The use of a larger piece of the action, small piece of the action appealed to me very much because I thought it was appropriate and the whole structure of the office of science and technology during World War II was a sequel to what inspired me the way the Rockefeller Foundation worked in earlier days to me were still models that I think could, and should be followed in peace time. Then the last point, by working with agencies funding biomedical research help obtain financial support for the work of collaborative groups that may emerge from such activities, activities in which the professor, that is me, is without personal bias or involvement and that is only as a catalyst. With this then I visualized the day to day activities again that I would work in selected fields, but broader now. And then I say what would I then be doing for the university, this specific university activity. And I indicated that I would give lectures on subjects that often crossed the conventional departmental lines. That I would not be a member of any one department, (b) I would participate in seminars or research planning activities of several departments on subjects in which his I inscribe here in a general way, or my previous or recent or current activities have provided me with specialized knowledge and (c) finally, when desirable and possible, develop programs for interdisciplinary, collaborative research. That is within the institution where I would be a professor. Interdisciplinary, collaborative research on important problems in which faculty members already at the university and when desirable others that may be recruited from other institutions
already have special competence and great interest. This was the sort of thing that I wanted to do. Without going into the many events that happened, the offer from the medical university of South Carolina, which certainly was only in the process after 150 years of existence of coming into real development and to a large extent through the efforts of Dr. Colbert, Jim Colbert, it certainly was not a prestigious institution. It wasn't even in the forefront of institutions with an excellent faculty, already in existence. There were some very good people but, but I was offered a kind of freedom of action which was not possible anywhere else and moreover I was offered a very good salary which I needed because my annuity and whatever savings I had accumulated were worth so little at the time that I couldn't continue to live on that if I didn't have a good salary and moreover I was offered a minimum of four years assurance until I was 72. And at age 72 I would be able to draw social security which would be available regardless of my earnings at the moment and I felt I could then make a decision. But if I am going to make a move, I want to have security for at least four years that I am not going to have to move in another year or so. Well, other considerations aside I resigned from the National Institutes of Health and accepted this position. Five days after I accepted this position, Dr. Colbert and his two sons with whom I had all this understanding was killed in an airplane accident. And again, as in the case of the director of the National Institute of Health with whom I made all sorts of plans and who was fired before I could get started, this connection, a man is tragically killed in an airline accident, and I had to make a decision. Do
I then retract my resignation from the national cancer institute which was already in writing. Do I retract my acceptance from the medical university that was already in writing because of this tragic situation. Or do I continue with the decision anyway and see what happens. I continued with the decision and although things didn't work out according to plan. There was a year of great ferment which I will not go into here now. I nevertheless had a wonderful opportunity to really be almost like a composer in residence, or poet in residence at the university with complete freedom. I not only had a good salary, I had a certain fluid budget. I was able to recruit an excellent assistant and first class secretary and I had a huge library at my command around the corner very excellent office and conference facilities of my own and so I was really enjoying my work very much and I became involved--it is now by official appointment as a consultant, official consultant to the assistant secretary for health in the Department of Health, Education and Welfare which of course has the responsibility at a higher level than the N.I.H. itself. It includes N.I.H. I was also consultant of the medical research advisory committee of the Panamerican Health Organization. I continued on the panel in the U.S. Army research medical and development command and as a consultant to World Health Organization. And I believe that through these funding agencies, that through these associations I would be able to try to implement the objectives that I have read before and that I would have the opportunity to select special fields of interest. And work them up. Basically what I did I continued with the work on hepatitis for the Army because that remained a big problem.
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I developed again an association with a symposium an in-depth analysis of where are we and where do we go from here on the role of the DNA viruses of human origin and human cancer. And then later I became involved because of another assignment to present a paper at an international congress in London, on a study of vaccination at the portal of entry for many other infectious diseases in man and animals—-that was the subject of that congress. And I had to give the opening address and in preparing for this I became tremendously attracted to the ongoing problem of the development of a live virus vaccine for influenza. And in the whole problem of acute respiratory disease in which I am now deeply involved. And I also gave any number of lectures that I was invited to give in other universities in the United States and aborad, and these activities I am engaged in now, I would say that up until now I cannot consider that I have been able for various reasons to really set up some of these collaborative programs that I had visualized. But I think some of the efforts are in that direction. I keep pushing. I think it is necessary especially in view of actute respiratory disease. I think it is still necessary. I think perhaps indirectly I had some success in a program development on hepatitis because I brought also in another person working in New York and at least some part of the program on development of vaccination against hepatitis came into being. And I am enjoying what I am doing now. But, one subject that I began particularly to study in depth, a year ago, was a consideration and actually I gave a lecture on it in May, 1975, of the 150th anniversary of the medical university of South Carolina, on biomedical research in the present era. A reevaluation
of the objectives, the major objectives, a reevaluation of the modus operandi structure of the organization, and I have been accumulating information and data on it and it was not ready to present to anyone in a position to act. Who is in a position to act, what were my original plans. It was not merely to have another paper published let's say in science, but rather to try to do it first of all through my association with the department, through the secretary for health in the Department of Health, Education and Welfare because ultimately that is where any decisions and recommendations must be implemented. That if I could work through the assistant secretary for health and development of certain ideas and then through him with the new director who is appointed, the new director of the national institutes of health and with the whole ferment that was going on in the nation of developing some new approaches, that I felt that perhaps that would be a useful function. And then as I was appearing for various purposes renewed my contact, in the senate and the house of representatives, my contacts with Senator Muskie and through him with Senator Nelson of Wisconsin and others, it became evident that they wanted to help, to have some help also in some structure, guidelines for decision making where they wouldn't have to make decisions that should be made by somebody else. At that time as I was doing this, the congress appointed what came to be called the presidential panel of, for biomedical research who basically was given the mission as a very involved operation, was given individually the mission to do what I was trying to do So I decided to wait to see what they would come up with because they had a mandate to come up with a report by a certain time. But they
came out with that report more or less recently. I still have to study it in detail but it is already evident that they only scratched the surface. And underneath it all, in all of the hearings before the panel and now before the congress, came this recurrent, recurrent misunderstanding of what is basic research and what is applied research and how one should structure the activities and divide the labor that has not been touched upon at all. And the hearings that Senator Kennedy is now holding on the recommendations of the president's panel and I read many recommendations I am completely and heartily in agreement about and I was glad to see that they came up with and I won't go into details now, the hearings that Senator Kennedy is holding as they are being reported in the press and in Science, it is evident that there is the continuing problem of misunderstanding of basic research and research, biomedical research in general. What I am going to do since I am working on it now. I will probably be working on it the rest of the year and you won't get around to it anyway, my thoughts will be put together more precisely in the paper that I am preparing, position paper which I will then let you have to make whatever use you may wish of it. But I would like to say, set down here certain guidelines that I have developed for myself and which to some extent the words that I shall be using stem from what I consider a very enlightening debate in the senate which was held in September 1975 on appropriations for the National Institutes of Health.

We had a discussion in the medical science division of the national academy of sciences in 1975 as to the guidelines
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for deciding what are the delineations of the section on medical sciences in contradistinction to let's say biochemistry, genetics, microbiology, physiology, to keep, I could keep on a list which are disciplines involved in biomedical research but also the various other kinds of scientific activity. And there was a very interesting discussion with the membership of this section of the national academy and out of it emerged a definition which I thought was useful in many other fields. And the definition is this. That the extent to which an investigator has established himself as one who has made important contributions to the general field of--I am now quoting from memo--of problems, of understanding the nature of certain diseases, disease in general. Of methods for developing the methods of or understanding the infrastructure of knowledge providing infrastructure of knowledge for prevention and treatment. That is providing the infrastructure of knowledge for prevention and treatment of disease which arises from a proper understanding of the nature of the disease. And there was a third one which I forget at the moment but it doesn't matter but that was the distinction between such a man whose orientation was disease processes, human disease processes, from the person who is let's say engaged in physiology even though it is human physiology, that he was developing the discipline of physiology as such without reference to health or disease who was developing biochemistry as such or genetics as such. Some of the principles are equally applicable to all kinds of disease not only in man but also in plants and animals and go even beyond that. They have impacts on many other fields of scientific activity. And it seemed to me that that was a very important
distinction for separating biomedical research from disciplinary, from the different disciplines which now go in to form the foundation of biomedical research. But then I had to resolve in my own mind another alternative to the simplistic use of basic research and applied research. You might say under this definition perhaps all of biomedical research is applied research if you take away the disciplines. But it isn't so. Because to me when you are searching for understanding, when you are searching for knowledge that is necessary to develop mechanisms for treatment or prevention, that this is basic research. Whenever you don't know how anything will turn out that is basic research. I am not talking here about having the knowledge but developing it to let's say economically practical or practically useful things but the whole infrastructure of knowledge whether it is acquired in the clinic or in the laboratory but directly, specifically to understanding disease processes that would never be asked fundamental questions that would never be asked by the various disciplines that are used if you didn't have the responsibility of elucidating a problem in disease. That to me was basic research. So I now then came down to using, dividing up two kinds of basic research which are important in I think biomedical research. One is what I would call categorical, basic research and non-categorical basic research and this is to fit the use of the language that the congress has employed found in establishing categorical institutions.

When the congress first started to establish the National Institutes of Health there were a number of categorical institutes. There was
an institute for arthritis, metabolism, digestive diseases. There was a neurological institute. There was the institute of allergy and infectious diseases. There was a cancer institute. There was a heart lung institute. What does it mean?

It meant that those institutes had the specific mission objective to deal with those specific diseases. That was their problem. The person in the neurological institute had responsibility for a number of neurological diseases which were poorly understood and about which nothing could be done. The person in infectious diseases had totally different field. Heart/lung, different field. You had specific things to concentrate on. But then it was found as the institutes kept growing that there was also a need for general medical science. That there were problems in biomedical research which couldn't be defined as applying only to heart and lung or only to cancer, or only to disease of the nervous system. Or only the eye institute as it later developed. Or only dental research, or only infection and allergy. So an institute for general medical sciences was established. Presumably that should have been the institute for non-categorical research, for research in those various disciplines now, biology, physiology, biochemistry, microbiology, immunology, genetics, etc., etc., etc., physics and whatever which has for its purpose not the elucidation of any one disease. But developing the total understanding of life processes as they are related to human disease problems, not to a life process that involves a tree or involves a fish. Or involves a fowl. I mean there again, there are different levels of specialization here now. But specifically that disciplinary activity which is not related
to any one specific disease. That is basic research without which the categorical basic research, directly related let's say to diabetes, or to multiple sclerosis or to cancer or to certain arteriosclerosis or certain other very specific problems, no. It has to do with protein synthesis, with various molecular biological problems with a whole sort of genetic studies which do not specifically relate to one disease. That's not the way the institute, general medical sciences actually has been operating or did operate from the beginning. It used to get the lowest appropriations. It was a wastebasket for all sorts of things which didn't carry out the infrastructural studies. But what has happened since then is that every institute, categorical institute has been doing the kind of research that should have been centered in an infrastructure, non-categorical research institute. And this is where the restructuring will have to be. So that all those who are trying, that because of these appropriations to individual categorical institutes that basic research is being neglected, that everybody wants a fast return for the buck, are incorrect. They don't know the facts of life. The reverse is true. That because it is much easier to do non-categorical research by not very clearly oriented scientists, every categorical institute is engaged in doing and reproducing and duplicating research that should not be done by the categorical institutes. And that has led to a neglect of the categorical mission. They have neglected, specifically sticking to the problem let's say of multiple sclerosis or diabetes or arthritis or certain infectious diseases like acute respiratory disease which is perhaps the most important infectious disease
problem from the point of view, not of mortality but from the point of view of other things so that actually the categorical institutes have been neglecting their categorical mission because there has not been a proper division and I think that needs to be restructured. There needs to be a restructuring also in funding because the funding cannot continue to be added on always at the periphery. To provide stability to institutions outside you must give some long range grants but when you give long range grants, you have no money available for new developments without going and asking for more. And you can't always add to the periphery. You've got to phase out something, some other things. So there must be new mechanisms found for providing stability for research activities in the institutions outside, quite different from those we are using now. And moreover I see an absolute necessity. I am going to speak structurally and organizationally now. Of separating the two major activities basic missions of the national institutes of health. One, the research done within the institute that exists on the campus, and that should be just scientific research and nothing else. The only reason for their existence is it provides opportunities for scientists to do full time research without having to use a large part of their time for departmental duties, for teaching, etc., etc. But the second front should be entirely separate and not at all involving the existing institutions. And that is the function of being the transmission belt of the two billion dollars or so that the congress appropriates every year for distribution to the institutions of higher learning, medical schools, and others to carry on biomedical research in the country now. It should
not be an extension as scientists in an institute at the national institutes of health to do science period. He should not be a monitoring officer. He should not extend his own program by contracts, advertising elsewhere. I think the whole thing has to be restructured, and moreover I agree with the recommendations of the president's panel that there should not be a separate, national cancer policy, or a national heart-lung policy. And as they recommend at the cancer institute should be brought back under the total umbrella. I think the director of the national institutes of health should have special responsibilities and powers of constantly weighing one against the other. You cannot separate cancer or anything else from the whole field of biomedical research to support the health administration, or health services of the country.

END OF TAPE