brunswick, the one in Camden, and to optimize it -- to look at every aspect of it. So there will be three university committees. Below those, there would be issues committees or groups, which would look at tenure, parking, health care, the information

technology -- which could be very expensive -- the buildings, the tuitions, etc. -- look at every aspect of academic life on that university, and plan for it so that at the end of that time, we would have a roll-out map -- who is going to do what at what time, what's required up front, and what's going to roll out over five and ten years. And I hope to have that done within a year.

Now, the next important step, of course, after that -- and, up front will be legislation. And that's why it's terrific that I had this opportunity to talk with you and this Committee; that is, the governor will be talking with people on introduction of legislation to start the ball rolling, so that we can roll out this concept.

Right now we have a vision -- we have a concept. Now, we need the roadmap and the cost.

SENATOR TURNER: It's a big one.

DR. VAGELOS: Yes.

SENATOR TURNER: And you're going to involve members of each of those colleges and universities in the process?

DR. VAGELOS: Yes, absolutely. In fact, it will be -- initially the top committee will have the leadership of the three universities and experts. And then the university committees will be almost -- with outside experts -- but it will be almost entirely made up of the university people -- the faculty, the administrators, the students, the staff.

SENATOR TURNER: Okay. Well, thank you very much.

Any other questions?

SENATOR BRYANT: Can I ask another question?

SENATOR TURNER: Sure, Senator Bryant.

SENATOR BRYANT: As they go into Phase II, are you planning to have folks from the southern region at the major board level?

DR. VAGELOS: Yes, yes.

SENATOR BRYANT: Or are you still going to be -- are you planning to have people from the southern region?

DR. VAGELOS: Yes, absolutely.

SENATOR BRYANT: We do have some brain power down there -- much, we understand that.

DR. VAGELOS: Absolutely.

SENATOR TURNER: Well, you're down there, Senator.

SENATOR BRYANT: No, we don't have much.

DR. VAGELOS: The answer is yes, Senator Bryant.

SENATOR BRYANT: Okay.

SENATOR TURNER: Thank you very much, Dr. Vagelos.
The meeting is adjourned.

(MEETING CONCLUDED)