

May 16, 1990

UNEDITED TRANSCRIPT OF THE EXTEMPORANEOUS REMARKS OF

DR. BASSAM Z. SHAKHASHIRI

ASSISTANT DIRECTOR OF NSF FOR SCIENCE AND ENGINEERING EDUCATION

"REFLECTIONS ON GEORGE PIMENTEL'S VISION FOR SCIENCE EDUCATION"

APRIL 24, 1990

BOSTON, MASSACHUSETTS

In 1986 at the awards symposium, in New York City, I was pleased and honored to have George Pimentel among the speakers at that symposium. Although I am pleased to be at this symposium, I'm deeply saddened that George is not here. On occasions like this, one might have the tendency to reminisce and to reflect on the kinds of interactions that one has had with a close friend and a mentor. I will try very hard not to do that because what we want to do is not only articulate the vision that George Pimentel had, but try to develop, quickly, effective strategies to implement that vision.

In 1983 George came to Madison for the final planning conference which led to the establishment of The Institute for Chemical Education. He was a major driving force that helped bring about that important activity into being and he also served on its national board for a period of time.

In 1984 I called him up on the telephone and said, "Some crazy people from Washington want me to come to Washington. Should I do this?" He said, "Bassam, those people are not crazy and what you need to do is accept that responsibility." He said, "In life there are two ways of approaching situations which face us, there is the easy way and there's the right way, and it is the right way for you to go to Washington."

We had a lengthy conversation about what might be in store for me. And he promised that he would assist in what ever ways he could to see to it that the task of rebuilding the science education activities at NSF was accomplished properly. And to a very large extent it was because of his promise that I said "yes".

I had many occasions to interact with him from the National Science Foundation and I asked him to join the advisory committee to the Directorate for Science and Engineering Education. Without hesitation, he accepted. The following year I asked him to become the chair of that committee. He said, "I'll help as

much as I can but I have my teaching responsibilities in Berkeley and I have other responsibilities at the ACS and so on". And I said to him, "George, in life when we confront situations (laughter) there is the easy way and there is the right way". (laughter)

Two days later he took the red-eye to come to Washington to meet with me for two hours to discuss a very delicate matter which relates to the policies and budget of Science and Engineering Education and it still remains delicate so we will not go into it now. (laughter) But I want you to know that was a turning point in the resurgence of science education activities at NSF.

A couple of weeks later George came to Washington to receive the National Medal of Science. I had a special, very private dinner for him at one of the restaurants near the National Science Foundation, very close to the White House. We spent the entire evening trying to restrain him from what he wanted to say to Mrs. Reagan the following day. (laughter) This was the time when there was a campaign about chemical dependency. And the word chemical was being used by a lot of people including the first lady of the land, in a sense that offended George.

I must tell you another story. I said I'm not going to reminisce. I heard this story. One time when George was the Deputy Director of the National Science Foundation he was flying on a commercial airline. The pilot announced to the passengers to look down one side of the plane at a set of antenna dishes. The pilot was not sure what these dishes were for. George stood up and went to the flight attendant and said, "I would like to speak to the pilot. I know what these dishes are for and would like to explain it to the pilot and to the passengers". (laughter) And they were the very large array dishes, the VLBA, and George came on and explained to the passengers what that scientific project was all about. He was a teacher at 35,000 feet in the air. (laughter)

One of the most moving things about George, I learned this when he told me, and I sure he must have told some of you, that on his income tax return where we are supposed to enter what are profession is, that he always entered, among all the things that he could have entered, "teacher". (pause)

If I could have the slide, I only have one slide. This is the last visual and written communication I received from George and his wife. A month later I had the privilege of seeing George for the last time. It was in January of 1989. It was one of those many Federal holidays that we have in Washington and I flew to California and I saw him for a couple of hours. We actually met in the lab and we talked for a couple of hours. And I looked at his shelf to see if indeed the statement that he had provided

me for the promotion of my chemical demonstrations book series is valid. Because part of the statement says, "This book should be on every chemistry lecturers book shelf. It is on mine when my colleagues are not using it." (chuckles) I looked for the book and it wasn't there. (laughter) We can have the lights on now please.

I would like you to know that in keeping with the vision of George Pimentel I have a couple of specific suggestions that I would like to pass on to a number of people, to all of you in this session. For I believe that the true impact of one person on another is measured not by reminiscence or by nostalgia; it is measured by the effect that one person has on another human being 15-20 years later, as that behavior becomes routine and part of what we do in our daily lives.

My specific suggestions are the following:

I would like to ask the research community, the chemistry research community, not only to go to the ball park but to show up on the playing field and to play. What we need now is a major renaissance movement at the first year college chemistry level. My remarks now are directed at two people in the audience. One is professor Harry Gray of Cal Tech and to Dean Bradley Moore of the University of California, Berkeley, to take on a leadership role immediately in taking a hard look at the first year chemistry offerings, not at Cal Tech, Harry! and not only at Berkeley, Brad, but across the land at all major research universities and all comprehensive universities, at four year institutions, and yes at two year institutions.

I know Harry you are next on the program and you can have the last word about that (laughter) but I look forward to your having the last word in print, on videotape, and on video disc for we need to bring back the excitement of chemistry at the first year college level and we need to use that first year experience as a recruiting experience for students who will become chemistry majors, who will become science majors, who will get degrees in other areas than science and who need to know about the centrality of chemistry and about the fun of doing chemistry, the real fun for doing chemistry. So that is one suggestion. Show up on the playing field, Harry! (laughter)

In all fairness, he and I have been talking about this for a couple of years and he has been contemplating which position he wants to play. I think we have just come to an agreement as to what the starting position is going to be. You and Brad and others should take on this leadership role. I'm not the chancellor of your university as Glenn was the chancellor at Berkeley and so I cannot promise you the kinds of things that Professor Seaborg promised George. But I am in some kind of minor position where I might be able to influence what you decide

to do. (laughter)

My second suggestion, when the "Opportunities in Chemistry" report was being developed, George Pimentel was the first person to insist that there be a companion document that dealt with chemistry education not just with opportunities in research. In his wise way he realized that the National Academy of Sciences and the National Research Council are going to focus solely only on research. He saw to it that the ACS establish another group that looked at chemistry education. In fact that group was established and led by Peter Yankwich and issued a report, in fact that report was finished sooner than the Pimentel report. So my second challenge to all of us, to the ACS, is to come up with the 1990's version of the Yankwich report. You see in chemistry research we have to look at the situation every 20-25 years. First we had the Westheimer report, and now the Pimentel report but in education we have to look at it every 10 years. So I ask the American Chemical Society and the rest of us to show up on the playing field and play hard ball in terms of looking at chemistry education at all levels not only at the introductory college level, not only at the senior level, not only at the graduate level but at all levels.

I'm pleased in this connection to tell you that among the people who now serve on the advisory committee to the Directorate for Science and Engineering Education at the National Science Foundation, is none other than Professor Glenn Seaborg. He has kindly consented to provide us with his wisdom and his advice and I expect that he will be called upon again to help marshall the necessary intellectual resources so that chemistry education is revitalized at all levels not just at the graduate level, not just at the undergraduate level, not at the pre-college level, but at all levels.

It is only fitting that the ACS Award In Chemical Education is now named the George C. Pimentel Award in Chemical Education. I am pleased with that. However, I have one regret. Namely, that the ACS Award in Chemical Education that I received was not called the George C. Pimentel Award in Chemical Education. But this is compensated by the fact that mine is the only one signed by George C. Pimentel (laughter) because he was the President at the time I received my award.

The issues that have been displayed this morning before us, in very eloquent fashion by the speakers, and the issues that Professor Gray and Dr. Watson will talk about shortly, will mean nothing unless we act on them. We have to have both an individual commitment and a collective commitment to see to it that the problems that we face not are not only addressed properly but solved properly. That is the tribute that we can make to the memory of George Pimentel. That is the way in which we can help our fellow citizens, not only in the United States

but our fellow citizens of the Planet, help fulfill their human potential.

I remind you, one more time, that the true measure of a teacher is what we have learned has become a part of our daily thinking, a part of our daily behavior, our daily routine. I'm privileged to tell you about the number of things that are now part of my daily thinking and routine that I've learned from George Pimentel.

Thank you very much. (applause)