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Interview with Dr. James Arnold
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Interviewer, Dr. Kathryn Ringrose

RINGROSE: I am interested in your personal background before you came to UCSD because I think that there are many similarities between the people that Roger Revelle brought here to start the new campus. What were your own experiences with universities, your family experiences with universities, how did you feel about universities as institutions? What ideas about universities did you bring with you to UCSD?

ARNOLD: Let me be a little autobiographical, then, to start. I grew up in a small suburban town in New Jersey. My father was an immigrant, he came over at the age of eleven from Rumania. He was a self-taught scholar and a brilliant man. My mother had been a schoolteacher. They were city people who had moved to the country to provide their child with opportunities. I was the only child, and it was great. Before I went to college, I received most of my education at home, even though I was going to school. I went to Princeton, entering the week World War II broke out, and finished my whole education in a wartime atmosphere. It was very odd, a very different way to do things. We were accelerated, so I graduated in February of 1943 right in the middle of everything, and then was told by my teachers that I really ought to go on and help the war effort at home. I probably helped it both ways by not being in the front lines. I worked on the Manhattan project, and what would be very shocking today, got my Ph.D. on secret work. My thesis is still classified.

There is a story I like to tell. I say to people that the thesis is wrong. Then I say, "Well, that is the main use of military secrets. Nobody will ever know." Somebody once said to me, "Yes, I read your thesis. I'm 'Q' cleared."

Anyway, Princeton University, Ivy League, is a wonderful place to get an undergraduate education, to be exposed to great scholars. It has one of the best departments of mathematics in the world. Physics and Chemistry were all pretty distinguished then. Physics still is, I guess. Chemistry is not bad. So, that was the start. After getting my Ph.D. in February of 1946—very few people in the world, or in America, had a shiny new Ph.D. at that moment—and since I had been in a somewhat ingrown environment, I accepted two post-doctoral fellowships, one at [University of] Chicago and one at Harvard. Both were very good for me. The Chicago one was the real experience, the uplifting, marking experience. All the great people in science who had been tied up in the war were going back to the universities. It seemed as if half of them were going to Chicago. There was a marvelous collection of people. Enrico Fermi was certainly the greatest scientist alive at that time, the greatest I have ever known. [Harold C.] Urey, [Willard

“Bill” F.] Libby and so on were all there. Then I had a marvelous year in George Kistiakowsky's lab at Harvard, another wonderful person.

Then Bill Libby called me on the phone and asked me to come back and work on carbon 14 dating. It was just starting. I had been prepared for his invitation. I have mentioned my father. His most serious intellectual interest was in Egyptian archaeology, and I had grown up with that. As Bill had been developing his ideas about carbon 14 dating, we had talked about it a lot. I spent three great years there with Libby developing what then eventually won him the Nobel prize, which was very deserved.

Then I became an assistant professor at Chicago. I was there until 1955, through what I think was the great period. Then, when I wasn't promoted to tenure, I went to see one of my old professors at Princeton. He decided they could use me back again, so I went back to Princeton and was there for three years and got tenure there before coming here.

Actually, my coming here was a pretty prolonged process. The discussions had started—when I left Chicago there were five or six people in geo-cosmo-science, the area I was in, who were all coming out at the same time or all looking for jobs at the same time. They were all quite extraordinary people, I thought. So, when I was looking for a job in 1955, I had the idea that I might as well be looking for a job for five or six people as for one. There was Hans Suess who is here now. There was Harmon Craig who is here now. There was [Gerald J.] Jerry Wasserburg, now probably the most famous of the lot. He went to Caltech. There was Cesare Emiliani who is an eccentric. He went to the University of Miami. And there was Stanley Miller who is here now. All of them are now in the National Academy of Sciences. Anyway, I wasn't successful in getting jobs for the whole lot, but Roger Revelle, who was already thinking ahead, did look around and decide that he wanted to get Craig and Suess at that time. Then later they propagandized a bit for getting me, and that is sort of how the thing developed. So, as far as my background in academia, Princeton was the early formative experience, some aspects of which I strongly reacted against, though I remained a great admirer of Princeton. Chicago was still more influential. Harvard was just another look at an absolutely first-rate place that did things still differently. So, I had gotten around.

RINGROSE: Were your ideas about undergraduate education shaped at Princeton?

ARNOLD: They were shaped at Princeton in the sense that there was and still is a great deal of freedom of interaction between the faculty and undergraduate students there. When I was a sophomore, if there was some distinguished faculty member whose book I had read, I didn't hesitate for a moment to go and knock on his door and ask him a question, even if I had never had him in a class and he didn't know me from Adam. That was the spirit when I was back on the faculty there. Students would do that. On the other hand, it was one sexed. I didn't quite realize the absurdity of that until I had gotten out and observed that it could be done differently. When I was back on the Princeton faculty, I was a member of a group that called itself the co-educational underground. I never imagined that they would change as quickly as they eventually did. But Princeton was, and is, a place where outstanding scholars really do teach undergraduates and take it seriously, and that is certainly something that I admire.

RINGROSE: What attracted you about UCSD? It must have been a major step to leave a place like Princeton and get on board this operation.

ARNOLD: Let me be a little autobiographical again and go back a bit. The thing that I didn't like about Princeton was that it was ingrown. They have gotten away from that a bit now, but then a large fraction of the faculty was Princeton Ph.D.s. When I was promoted to tenure there, there were six associate professors and five of us were Princeton Ph.D.s. I thought that was a little much. The atmosphere reflected that. Then, on the other side, I had not traveled much. When I was young, I guess one didn't.

In 1948 I made my first trip west of the Mississippi. I went on an archaeological dig in western New Mexico. I was then working with Libby. I flew from Chicago to Albuquerque, changed planes at Albuquerque to fly to Winslow, Arizona, got off this DC3 in Winslow and went into the airport to see how I could get into town. There weren't any taxis, but some guy said, "If you don't mind riding in the back of my pickup, I'll take you in." By the time I got to the Fred Harvey Hotel, I said to myself, "I am going to get a job out here!" I was just infected with the West. I wasn't predisposed to that in any way, but from then on, I just felt, well, I'm not going to injure my career, but if I can find something that works—. And it was a risk out here, I was very conscious of that because, by that time, I had a young family and all. That was the main reason why I had this protracted negotiation with Roger. I was bargaining, bargaining, bargaining.

RINGROSE: He says that you were hard to catch.

ARNOLD: I knew that I was taking a risk, and I wanted to take a risk. Intellectually it was exciting, but I wanted to be as protected as I could be. Issues arose, money was part of it, but there was also the issue of political activity. I had been quite active as a member of the Federation of Atomic Scientists, I had been active in party politics, and I had heard stories about California. I remember a letter from Roger when I had put to him a series of queries and he said, "It may reassure you to know that in the last election several professors at the University of California ran for Congress and not on the Republican ticket." I still remember that phrase. You know, it was a pleasure to do business with him. He was a large part of the attraction. I visited here briefly in 1956, and then the serious stuff started when I came out here in the summer of 1957 with one of my graduate students from Princeton and Louise [Arnold] and the kids. We spent the summer here and I really got to know Roger and I was very much taken with him.

RINGROSE: With him as a person as well as what he hoped to do out here?

ARNOLD: Yes. I have known a lot of college chief administrators, presidents, chancellors, whatever you want to call them. I had known a fair number then. He struck me as being a different animal altogether. Well, one story—. The first time I came I was writing a paper and he and Hans Suess were writing a paper on a similar subject, so someone invited me to give a seminar. I gave a seminar on a topic that had nothing to do with the paper. Roger came late—he has a great tendency to be late—to the seminar and, at the end of the seminar, he asked a couple of exceedingly penetrating questions. Harmon Craig had given him a copy of my manuscript. Then, on the way out, Roger said, “There are two serious mistakes in your paper.”

He was wrong about one of them, I remember. He had misunderstood. But he was quite right about the other and I said to myself, “This is the chancellor?" I mean, that is another level of intellectual functioning. Of course, he might have been in a field that was quite different from mine and not have been able to do that. He certainly couldn't do that with people in many of the fields he later attracted, but it was an expression of solid intellectual quality that I found impressive, along with his human and visual qualities.

Going ahead a little further, by 1958, the post-Sputnik era, everybody and his brother was saying, "We have got this great new campus, or we have this huge new endowment, or we have this new president, and he is going to get this and that .11 I was popular, and I was getting lots of offers. I would go and be shown into these impressive offices and be shown these layouts and I quickly realized that most of it was just paper. But here it was different. It was different primarily because Revelle knew what he wanted, and he was really thinking about what education should be. Probably not all of his ideas were correct, but that was one of the main things. The other thing that was different about it was that it was the University of California. I didn't perhaps give it its full weight then, but I am really convinced now that the success here rested on that to a very great extent—this hundred-year-old tradition of great public education. You could not get that in the East. In the Midwest you have some great state universities, but this one was and is the best state university, in my book, by a considerable margin. That made the start of something new a more likely bet than it was in many other places.

RINGROSE: These are two themes that have come out in almost all the interviews I have done, the idea that there is the tradition of the University of California that you are building on and that makes the place attractive, but also the idea that—we are all idealistic to a certain extent, or at least I hope that most of us are—the idea that this was a place to which people could make an emotional commitment. That has to do with Roger Revelle. In one way or another I get this from all kinds of people, a very personal, emotional tie.

ARNOLD: Although, as you realize, Revelle recruited only a few upper campus people before he was superseded by Herb York and others, it was a key group of people. If you look at the total faculty that he recruited when he was chief campus officer here, it is a pretty small set.

RINGROSE: Then later, when you began recruiting people, did you also look for people who you thought would have this kind of emotional commitment to the campus?

ARNOLD: Well, yes, but we were looking for class above everything else. We were trying to assemble the best research faculty we possibly could and, you know, in addition to the idealism one should mention that La Jolla is a very nice place. It is a beautiful place to live, and certainly, in my calculations, and in the calculations of many of the people I succeeded in recruiting, there was this feeling, "Well, if it doesn't work out quite as you hoped, still you are living in a very nice place, and you could be disappointed in worse places than this." So, I think that the attractiveness of the climate and the surroundings was an important element too.

RINGROSE: It was certainly true that at the time we were building here many of the major campuses were in urban situations that were deteriorating. That was true of Chicago. Would you talk about your contacts at Chicago? Why were people leaving there?

ARNOLD: Well, there are obvious aspects of that and there are less obvious aspects. The obvious aspects were that the whole Hyde Park community, the area of the University of Chicago, was in the process of deteriorating pretty rapidly, being perceived to deteriorate pretty rapidly. We watched this 'block busting" business. There is probably no point in going into that in detail. A lot of that was staged. It was theater. But I watched very intelligent people who could discuss these issues in the abstract very well panic and sell and go through all sorts of silly gyrations.

Another aspect was that Fermi died. He had such a huge, in his quiet way, moral influence over the whole scene that there was a sense, after his death in 1953, that well, the golden age is beginning to pass. It was a great shock when they couldn't recruit a successor for him because the great people said, no, we don't really want to come to Chicago from Caltech, or Harvard or wherever they were. And we had always thought of Chicago as the center of the universe up until then. So, those are a couple of obvious things.

There were financial stringencies at the university. Because of them [Robert M.] Hutchins was replaced by a president who was chiefly known for his knowledge of real estate values. It was a huge contrast. I may say that Chicago is still a great university and they had, after that, a series of really brilliant presidents. One of the things that has impressed me most about that university is that when we recruited, say, Joe Mayer, they "grew" Stuart [A.] Rice, they "grew"[Edward] Ed Anders when Harold Urey came, though, of course, Harold didn't leave Chicago voluntarily, he was retired at the age of 65. It was the stupidest thing. But his leaving was—he was going somewhere. He wasn't going to take a gold watch and garden at 65. He was in the prime of life. So, there were various factors, especially the deterioration of the neighborhood and the sense of slipping—it fed on itself. When people left there was more of a sense that people were leaving and there were money problems. Those were probably the main things.

RINGROSE: Was research being supported? Is that what you mean by money problems?

ARNOLD: Well, of course research support comes from the federal government, and outstanding people were getting supported, but the money available—it showed itself in various ways. It showed itself in a freeze on tenured appointments the year I didn't get tenure. It showed itself in a slowness to make new junior appointments. It showed itself in not fixing up buildings that needed fixing up, that kind of thing. It was a tight situation.

RINGROSE: Talk about Harold Urey. You mentioned him a moment ago and their retiring him. It is bizarre—were they really going to retire him at 65 and expect him not to use his labs and so on?

ARNOLD: Yes.

RINGROSE: Why was that going on?

ARNOLD: I suppose they had a rule. I really don't know. I wasn't there at the time, so I don't know. It was bizarre. I have talked to people at Chicago about this, I still have many friends there on the faculty and never really understood it, so I shouldn't say anything.

Maybe I should say something about my personal ties to Harold. He had been a very prominent figure in the Institute when I arrived. He was one of the great men, obviously. He and Bill Libby had been very close. Libby had been one of his chief lieutenants in the war-time project, and they were both also moving from nuclear chemistry, nuclear physics (they were both really chemists) into the geo-sciences and planetary science. That was thought at the time to be quite eccentric, so they supported each other. They encouraged each other. Urey helped raise the money for carbon 14 dating, for example. I did not know him extremely well at that time, nor did he know me, but he was a very visible figure, and was always very approachable.

I had nothing to do with bringing him here. When the people here heard he was to be retired at 65, Roger just went and saw him. It was very easy to arrange, apparently. We arrived at the same time and in the years, over twenty years, between his and my arrival here in 1958 and his death we became very close. He had a great influence on the early developments, both indirectly and directly. He was Harold Urey. He was not somebody off the street. If you went here not knowing what the place was like and you were greeted by him and had lunch with him and he was full of enthusiasm and ideas, that made an impression.

RINGROSE: You referred to him as a "guarantee of seriousness."

ARNOLD: Yes. He was here already. We were not talking about how we were going to bring him. He was here, working. The mass spectrometers were set up and the data were coming out when I was recruiting new faculty. So, that was very good. Then, too, he had great taste in people, and he had great taste in scientific fields. He was, more than any other person, responsible for the focus that we had early and still have today on biochemistry in the chemistry department. His attitude was, "Well, it is not my field, but it is a fascinating field and one that, if we are starting out, we ought to push." He suggested Martin Kamen and that was the beginning. That was, to a large extent, Harold's idea, his contribution. We always listened, of course, with great care. He was totally uninterested in administration, which had a lot to do with pushing me into it, since he wouldn't. He was always very supportive and encouraging about everything we tried to do. It made your day. It was a constant lift to have that.

RINGROSE: Talk about some of the other key people, people like David Bonner, Carl Eckart, the early people you were involved with.

ARNOLD: I am not the best authority on all the planning and thinking that went on here before I came. Roger was, of course, by far the most visible person to everyone like myself who was interested, but Carl Eckart was surely the other person who made a great contribution to that early thinking. Carl was a distinguished physicist who almost invented quantum mechanics—he was one of the two or three people who were a year or two behind [Werner] Heisenberg and [Erwin] Schrodinger. He was a professor at the University of Chicago. He was quite famous in that field, but he came out here and got interested in waves. The joke was that quantum

mechanics was too simple for him and he wanted to do something tougher, so he started studying ocean waves. He was actually the director [of the Scripps Institution] before Roger Revelle and was a great pusher of Roger's career. He was a brilliant man, rather shy and therefore not always as visible to people, but certainly a lot of the early thinking about how you would try to make the place interdisciplinary, how you would bridge from the sciences to the humanities, starting at the top, building the roof first, and so on. He participated—Roger could tell you how deeply—but he was certainly deeply involved.

There were a half a dozen other people, Craig. [Gustaf] Arrhenius, the younger generation who played a role, but I think that, to my mind, there were really these two, Roger and Carl, who were way up there in the thinking and planning before my generation arrived. Then, when I came, I wasn't supposed to be the chairman. That wasn't the deal. The deal was that I would go out and get a chairman of the chemistry department and I tried a couple of very good people. They were interested but, in the end, they didn't come. That is how I slipped into it. Keith Brueckner was recruited to be the physics chairman. He was a big name, one of the generations, [Murray] Gell-Mann, [Marvin L. “Murph”] Goldberger, Yang [Chen-ning], of postwar hotshots in theoretical physics, a man of great energy who attacked that job with great success.

RINGROSE: Was he connected with the Chicago group?

ARNOLD: No. He was not, and in fact he was very unusual in his generation for not being connected to Chicago. As I think about it, Gell-Mann, Goldberger, and Yang were all Chicago. Well, Gell-Mann got his degree at MIT, but he was a young assistant professor at Chicago when I was an assistant professor. Goldberger was a graduate student of Fermi's. Yang was a graduate student of Fermi's at Chicago. Brueckner was not. He was at the University of Pennsylvania when he was brought here.

RINGROSE: That's right. This is what everyone tells me. Then a friend who has been here a long time and came from the University of Chicago said, "I used to see him at parties at the University of Chicago." Well, I will just have to go ask him.

ARNOLD: Maybe that is true. Do go ask him. I was not aware, then or now—in fact, I remember when his theories began to become prominent, people like Gell-Mann talking about them in this sort of, "Who is this guy?" way, first of all, then later with respect. I probably met Keith at some meeting or other, but I don't remember meeting him at Chicago.

RINGROSE: He is interesting, in that he is very much an outsider.

ARNOLD: That's right. A lot of the others of us had known each other already, but he wasn't one of that group. Still, he was, of course, extremely well connected in Physics and one of the great things he did was that, with a conspicuous exception, the Mayers, whom we will doubtless talk about, many of the people he brought were not from Chicago. For example, there is Walter Kohn, who is just one of the great people, Harry Suhl, and Bernd Matthias—Bernd was at Chicago. I had known him at the Institute for Metals earlier. But what I was going to say is that it was not basically a Chicago circle. It was a broader circle, which was a plus.

Now, Dave Bonner was not, in any sense, connected with Chicago. He came, as you know, the youngest brother of a famous family. I think—I'm not sure he is the youngest. I think it may be Francis, whom I knew as a chemist, at the State University of New York. James Bonner is the most famous of them, at Caltech. Then there is another one in between. Anyway, Dave was a maverick. That is the first thing you always say about him. He had been considered so anti-establishment at Yale that until, I think, two years before we recruited him, he was not a member of the faculty. He was some sort of research something or other despite the fact that he was already a man of international reputation. I didn't know him from Adam. I remember [William L.] Bill Belser came by my lab one day and said, “You know there is a rumor that Dave Bonner is available." And I said, "Who's Dave Bonner?" I remember that because I was so embarrassed about it later. So, he gave me a bunch of Dave's reprints and I looked at the situation and talked to a couple of people and said, "Aha, that looks interesting.” So, we brought him out and he was of course—the human qualities there, a man with Hodgkin's disease when he came, in those days under sentence of death, in fact it was only a few years before he died, but full of energy and determination and not, in any way, the least bit daunted by any of this, and full of ideas. He was very combative. I could see that about him from the start. We had to—he was a risk taker—even more so than I. You see I had been an associate professor for a year or two and I was establishing myself. In a benign funding climate, I could establish myself one place as well as another. But Dave had a big group at Yale and had a lot going there. He had to break up his lab and we couldn't even offer him—we offered him half a floor of Sverdrup Hall. He was able, before he died, to build the Biology Department up to four people, two assistant professors, Jon Singer and himself. He knew that when he came. We were planning new buildings and starting new buildings. He was daunted by nothing. He really wanted to get out of Yale because he thought it was a tired, boring place. So, he came and that was a great thing. We started the Medical School, and he was still around to influence it in the beginning. It was something that Roger and the rest of us, in great ignorance, were interested in. So, he was the other person I would name in that little circle of beginning people who really made a difference.

RINGROSE: What about the Mayers?

ARNOLD: Well, that was a special story. I had known them both very well at Chicago. There were the Ureys, Mayers, Libbys and [Frank and Jeanne] Westheimers. They were a social group, and I was living in the Libby house and seeing them all the time. It was actually Keith who came to me one day and said, "We're interested in hiring Maria, are you people interested in hiring Joe?" I said, "Obviously." That didn't take any discussion. And so, we went and saw Roger and that didn't take much discussion with him either. They were both very well-known people. Their careers had gone in track with Harold Urey's to a great extent. They had been young at Johns Hopkins together. They had moved to Columbia together. They had moved to Chicago together. So, in a way, it was an obvious move for them. One thing struck me about that recruitment. We brought them out here and talked to them—I think it was Harold who talked to them first and invited them. We agreed among ourselves very easily that we would offer Joe a professorship in chemistry, and we would offer Maria a professorship in physics. This is now 1960. Maria was 55. She had done her shell theory work in 1948, and it was now 1960. Nobody knew for sure she was going to win the Nobel prize, but everybody knew it was Nobel class work. I will never forget discovering, to my amazement, that that was the first faculty position

offer she had ever received in her life. [William H.] Willy Zachariasen was the dean then at Chicago, an old friend, a gentleman and a scholar and he used to spend his summers out here. He ran back to Chicago when he heard this offer and he made them, of course, a munificent counteroffer, but they said thank you very much and they came. They had been very much devoted to Chicago, but the departure was completely understandable. Maria was teaching a full load in that department with a courtesy title and no salary. She had a consultantship at the Argonne National Laboratory which brought her something like a half salary. And she had been doing that all her life—from the time that Joe was an instructor at Johns Hopkins she had been teaching labs free of charge, this theorist and keeping her lip buttoned and behaving herself as a faculty wife for no pay. I think there are young women in my department who probably wouldn't believe that story.

RINGROSE: Well, I am old enough so that I can believe that story.

ARNOLD: It was just incredible. When they came, of course, we thought that was an enormous coup and so did everybody else. The sad thing was that Maria had a stroke within a couple of years of getting here, so most of the people here didn't really know what she was and what she could do. She was a kind of presence in the department, but—she had been quiet before—but now she became difficult to understand. She couldn't lecture in courses anymore, though she was still working. Her mind was still there, but it wasn't as big a gain in the sense of indoctrinating the young as one would have hoped for. Still, it was a great part of, again, the sign of seriousness, that things were really moving here. I spoke of Chicago in the sense that when people started to leave, they started to leave. It was just the opposite here. When people started to come, they started to come.

RINGROSE: Right. And I think it is also a sign of the vitality of a new place that you were willing to make an offer to a serious woman. That was quite unusual at that time, wasn't it?

ARNOLD: I guess it must have been. I was actually on something called the nepotism committee. Everybody knew a certain number of horror stories where very distinguished male professor X insisted, as part of the deal, that his wife, who was really second rate, be given some position—either a professorship or some other thing and she became a great pain to everyone. It quickly became clear when ideas began changing that you could find plenty of examples of distinguished male professors who stopped being distinguished or people who were thought to be distinguished who were not and who behaved very badly. I think that over the years there have been some problems to overcome, when there are, say, two people in different departments and one of them is very good and the other one isn't. Obviously, we were entering into a new era. But you speak of this as being daring, it was very consistent with Roger's approach to everything and with Herb's approach as well.

When Jon Singer came with Dave Bonner, he brought with him a post-doc who had been a member of the Communist Party and couldn't sign the oath. I knew enough to know that there was likely to be some heat about that in the La Jolla community, if nowhere else. When I brought all this to Roger, Roger's attitude was, "Well, how should we work it?" He went to Clark

Kerr who was very helpful. And we worked it out and the guy is now a professor at Berkeley, so presumably it worked out fine.

In Herb's case, well, you know, to go back a little bit, La Jolla was a community which clearly discriminated against Jews and presumably still more against people of other colors in earlier years. There were housing covenants and all that sort of thing. Roger and others saw from the beginning that that would have to go if they were going to build a major university. You just couldn't do it that way and they worked with people in the community who agreed that this prejudice would have to be broken down. They did not break what was really a color bar here. The first black employee at UCSD, other than one in a menial position, was Herb York's first executive secretary, Gerry Rickman. That also took some courage. People were talking about it in whispers. So, there was a lot of courage at the beginning in a lot of different areas. People saw what they had to do, and they went and did it.

RINGROSE: We were talking about the problems with the community, town and gown relations and this kind of thing. We should talk about that a bit. Did you get involved in the discussions about the site for the campus? I assume that was pretty well established when you came, or was there still discussion?

ARNOLD: No, the fight was right in the middle when we came. The site and the style of the school were inextricably mixed because the site meant Roger Revelle and his friends and if you took the site, you took the people.

RINGROSE: I see. I had never quite thought about it in those terms.

ARNOLD: Well, I think that was one of the reasons behind Regent [Edwin W.] Pauley's bitter opposition to the site. He was bitterly opposed to Roger. But there were other reasons and some of them were probably legitimate. What is interesting to me, and was very important to me at the time, when I had already agreed to come but was really not very clear as to what was going to happen, was the election dealing with the gift of the land. It was on the ballot and the city had to vote. We were all told that it was politically very important for La Jolla to come in very strong on the positive side. And it happened. The city vote was overwhelming, and the La Jolla vote was overwhelming too. So, although there were threads—the anti-communist thread, the racist thread—prob-ably some people had a pretty realistic idea of what a university was like and opposed it for that reason. All these kids running around. Nonetheless, at that particular place and time, there was a very strong sense that education was good. Research was good. I would guess some of it had dollar signs attached. Roger was preaching and I made some of those speeches myself to the Chambers of Commerce and Rotary clubs about how this part of California doesn't have any natural resources. We are a zillion miles away from the markets, so we are not centrally located for manufacturing and shipping cars and refrigerators. If you don't sell brains, what are you going to sell? Some of it involved appealing to mundane things like that, but there was a very general perception that was shared across the political spectrum that these things were good. That has changed a bit, but in a way, it is coming back now.

RINGROSE: Yes, I think things are turning around. Were you involved in the business with Jonas Salk and the Salk Institute?

ARNOLD: Yes.

RINGROSE: Would you care to talk about that? I know it was a difficult and painful time for Roger Revelle.

ARNOLD: It was, certainly.

RINGROSE: He sees it as one of the major setbacks he suffered. I have really only talked to him about it. It would be good to hear about it from a third party.

ARNOLD: All right. That is Jonas' house right across the street. I have known him now for a long time. Maybe I should quote a comment that Roger made that sort of summed up the situation. I think it was a little while after the main fight was over. It was, "The thing you have to remember about Jonas Salk is that he is a good guy, not a bad guy." I think that is a very perceptive summary, because he is a good guy, but you have to remember it.

Leo Szilard, whom we haven't mentioned, was very much responsible for the creation of the Salk Institute and the creation of it here. He was a great influence on my life in Chicago and one of the outstanding people of his generation, and he had a lot to do with planting the idea. I don't know about its early history, but he came out here with Jonas and was closely associated with him. The idea of a research institute that would do molecular biology hard and in a broad way was an excellent idea and basically an excellent idea for the University of California because it brought here, as they have now, a very distinguished collection of people and raised the whole intellectual tone of the community. The conflict came, I think, mainly because of sheer obliviousness on Jonas' part to the possibility that there could be any turf problems. He has always had a great deal of confidence in himself and his ideas and he just went to the city council, a great name, and asked for the land over here. Whether he actually knew when he asked for it that it had been promised to the university, I don't know. The council certainly knew, but they acted like.... We found ourselves faced with a fait accompli. You know, we were even unaware that there was a battle going on.

[END OF PART ONE, BEGIN PART TWO]

ARNOLD: I never talked to the mayor at that time.

RINGROSE: That was Dr. Revelle's assessment, that the mayor had had polio and was ready to roll out the red carpet.

ARNOLD: Well, that may be, but you know even today, and certainly then, because it was only really six or seven years after the polio vaccine, Salk's name was a household word. This was more of a bush town then than it is now and I think that Roger is doubtless right and doubtless knows better than I, but I would say that the general reaction of community leaders was, "Jonas Salk would put us on the map."

RINGROSE: Did Revelle have any definite plans for that piece of land?

ARNOLD: Yes, you see if the Salk Institute did not exist in all probability the main campus would be much closer to the cliffs today than it is. Our idea was that we would develop the university... look it was not very far along, you understand. If the university had been given all the land where they now are as well as what we now call the Horse Farm area, then I believe the upper campus would have started on those cliffs. That was my memory of what we were then thinking about. In fact, of course, the issue was eventually compromised. Roger didn't lose altogether. It was a messy fight, a fight he didn't want, but couldn't avoid because he felt that some of the prime incentives for building the university here were being taken away. This was not only bad in itself, but it was an exceedingly bad precedent—that they no sooner give their word to you on something, or sign a contract with you, then they break it. You know, everybody else is going to say, "What are they going to break next?" And they have dented things a bit since, though the record on the whole is pretty good. Anyway, there was a settlement and a meeting of minds.

It was made more difficult by some of the people around the March of Dimes administration. The people around Jonas who were in the science group, Leo, and others, certainly were nothing but a benign influence. Some of them may have been a little arrogant too, but it goes with the territory. The people from the March of Dimes who were putting up the money were an astonishing crew. I still haven't gotten over watching them operate—the starlets draped around the pool. It was another world from the world we lived in and it made a very negative impression on us and was part, I think, of the passion with which some of Roger's colleagues picked up the cudgels. They felt that they were dealing with a bunch of con men and that made it messier.

RINGROSE: That piece I hadn't heard before.

ARNOLD: There were some conferences we had where—you know, high living—and of course La Jolla…

RINGROSE: How did Salk feel about that?

ARNOLD: It is hard to tell. Jonas is a poker player. It is very hard to tell. I don't know how he felt about it at the time. Over the years, I have never been close to him, but I have found it quite easy to communicate with him. I find him frank and easy to talk to, now. But at the time I think his position was that he was above all that and didn't concern himself with it. I really don't know what he thought about it. He doesn't now and didn't then live that way himself.

RINGROSE: Am I correct in the perception that if you are going to raise large amounts of private money that is how it is done?

ARNOLD: That may be.

RINGROSE: It sounds as if you are telling me that the kind of idealistic faculty that had developed here, first was getting enough from the government and the state so that it didn't have to get involved with private fund raising...

ARNOLD: Quite so.

RINGROSE: ...and second found it somewhat undignified.

ARNOLD: Yes, yes. I think that is a perfectly fair perception. As one of those people, I would say, well, I don't want to descend into details, but it went pretty far. I think the other thing that sort of stuck in people's craw was the March of Dimes—the picture of these Boy Scouts collecting dimes so these people could have their nights on the town—that sort of stuck a bit. If they had been collecting the money in million dollar blocks you might not have felt that way about it. Well, that is a detail, but it was part of the atmosphere that tended to increase the hostilities.

RINGROSE: Has the break between the Salk scientists and the campus scientists continued?

ARNOLD: I wouldn't say so, no. Not in my perception. I think that by the time the building was up, and they were in there and working—. I am not aware of any deep feeling at present or for many years. There are some of them we never see on campus. Some are around a lot. I think it is just regarded as a distinguished neighboring institution. Some of the biologists have quite close connections. Let me add one thing. What we missed in this discussion was the serious talk that went on for some time about the Salk Institute being a part of the University of California. My chronology is shaky here, you will do better in the archives than from my memory. I don't remember exactly the order of the land fight and these discussions. I am a little dubious about that. But when David Bonner was first here, which will define the time pretty well, there were serious discussions about the Salk Institute in some way or another becoming a part of the University of California.

RINGROSE: You mean the way the Scripps Institution is a part of the University, that kind of an affiliation?

ARNOLD: Yes, as a purely research institution. The real breaking point came, in fact, when it became clear that that was not possible. It was when it became clear that the professors or the fellows as they called them really didn't want to teach. They didn't even want to teach graduate courses. And at that point... That is something that perhaps you should dig at a bit if it has not come out before.

RINGROSE: That doesn't come up. The big hot meeting about the land transfer was in 1960.

ARNOLD: That is about when Dave came. It might have been late in 1960 when he came, but I am sure Roger remembers more about this. He was very much in on it, as I was of course. From our point of view there was this thought that this might be the best solution of all. What that tells you is that hostilities never reached the point of really breaking off relations because we couldn't have been talking about that with Jonas as well as with Szilard and a couple of other key people.

RINGROSE: How would this have been done if you had absorbed the institute into the university?

ARNOLD: Well, that was what we were trying to negotiate. They wanted, of course, to have it both ways. I am not saying that in a critical sense. They wanted the mantle of the University of California. They didn't want teaching obligations. They wanted to be free to raise private money, which is no problem, we can raise private money as much as we want, but they wanted some elements of independence from university meddling, which would have been difficult. And, most of all, they wanted this business of no teaching. From our side the attractions were the distinction and that we—now don't trust me quite on this—but I think that there was the thought, if the order of events is what I remember, that this would solve the land problem because it would mean that we would be doing things jointly and we wouldn't be independent.

RINGROSE: The title might still reside with the University of California.

ARNOLD: The title would reside with the university, and we could work out between ourselves, not on floor fights on the City Council floor, how we were going to do things. So, that went on. There certainly were serious discussions. I don't know how protracted they were, I don't remember. There was more than one discussion and there must have been some interchange of documents.

RINGROSE: That documentation I haven't seen.

ARNOLD: If you are interested look at that. It never came close to happening, but I think it is something I should put on the record as part of the relations between the two institutions.

RINGROSE: Would that documentation have ended up in the Revelle papers?

ARNOLD: I would think so. I don't know why not.

RINGROSE: The Revelle papers are quite thin where materials on his administration of the early campus are concerned. There are some problems with our early administrative papers. I have seen nothing about the university Salk negotiations, only the record of the last big meeting is there. There is no mention of this kind of a solution (absorbing the Salk Institute into the university).

ARNOLD: Well, we had even discussed with some of the great men, [Renato] Dulbecco, [Edwin] Lennox, the possibility of joint appointments after that, and I think that was taken seriously for a little while. In fact, the main thing that prevented these things was not the free-for-all over the land but the difference of vision about what the two groups were trying to do. We were both trying to build new institutions, but they were different, and I guess what that says to me is that the hostilities that were generated by the land fight were really not all that durable because we were certainly still... it wasn't just that I had personal relations with Szilard and some others, but that the university people were talking seriously and being talked to seriously by the Salk people over most of that early period about things of common interest.

RINGROSE: So, it clearly was important to Salk to try and have this affiliation.

ARNOLD: Yes. It wasn't important enough to him, finally, that they would sacrifice other things they wanted, but, I think, unless I am very much mistaken, if they had been able to write the charter, they would have been quite happy to be part of the University of California.

RINGROSE: Earlier when we were talking, we talked about building the faculty. I hope you will talk about that and especially about building the Chemistry faculty. What kind of people did you select? What kinds of qualities did you value in a faculty member? That is what a university is.

ARNOLD: Yes. Well, I must say that a lot of this was done on a very personal basis. We did not so much draw up an ideal profile as say, "People like X, people like Y." One advantage of my somewhat traveled youth was that I had been around in a lot of places and knew people. I had many personal acquaintances, though I had never met Martin Kamen, for example, before I recruited him here. I think we thought in terms of... What kind of qualities were we after? We wanted distinction in science, breadth within field and breadth of interest. That was always a La Jolla trademark. It had been a Chicago trademark. I well remember Enrico Fermi, who was certainly not a "geo" person in any sense, sitting and listening to Urey and Libby talking about their work and asking a lot of questions, and Bill Libby asking Maria Mayer lots of questions about the shell theory of nuclear structure. You know Carbon 14 dating in archeology was a kind of classic of that sort of cross-disciplinary thinking. We were permeated with that idea and so we tended to look for people in interdisciplinary fields rather than people at the center of disciplines. We may have carried that a bit too far. But of course, Joe Mayer, for example, was absolutely at the center of theoretical chemistry.

There were human qualities we sought, and we wanted a department that valued diversity. We wanted a compatible group. I remember Harold Urey talking about his days at Columbia, the only time he was a department chairman. I can't close my eyes and picture Harold Urey as the chairman of a department. It must have been a real rat-race. He hated that kind of job. Anyway, what he said was that Columbia had a very distinguished faculty then, both before and after his tenure, but that these people spent so much time fighting each other that they just sort of canceled each other out. He used a vector analogy. It won't show up on your tape, but all the arrows are pointing in different directions and canceling each other. At first, he said that we should look for people who would reinforce each other and later he said that we had succeeded, and I thought so too. But we certainly didn't avoid mavericks—that was the word I used about Dave Bonner—or crusty people—people that might be difficult. We just wanted them to be difficult because they were intellectually enthusiastic and not because they were building their own egos by pushing other people down into the muck.

So, those were the qualities we looked for. We knew we had to cover certain fields. If we were going into biochemistry, we needed a leader, and we found one. We knew that the first half dozen appointments had to cover the ground a little bit, we couldn't be all in one area. We also knew that we had to start recruiting assistant professors as early as we could because building the house from the roof down exposes a department to the risk of becoming an old man's club of some kind. In fact, Harold Urey made us see one thing that we did better than the physics department. Due to Harold Urey's pressure we tried to distribute people in age. If you get a whole collection of people who are all young together, they will all be old together too. I must

say the physicists did tend to recruit a cohort of people who were Keith Brueckner's age. They were his peers, and he knew them well. They are outstanding people, but that has created a problem later.

So, that was our starting point. If I remember how the decisions were taken, they were very much taken one at a time. I was going to professional meetings; other people were sort of going around and as each one arrived, we had our tentacles out. If we heard that so and so might be available, we would go talk to him. Sometimes it was all a lie, and he didn't have the slightest intention of leaving Harvard or whatever, but every little while it was true. Usually that meant that five or six schools were bidding for him, because these were top people. Then we would go to work, and we won more than we lost, we had gotten to that stage. Few of these people were personal friends—the Mayers and Stanley Miller were the only ones. I had known Stanley Miller very well.

We recruited him as an assistant professor. He had become famous as a new Ph.D., so he was still young. Joe Mayer was the only other person that I had to do with recruiting who was really part of our club—somebody we knew very, very well. I knew Bruno Zimm as an acquaintance, but not any more than that. We also recruited Teddy Traylor as an assistant professor. Well, that was clubbiness too. Frank Westheimer wrote me a letter about him and said that he was good.

So, that was what it looked like at the time. I look back on these recruiting enterprises as great fun. We didn't win them all. The one I remember losing and it particularly hurt was [Har Gobind] Khorana. Martin told me about him either just before he came or just after. He said, "Here is this great man and he is Indian, and he is at the University of British Columbia, which is not the center of the world." I moved real fast, but I didn't move quite fast enough. I flew up there and met him and his wife and found them utterly fascinating. I already had connections in India at the time so that was another plus. I could speak to them about that. He came down and looked at the situation. But, again, in that particular case, what [University of] Wisconsin offered him was a distinguished professorship with no teaching. That was a breakpoint for us. We were not making offers like that. I never understood it because I thought that in his case, he was a natural teacher and if he ever had really gotten into it, he would have loved it. In his later career he went from Wisconsin to M.I.T. He has never taught.

RINGROSE: You say that you were not in a position to make those kinds of offers.

ARNOLD: We did not want to make those kinds of offers.

RINGROSE: You didn't want to, or the university would not let you?

ARNOLD: It was both. The rule said no, but we were breaking other rules. If we had been determined to break this one, we could have, but that was not our idea. We didn't want to load such a person down with twenty hours of freshman teaching, but we thought the point of building a university was to expose young minds to these people. Now that I am in my sixties, I am even more convinced than I was in my thirties that teaching keeps you young. If we wanted

a lively faculty, especially when the faculty got to be my age, we should have them do some teaching. I think that was correct and I still believe it.

RINGROSE: Also, if you start appointing people with no teaching duties you create an elite layer of faculty and that can cause a lot of problems.

ARNOLD: Quite so. It is particularly bad that that is the perk of being elite, so the strivers are striving to do as little teaching as possible. I had never been at a school, Harvard, Chicago, or Princeton, where there had been any such thing as that sort of distinguished professor. I would suspect, from what I hear, that it has lots of bad effects.

RINGROSE: So, you managed to build, in the Chemistry Department, a faculty that has continued to develop. One of the things that I think I have seen in the Physics Department is that they have tended not be bring along young people.

ARNOLD: Physics has had a few outstanding successes, Larry Peterson would be one example, Carl MacIlwain, Bob Swanson, that makes three I can remember who came here as assistant professors and have done very well. I was quite close to Larry because his research field and mine were, quite accidentally, very close. We became collaborators after he arrived here. In chemistry we have had our failures too. I would like to endorse what you have said, but we have had a mixed record, to be candid. We have had some people, John Abelson who is now at Caltech, [Russell F.] Russ Doolittle, Teddy [G.] Traylor, whom I mentioned, and Stan Miller, who came here as junior people and have done extremely well. We had a tendency, especially in the middle period, say in the middle and late sixties and early seventies, to bring people on and if they didn't work out, we kept them anyway. We could always find a reason. There has been a big reaction against that. I think the junior faculty now who are coming along and some of the ones who made it are very good. I think we are back on track, and I feel confident as I look around the room at a faculty meeting and think about what it will be like ten years from now. It will look better than it is today, and I think it is very good today. I think physics is doing well too. They have had a different kind of trauma because they lost people by uncontrollable events, mostly. Bernd Matthias died; Keith Brueckner has withdrawn himself because he has other interests.

You were asking earlier about my feelings about the university as an institution. I love universities as institutions. I have spent my whole life in them since I entered as a freshman. I seem to be ideally suited to them. I like to teach; I like to do research. I haven't tended to withdraw, nor have others. Martin Kamen rather backed away after his chairmanship. He found that a rather traumatic experience, which surprised me since he is very much a man of the world, but he decided he just didn't want to bother, and he just kind of withdrew. In the main the key people in chemistry have stayed involved.

RINGROSE: One of the things I thought I observed in the interview I did with Roger Revelle about the Physics Department was that many of the people who came in physics did not come out of a university milieu, they came from Bell Labs, they came from places where they had been engaged in pure research. Assuming there is a certain amount of truth in that, was it

difficult for these people to learn how a university works, to adapt themselves to building an institutional structure? After all, you didn't even have a structure you could plug them into. You had a double problem here.

ARNOLD: Well, Keith Brueckner was the first dean of the School of Science and Engineering, and he was the honcho of the creation of the first undergraduate curriculum. I think Keith did a splendid job. He kept all of us focused. He also was deeply involved in the key recruitments in the humanities, as I am sure you will find out if you interview Roy Harvey Pearce and so on. Now, Keith had been in a university but had not, as you remarked earlier, been part of the circle. The other two people I think of when you say that were Bernd Matthias who always here, as everywhere else, did exactly what he wanted to do. Fortunately, he enjoyed teaching "his way". He was an eccentric but brilliant teacher. He had a course on the "green flash", for example. The other is Harry Suhl who, I think, adapted himself very soberly and seriously to the task and did it. Of all the senior people there were just those two. I am sure that if Bernd had been in my department, he would have been a handful for me. He was a handful for everybody who ever knew him. And there was George Feher. Well, George's case was a little odd in that he was an Israeli doing bio-physics… very "bio". So, there was a little gap between what he was doing...he had been at Bell Labs too, doing magnetic resonance. He was a wonderfully broad guy. My impression is that George has been a very good teacher of the traditional kind.

RINGROSE: So, you think this really wasn't a problem.

ARNOLD: No, I wouldn't have said that. Bernd was very visible and people who saw Bernd... He loved to say the most outrageous things, and so anybody who just got his impressions from listening to Bernd Matthias might have thought anything, but Bernd didn't mean eighty percent of what he said. He was just trying to excite the animals. By the way, Bernd was a great admirer of Roger, so it wasn't that there was a personal problem between them. No, I think the Physics Department really did very well overall. If I were grading its first five or eight years, which is when I was working most closely with them and knew what was going on, my rating would be very high.

I have mentioned Walter Kohn to you before as somebody who had great influence on the development of the college system. He was not from Chicago, but from England and Canada. He was born in Vienna, I guess. He is a scholar and a wise man and very much interested in all aspects of teaching. I have very positive feelings about that group of people. Their tribulations really began recently with deaths and departures, losing Walter Kohn to [UC] Santa Barbara and [John C.] Wheatley to Los Alamos. Bernd died. That also happened very fast. The academic world is a little like the stock market. We have mentioned that before. If you are going up, you are going up. If you are going down, you are going down. You mentioned Chemistry. There is a standard thing that our peers say about us. "Well, biochemistry is great, but the rest of it…" That has been repeated so often that I think some people actually have begun to believe it a little bit. Biochemistry has flourished, and more visibly than the other parts of the department, but I think that is a canard, myself.

RINGROSE: Now, what was your association with the undergraduate curriculum?

ARNOLD: Well, from the beginning I had been determined to be deeply involved in the chemistry part of it. I taught the first freshman chemistry and kept doing that for a while. I had a lot of previous experience doing that, more than my colleagues, more than my early colleagues. It was not until Russ Doolittle came along that I think we had a really stellar freshman teacher who was much younger than me. Various other people did it, but I kind of specialized in that and in the course of doing it, naturally, was making policy a little about the way it should be done. Bob Swanson and I invented the Revelle joint Physics and Chemistry class. It was agreed to in the Brueckner committee and then Bob and I went and did it. That was quite a successful program for a long time, though now it has weakened a lot. It has tended to succumb to the pressures for uniformity that you get when a school is very big. A lot of that early enthusiasm and individuality at the school has been lost.

RINGROSE: The early undergraduates were really outstanding.

ARNOLD: That also happened. They were outstanding, but there was a problem. I still remember the first class, which was about two hundred students, and they came in here—we had graduate students and freshmen. The freshmen thought they were being crucified. Here we were laying out this curriculum and they thought they were being killed. Well, you remember going from high school to college. If you, did it in America, college is always much harder than high school and these bright kids had breezed through high school and gotten "A's" and all of a sudden, they were studying nights and weekends. So, we had a morale problem the first year. It settled down rather quickly, but that shocked us. We looked at these bright kids and said, "Wonderful! We have got to do something for them."

RINGROSE: And there weren't many of them. I'll bet you had lots of time for personal attention and interaction. (laughter)

ARNOLD: Oh yes, and that was the end of it, unfortunately. It went downhill from there. One of the great disadvantages, which I knew intellectually but did not fully realize, of a big state university is that you lose a lot of personal contact. What I miss most now is that the students don't come around. When I teach a freshman class of three hundred and fifty and say, "My office hours are so and so and I like to talk to students," only two or three students come around to ask anything other than, "What will be on the test?" or "Will you grade my paper so and so?" In a class that size today, that is about it. One percent of the students take advantage of the intellectual opportunity. It's very hard to change and I deeply regret it. People tell me at Princeton that it is not quite the way it was. There are twice as many undergraduates as there were when I was there, but it is still more or less the way it was. It is not that way here and that is too bad.

RINGROSE: I don't quite know how that attitude develops among undergraduates, but everybody says…

ARNOLD: Professors are busy...

RINGROSE: But if professors aren't busy, they are still… the students still don't come around.

ARNOLD: Yes. But if you ask them why, that is the answer you get. "I know you are very busy."

RINGROSE: There is a kind of gap between the students and faculty. I don't know how you bridge that.

ARNOLD: I have tried little experiments, but none of them have been successful.

RINGROSE: I have wondered if perhaps what goes on is that as student services build, we have a whole new administrative layer of people, deans, assistant deans, counselors, people who are there for the students. Perhaps the students tend to go to people in that administrative layer because they appear to be more accessible and less threatening.

ARNOLD: Then of course teaching assistants are very prominent and visible, more so than they would be at an elite private school because that is the nature of the beast. Chemistry, in particular, or any of the sciences, is very demanding in terms of the number of contact hours and so on and so the student is talking to a graduate student and there is no reason in the world why the graduate student should not make him or herself available and try to interact a lot. That is what I have always encouraged them to do, but that is another layer that is between you and the students. That is much more the case here than it would be in a more expensive school.

RINGROSE: Everybody says that during the first few years here there was an attempt to foster serious interchange between the faculty and the students. There were faculty open houses, things I associate with a good small private college much more than with a state university.

ARNOLD: Yes. But people are successful at it even now. Tom Bond, whom we just welcomed as the new Provost of Revelle, as a teacher in Chemistry was always able to achieve that rapport. Of course, he devoted himself entirely to it. He is not a great research person, but he is just everything I would want a teacher to be. So, it can be done, but it apparently takes an act and much more application than most of us are able to put into it. You are fighting the tradition rather than working with it.

RINGROSE: And you are not rewarded by the University of California for teaching. You have to be realistic about that.

ARNOLD: Sure.

RINGROSE: When you talk about the undergraduate curriculum you also have to talk about the college system and how it is structured. Did you support the multi-college system?

ARNOLD: I was one of the inventors of the system. Let me say something about its history though I'm not sure I have all this right. When I came there was a very serious concern about departmental rigidities. This had come up in discussions. Carl Eckart had experienced it in physics and was very much turned off by it, and there was talk of some sort of dual organization that would make a person a member of a department and perhaps also a member of a research institute. Scripps was and is very interdisciplinary. It has to be. So, we were trying to build on that tradition. That was the idea.

When that discussion got involved with undergraduate teaching, how it would fit in, that is when, in my memory, the college idea began to arise. The notion was, again, that the faculty would have a dual affiliation. Once the place was very big you certainly couldn't know all your colleagues in other fields like philosophy. But if you had a college which had its 150 faculty members and 2500 students then you would know the professors of Greek if they were there. So, you wouldn't be so narrow, and the students wouldn't get so narrow an education.

Then Walter Kohn arrived. He had been a student and had taught in Canadian universities, I think it was the University of Toronto, where something like that was done. Roger was always quoting us passages from [Hastings] Rashdall about the British and continental systems. I had been at an undergraduate college, Princeton, which I thought was just about the right size, twenty-five hundred students. Then there was the Yale model. So, by the time the first handful of upper campus people were concerned with how to structure the colleges, it took this form, and it got talked about and talked about.

My memory is that Roger was under some pressure to produce a concrete plan and was still polishing it. Walther Kohn and I got together one weekend and wrote the first document because we saw eye-to-eye very much. We wrote a straw man, and it was revised, but it pretty much went that way. I was a great advocate, a proponent of this system in the early years. As Revelle College got started it was easy. There was only the one college, and we were still small, and everything was lovely, and then we started Muir, first college and second college. At that time, I think, there was still a pretty strong feeling on the part of the faculty that it was going to work, and it has worked to a very limited degree.

The pressures against it have been strong. There was no particular sympathy from Berkeley or the higher administration to begin with. It was thought of as a source of inefficiency and an unnecessary layer of administration. There were faculty people who had no interest in it one way or another. The places where I think we have lost most visibly are that the departments have been one and all desirous of clinging together, not being divided. The departmental professors saw themselves as members of departments, membership in the college was either secondary or nowhere. With regard to teaching, there was a time when the Chemistry Department, which is a big service department, had a Revelle College Chemistry, a Muir Chemistry, a Warren Chemistry, and a Third College Chemistry. They were all interesting and different courses. But no more because as the pressure of students grows and grows and grows, people see that it is more efficient to have just one course and twelve sections and do it all that way. It is more efficient, but educationally it is much less satisfactory. It is what has happened. So, what interests me about what remains is the geography. Nobody is going to be able to rebuild the campus to break that up and anyone can see that the style and flavor of the architecture of each of these campuses is different. Third is my favorite from an architectural point of view and Muir is my un-favorite. Revelle is very nice. I have been living there comfortably for a long time. I find something interesting which encourages me a little as a sort of residuum of all this. If I am talking to an undergraduate and I say, "Which college are you in?" he never hesitates to say, right away, Muir or Warren, or....

RINGROSE: The students see a lot of differences.

ARNOLD: Yes, and so I think we have built an experiment there which one has to say—well it is about two-thirds failed and about one-third succeeded. I am glad for that much.

RINGROSE: Do you think it might have worked had the university grown into the size it was originally expected to grow to? Then it would have been more important to have these smaller structures.

ARNOLD: Well, let me put it this way. I think the university will grow to the size it was originally supposed to. There is a lot of discussion about a fifth college right now.

RINGROSE: Then we may be glad to have the colleges.

ARNOLD: Yes, as late as the time when the central library was built the thought was that it would be at the hub of the campus, among other things. We went from the projection of 27,500, which was the magic number that all campuses would reach, to a projection of 10,000, which we are still being held to even though we have more than 10,000 students. Now I think people are talking in terms of 15,000 and it is crowding 15,000. I think it is going to 20,000 and I don't know where it is going after that. So, I do think that the student body will grow, and I hope that the college system sticks... I think Dick Atkinson wants it to remain about as it is and doesn't want it to get any weaker. I think there are some forces in support of the college system on the campus and I certainly hope so. It is hard for me to see how it can get much less unless enrollment doubles from now and they make a conscious policy not to build a college. I think it will stay about where it is.

RINGROSE: Describe for me how the Chemistry Department would have operated in the original college plan.

ARNOLD: In our original plan, there would have been chemistry professors formally affiliated with, and I think on paper they still are, each of the colleges. Chemistry is a big department. There are two kinds of departments. In our original plan we saw an Astronomy Department or a Greek Department as a classic small department. Then we said, “You have a department of six people, they will be in Muir College.” So, you have the Greek Department in Muir and the Sanskrit Department in the Fourth College, and you scatter them around that way. Professors' research space is not all grouped together in one building according to department. For example, all chemists would not be together in a chemistry building. Instead, those chemists, let's say, who are very geo-oriented people like myself are clustered with like-minded people who are in the geology group and is strong on one campus. Those who are more biology oriented are over in Third College where people who think more "bio" are located. Some of them are over in the Medical School and have their research base there. In fact, Chemistry in is eight buildings now so we, thanks perhaps to me and to Joe Mayer, are probably being cursed by many of our colleagues that it came about that way. That was the idea.

RINGROSE: And that would have squared well with the original intent in which the colleges were disciplinary in tone.

ARNOLD: Disciplinary doesn't display what I am talking about. They had a tone. They had a style, but the colleges were not. For example, what some people thought when the School of Science and Engineering evolved into Revelle College. They thought that meant that Revelle College was science and engineering. That was not our idea. Our idea was that Revelle College emphasizes science and engineering, Muir emphasizes humanities and psychology. Third was originally to be strong in the social sciences and history. But it wasn't intended that if you were going to major in history you went to Third College.

[END OF PART TWO, BEGIN PART THREE]

Third College, in fact, was the first real baptism of fire of the college system. I think that Roger Revelle agrees with my view that in one way, without knowing it, the rebels, the third world types, the Lumumba-Zapata types were a little closer to our original conception than the people who were doing the official planning. They wanted to make it really different, to give it a style of its own, and they did. I was talking with [Joseph W.] Joe Watson who was, I am proud to say, the first black faculty member recruited on this campus and was recruited by my department and who became, after that struggle, the first provost of Third College, sacrificed his scientific career to it. He was expressing everywhere he could his earnest desire that the Third College be a place where students really got an education, got their minds opened, got stretched, got what the white majority had gotten in other places in an environment which they felt they had a real stake in. I think that was very close to the sort of thing that we might have thought of if we had thought enough about that problem at that time. The rhetoric was something else, but the spirit was, I thought, good.

I think that is also true of Fourth college, which became Warren College. I created the first college chemistry for Warren, too. I enjoyed doing that sort of thing and I found it good. It was a little more crass, job oriented, "professional preparation" was what I think they thought was their theme. Warren College has had the good luck to be in the Camp Mathews temporaries now for years and years and I think that is very helpful. It really gives a group of people a spirit. (laughter) So, I think that has been a plus in keeping these ideas alive.

RINGROSE: There is a document that I am trying to get my hands on. Before he died Armin Rappaport opened his top desk drawer and the only thing in it was the original Third College plan on a big stack of yellow sheets. He promised it to me for the archive but wasn't ready to give it up. Then he died quite suddenly. I keep working on his wife and hoping she will locate it. I would like to compare it with what actually was done. In any case, I hear what you are saying. I suspect the original Third College plan was a bit sterile, given the times.

ARNOLD: I thought so at the time. Armin was a very good person. That isn't a criticism of him as an individual, but he was commuting from Berkeley, and I thought at the time… There have been other college plans that have not materialized. John Isaacs, a very admired friend at Scripps, was asked once to make a Fifth College plan back when we were supposed to be growing much more rapidly. It was a very interesting one. I remember that I looked it over at John's request and liked it.

RINGROSE: I have never seen that one. I would be interested in knowing what became of it. Now, you must also have been involved in the early financial structuring of Revelle College.

ARNOLD: I wasn't centrally involved in that. When I was Acting Dean, the post that later became Vice-Chancellor for Academic Affairs, I was naturally in on the meetings and the conferences that had to do with budgets. Of course, I was always in on the ones that involved the Chemistry Department and our F.T.E.s and so on and so forth. I think it is probably a statement about me that I was not very excited about that stuff. I don't remember a great deal of detail about it. The one thing I will say is that we always felt at the time that we were being somewhat shorted of resources, and that was absurdly false. It was just silly and immature on our part. We were being backed in a way that, in retrospect, looks like the golden days.

Well, one example, I can't resist. We were talking of Joe and Maria Mayer. The next big situation of that sort was Geoffrey and Margaret Burbidge. They ran into the problem that we then, as now, had no astronomy department. So, the idea was to appoint them as husband and wife in the Department of Physics. There was a rule against that so, I forget who it was, Keith or Walter, who was chairman at that time, came to me and said, "Could you imagine appointing Margaret Burbidge as a professor of chemistry? I had a spare slot, and I knew who Margaret Burbidge was. I knew she was very distinguished. So, I took it to my department, and they said, "Fine." I remember going to her and saying, "Look, you don't have to come to faculty meetings. This is a bureaucratic necessity." And, in a few years, the rule was abolished or whatever and they didn't do that anymore. But the idea, today, that you would have so much freedom and so many resources that you could do something like that!

RINGROSE: You could never do that today. I know that when I interviewed Clark Kerr, he made the comment that he felt like he was always going out on a financial limb for this campus, and indeed it was a privileged campus.

ARNOLD: I think that is correct.

RINGROSE: Yet you say that the faculty really didn't see that.

ARNOLD: Well, there was one place where the battle was continual. That was the library. John Galbraith is associated with that, but much before his time there were problems that were, in a way, a symptom of what we are talking about, a symptom of a bigger issue, and I think that is worth talking about. In the days when this campus was small, in the late fifties or early sixties, people on this campus didn't really believe that all the campuses of the University of California were equal. I was probably as close as there ever was, on statewide committees, and I was on many, to somebody who advocated a real fairness doctrine, that we should be sure that Riverside and Davis and all of us were treated in a fair way. The common attitude here was, well, we recognized Berkeley as a great institution and we were a great institution and UCLA is big and not so bad, so we were really the three important campuses of the University and to hell with the rest. The hell with the rest is a bit overstated, but we are the three important university campuses, and we want you to recognize right now that we are one of those three. And, in fact, to a considerable degree the university did recognize that, I think.

RINGROSE: I think that comes out very clearly in things that Clark Kerr said, though he never really fully admits to it, the geographical Berkeley, UCLA, UCSD thing.

ARNOLD: Well, I think that any president of a university would have great trouble admitting to it because it has obvious implications for Irvine, Davis, Santa Barbara, the other campuses which have their own merits, their own aspirations. What that meant was that we really wanted to be in that privileged front row. It was rather interesting, in fact.

One of the things going way back that I saw in the statewide experiences that surprised the life out of me was that our UCLA colleagues (you know at the beginning we were part of the Los Angeles division) treated us quite well. The Berkeley people, very often, just crawled right down our backs. We had endless trouble with various individuals at Berkeley. We had the occasional turf fight with Los Angeles colleagues, but in general their attitude was, "Well, here are these feisty young guys. We fought these battles and lost. Let's help them fight the battles and then come around and say you have got to do it for us too." And it worked. I have talked with John Galbraith, who was chairman of the budget committee, what is now the CAP [Committee on Academic Personnel], at UCLA when we were first struggling, and he talked about how he viewed it then and that was right. So, we had both support and opposition. I wouldn't say that the smaller campuses really gave us a lot of trouble either. Santa Cruz went a very different way. Many Irvine people felt, and many of them probably still feel, that we used our elbows on them, that they started at the same time we did, and they are very good too. But by and large we had an astonishing measure of tolerance and even support on the other campuses and from the high administration. In retrospect I am quite grateful for that and a little surprised, given the way I know human nature to be, that it was that way.

RINGROSE: I have heard that there were difficulties for Roger Revelle in managing and developing an administrative structure and making the transition from a Scripps administrative structure to a larger university structure and "running" the money. This got him into a certain amount of hot water and perhaps led some people at central administration to believe that perhaps he wasn't as good an administrator as they could wish. Would you care to comment on this observation?

ARNOLD: Yes. Again, let me put the money aside, to a degree. I will talk a little bit about it, but I don't think I was in a good position to judge. There was this special fact that at that period, on all the campuses, the official who is now called the vice- chancellor for finance did not report to the chancellor. He reported directly to the Regents. There was a business manager down here who had that role who was not a friend of Roger's and was not cooperative. So, I don't see how anybody could have avoided difficulties in that area. That was changed later, but he had to live with it.

In other matters where, say, his signature was needed or where some action was needed, he tended to react. I remember a lesson he taught me once when we were putting in a new building and the grass was going in. I noticed there were no sidewalks. He said, "Let me give you some hard-won wisdom about the way universities work. What you do is you put in the

grass, then you wait and see where people walk, then you put in the sidewalks." That was the spirit with which he approached a number of things.

As his direct subordinate and a guy who had to get decisions out of him, I got along just fine. I wasn't conscious of a lot of trouble in that area. He would have a habit of taking papers off… he was sloppy in personal habits, but he knew that, and he had a good strong secretary and so on. I think he may have been a bit slow, but I think that was exaggerated. My view of it was, and it is obvious I was a strong advocate of his becoming chancellor, when these points would come up, I always spoke in his favor and that is how I felt. I think it would have worked. I think somebody would have, Kerr or someone, would probably have had to put his thumb on him once in a while, but, I think, had he become chancellor, not to take anything away from Herb York who was wonderful in that role, everything would have worked out. He wouldn't have been as clean desk a person as say Bill McGill, but I think that would have been managed just fine.

RINGROSE: How did his friends and supporters feel about it when he wasn't selected?

ARNOLD: It was like a kick in the stomach. It was devastating, and especially because there was all this fear about what Herb York might be and imply… Chief Scientist, Department of Defense, Director of the Livermore Laboratory at age 28, which made him a disciple of Edward Teller in our eyes, quite wrongly, but that was how we saw it, so that period between the announcement and Herb's arrival and a little bit after Herb's arrival was a very difficult one.

RINGROSE: What did people think about his selection? How did he get the job? How was he chosen as chancellor? Was there any input from down here?

ARNOLD: It is believed, and I guess I believe it, that the one faculty member down here who really hated Roger's guts was on that committee. That faculty member left shortly after Herb arrived. That is a widespread rumor. I knew, from the first Regents' meeting that Roger hauled me to two months after I arrived, that there were Regents that Roger couldn't stand and that couldn't stand Roger. And the thing I really saw with dismay was that Roger didn't conceal this at all. I understood that on the part of the Regents but couldn't understand Roger's openness about it. I thought he could have been more discreet. That surely must have been a factor. To be blunt about it, while I think, in retrospect, that Clark Kerr really did support Roger in his efforts and plans, they were not ever personal friends, and I can't imagine that they ever would be. [Note to text from Prof. Arnold—they seem to be now!] They were just completely contrasting people.

RINGROSE: You are right. They are totally different people, both wonderful people, but I can't think of two more totally different, but superbly bright individuals.

ARNOLD: You know there was that later period when Roger had some statewide title, and he was in University Hall. He was statewide Dean of Research, and he was so unhappy during that period because he just… you know he was sitting up there, he was supposed to be a big shot, but you know how places like that are, everybody in the place knew that Clark Kerr didn't listen to Roger and so he…

RINGROSE: Or at least Kerr didn't appear to listen to him. He has a very flat affect.

ARNOLD: You know, you are right. He probably listened to him more than people thought. That is a proper amendment. So, that is what we saw here, and we took that... I think I will say a little more. I was on the committee that found our second chancellor and I was associated with such processes later also. In the course of that Roger's name inevitably came up.

RINGROSE: Yes, I have seen those papers.

ARNOLD: O.K. It was clear to us, you may have some things on the record that I don't want to talk about, I don't want to talk about all aspects of that but let me say as a general summary that it was clear at the time of the choosing of all of the first few chancellors that you could present Roger Revelle's name if you wanted to, but he was not going to be chosen. That persisted even after the leading personalities were gone. That was a fact of life. The affection and respect for Roger never really faltered here and was shared, for example, by Herb York and John Galbraith, and so on, and yet, though I think a very strong campus backing could have been drummed up at almost any time until it was clear that Roger was too old for the job, up above there was a persisting tradition that “no” was the answer.

RINGROSE: That clearly lies with the Board of Regents. I pursued this question with Pat Brown when I interviewed him and of course he is a very cagey politician, but he really did convince me that the problem never got as far as his office. He didn't really understand exactly why Revelle wasn't chosen, except that there was some terrible problem within the Board of Regents. This decision was never discussed as far up as the Statehouse.

ARNOLD: Well, I also have the impression that as long as Clark Kerr was in that job, he would never endorse that. I could be wrong, but that was the impression I had. Whatever his intellectual respect as a…

RINGROSE: For a lot of people this is a terribly important thing, and I can understand their feelings, but we should go on to other things.

ARNOLD: I agree.

RINGROSE: This is something that is never going to be resolved.

ARNOLD: And it didn't turn out, ultimately, to be that important an issue, I think, although I have tried to fantasize sometimes about what the campus might have been like if Roger had had, say five years as chancellor after it started. I think it would have been better, even, than it was, but we will never know.

RINGROSE: What about the founding of the Medical School. Now there is another can of worms that one opens with great care, and peers at cautiously. (laughter)

ARNOLD: Going back again to the period before I got here, you know for all of us that is a prehistoric, Neolithic period, there had been a discussion about the fact that a great university

has professional schools. The medical school had been fastened on for a lot of reasons. Medical schools have a very strong research component. There was a feeling that there were too many lawyers already, and that a business school was not the path to academic distinction. Also, I think Roger, at least, really had a dream that would fit very well with the kind of undergraduate school he was hoping to build here, with Scripps, which was a very distinguished research institution and had its marine biology people and all that. He saw a medical school and others saw it as a natural mesh. I agreed with that.

Dave Bonner's reaction, when he got here, and Martin Kamen 's reaction when he got here was, "You guys don't know what you are really getting into," which was true. But they both… they were not opposed to the idea. They thought it might be fun to create "our" kind of medical school instead of "their" kind of medical school. "Our" kind of medical school was, for them, among other things, a medical school in which, in the pre-clinical part, the basic sciences had a much stronger voice in what went on. In the original dream, Roger was talking about the medical school being part of the campus, about people doing as was done fifty years ago when you entered as a freshman, and you graduated as an M.D. There was no particular break. You started taking your pre-med courses in your junior year. The goal was to shorten the time it took to get an M.D. and to decrease the bad economic pre-conditioning which makes doctors feel that they have to earn so much money.

I think that I, too, was… Princeton didn't have a medical school. Chicago and Harvard, of course, had famous ones. I knew something about them, but I hadn't been that much involved in that sort of thing. So, as we got further along, as we began to bring people on board, it happened also that the state of California decided to establish a bunch of new medical schools, too many, as one sees in retrospect. When we saw, as I remember the sequence, the first of the new medical schools established at Davis right there close to Sacramento, we said to each other, well, it got moved. If you don't move…

So, there was great pulling and hauling between basically three forces, to oversimplify. There was ourselves, if we were a force, and it didn't feel like it at times. There was the county medical community, the county medical association, the “big docs” in San Diego who saw this both as an opportunity and a threat, and there was the central administration of the university and its medical bureaucracy. It did not show itself as U.C. San Francisco and U.C.L.A. Medical School protecting their own turf. That was hardly visible. But the attitude in University Hall was, "Well, come to us and we will give you the plan for your medical school." And so, there was war, and it was a complicated shifting war on many fronts. Initially the spokesmen here were Roger, Dave Bonner who had worked in a medical school for a long time and knew lots about it and myself as sort of the third man. Martin Kamen was in the background telling us to go home and talk these things over. Martin would say, “What they are trying to pull on you is…” That was our team. Then, very quickly, that was just in the transition, it became York instead of Revelle.

Herb, I must say, earned my respect early on. This guy had been raised in a tough world, the Pentagon and all that sort of thing. He had dealt with aerospace companies. The impression I had was that by his second day on campus he was at home. He knew where he was, and there was this issue with the county hospital which was very large and very complex and the arena,

the battlefield, was over the location of the medical school. The forces, in so far as they were coherent and unfortunately, they were not completely coherent, on the other side were bound and determined that the medical school was going to be down at the county medical center, as far away as possible from people like us.

RINGROSE: So that is the reason, as opposed to saving money.

ARNOLD: Saving money was the surface…

RINGROSE: It was the apparent reason, but you think the real reason....

ARNOLD: Let me tell you one story about that. By the way, we always had people like David and Martin who, in their darker moods would say, “You know, we ought to let them have their way. We might get a medical school up here and then we will be sorry.” Nonetheless, in public our line was very hard. Well, the particular example about the dollars… This was in fact the climactic battle. We "won" this one.

The person, the administrator at Berkeley who was fighting our cause, got a university employee, an estimator, one of those people who go around estimating the cost of projects. This young man, a CPA, came down and went through the whole thing and asked us lots of questions and asked the county medical people and the administrator who wanted to do it that way lots of questions. He came up with the statement that if we had so many professors and so many students and so many beds and did it our way it would cost seventy-six million dollars. If we did it their way, it would cost thirty-eight million dollars. It was just a factor of two. I was totally buffaloed by this. I couldn't imagine, since the list of components was just the same, what was making the difference. Well, Dave Bonner pulled this out of the fire. He said to the young man, “How about coming down here and spending a few days. We will walk through it all together. I don't understand your figures.” So, he came down and Dave and I don't know who else… he assembled some other experts of his own… [Robert N.] Bob Hamburger might have been involved in this. Bob was always behind the scenes. Bob was always back there too. Sometimes he was in the room because he was the only M.D. we actually had on the premises.

Anyway, the revised estimates came out that it would cost thirty-nine million to do it their way and thirty-seven million to do it our way. We immediately grandly admitted that it was probably really the same, we did not insist that our way was cheaper. All that had happened was that, in the course of going over the figures with this young man, who had no bias at all and was just a technocrat doing his job, Dave exposed all the hidden assumptions. The deck had been stacked in ways I no longer remember, but which were really quite absurd, outrageous. I think the persons who did this thought that we were ignorant enough so that they could get away with it, and I think some of this is documented. A great deal of it is on this hidden tape I have talked to you about where all the names are named and probably the facts are straighter because I was lots closer to it than I am now, though no less emotionally involved. I was outraged… I was very, very angry.

So, we won that battle and it turned out to be, in a way, the critical battle. Again, I would say it is like the college plan. We have lost a lot of the ground that we won at that time. Medical school education here is much more orthodox than we had planned. The pre-clinical departments, which are today the biology and chemistry departments, do not have the influence over things that they did. Some of the early deans, [Clifford] Grobstein most obviously, had very much the sort of ideals and interests at heart that we are talking about. That is not true today by the account of my friends in the medical school. So, we won in a way, because the medical school seems to be, like the rest of the campus, a top research institute. Some of the people over there… well, the [Eugene and Nina Starr] Braunwalds, whom I knew when they first came, and Marshall Orloff. There are a half a dozen people over there whom I know who are obviously world-class scientists. So, in that sense we won. And, I think there has been some influence. There is probably still a little more idealism in this medical school than there would have been if we had not been there. Something remains, something to build on. So, I wouldn't regard that as a failure. Nonetheless, it wasn't what we dreamed.

RINGROSE: Do you think we ended up with what the community wanted?

ARNOLD: The community, of course, is a somewhat amorphous term. There are many, many things to consider. I think the community really did want a famous university, and that, I think, they got. I think if you asked the members of the community that I tend to mix with they would say the university has been a wonderful thing and they would have a long list of pluses, most of them of a cultural character. La Jolla has become a much more international, sophisticated community. The high school is much better now because it has a much better undergraduate population. I was very much struck by that transformation. So, I think that although it has been slow in coming, the community will get and has been beginning to get what it wants in economic terms. I think there will be a Route 128, Silicon Valley sort of phenomenon. I think Sorrento Valley is beginning to be that and probably is unstoppable by now. So, in all those senses the community got what it wanted.

But the university has helped cause the disruption of old La Jolla. La Jolla is not the isolated quiet town that it was even, to a degree, when we came, and of course in the late '60s and early '70s, during that period of turmoil, the community was very, very sure that it was not getting what it wanted. Today the undergraduate mood is very different. I am not too happy about it. Maybe it is more what the community wants. I don't know. I think if you were to take a survey you would get a response much like mine, "Well, we got a lot of what we wanted but we were disappointed about some things."

RINGROSE: You promised to talk about the great ladies of La Jolla, and about the community.

ARNOLD: Oh yes. This is an old theme of mine. Let me try to do that. I was struck, when I first got here, by an atmosphere that certainly I did not see at the other universities I knew, though a couple of the great ladies I will name were at those other universities. Still, the circle of people who were trying to decide what this place should become was a small one. We all knew each other. The point I am speaking of now is that women played a much larger role here in the spirit of what was being done and, in one case at least, in the actuality, than I had ever seen

elsewhere. I am now not speaking of a professional role, though UCSD and my department has a larger fraction of women on its faculty than elsewhere and so on. I had this little thing about the four great ladies of La Jolla. Let me mention them now, though the list, in retrospect, is a little arbitrary. I will give the four in chronological order. I thought a bit about it after we talked the other day.

Chronological order begins, certainly, with Ellen Revelle, whom I have admired ever since I met her, which was a long time ago. Second is Clary Eckart [Klara (Klari)] Dan von Neumann] who isn't with us anymore. So, I will talk a little more about Clary. She had been the wife of John Von Neumann. She was, according to the legends, the first computer programmer because when the programmable machines came along… they invented it, but nobody knew, actually, how to use it. She had known Carl Eckart for a long time. She was a lady of Hungarian antecedents, rather boisterous in manner, smart and outspoken and also very well connected. She knew everybody in science, at least in physics, mathematics, and all that sort of thing. She had a properly cynical… she was free in her expressions of amusement and criticism of some of the things we did, and it was very constructive. She punctured quite a few balloons and sometimes her opinions about people… you know, we would bring people to recruit and… [*laughter*] meow… It is not so much specific things about any of these people. It was the atmosphere, the style of the place.

The third was Frieda Urey. Frieda is still around. She was younger then, but she is wonderfully preserved and active now. I think you can see for yourself. She had always been very… what's the difference, she was at Chicago too. The difference is that we didn't make Chicago. Chicago was there when the Ureys got there, and it is there now. It was an influence on the local environment, but here everything was being made new. Louise (Arnold) can tell you about the Oceanids. From the first day she (Frieda) got here she was a great influence, making people feel welcome. It is hard to remember, but many people found this a very exotic and strange environment when they first arrived. They came out of New York or Chicago or somewhere, very much disoriented and Frieda was the first who tended to take these people in… along with Helen Raitt. I can easily have added to the list. Helen would certainly have been an addition if I were adding to the list.

The fourth was Maria Mayer. There the great thing was the example. She was. She existed. She, too, was a woman of great judgment and not too much patience, a very gentle woman but if she got bored you knew it awfully fast. She was a chain smoker, as Joe was. She would light up a cigarette and start looking up at the ceiling. They tell you not to be… as I say, they weren't sitting on the committees… It still goes on today. Judy Munk, there is a whole history… Sibyl York, when she got here, joined this club.

It meant that the big philosophical issues got discussed at home. They got discussed on social occasions. The idealism which, well, insofar as you get your roots from places like the Ivy League, though I certainly don't think of myself as a typical Ivy Leaguer, but there it is on the record, you know. I think that Roger too, and Ellen for that matter, though in principle they had an upper-class liberal outlook, nevertheless were realistic. But the idealism is the thing I can best point to. It was really sort of a spiritual thing. We all got used to it and it was a big plus in

recruitment. There was no end of value that we got from having these people here and speaking and working for us. I feel that it is something that you would find very hard to document in the record. As a part of the atmosphere, it made a big impression on me. I still feel that some of those people… you know that the beginning of this campus was a golden time, a great time in my life. I have had a few times in my life that were the most marvelous fun… carbon dating, later the Apollo period… but I would say that the best time in my life so far was those early years here. Everything was happening. It was such fun. Things were working. One remembers such great periods as centered around people.

We were just talking about the Medical School. There is something funny about war, the solidarity that it brings about. You are comrades in battle. Well, if I start reminiscing pleasantly about those scenes, I think that whole effort… certainly if you look at contemporary life, power structures and the way they are… that whole effort was probably more coeducational than anything that I have ever encountered or known about in modern times. It was different, too, in that way.

RINGROSE: I think that other people I have talked to have had similar kinds of feelings about the early days and the community and the pulling together. It comes together in little ways… when Hazel Alksnis talks about the early Revelle staff washing windows and painting walls together on Saturday afternoons because the students were coming, and the place had to look decent today. These are things that would never happen.

ARNOLD: Well, there still are pockets, perhaps, where it is possible. You started this discussion by talking about my background. One of the things that happened when I left Princeton was that while I had kept the chairman scrupulously informed… I was quite an experienced academic game player by then… the day I walked into him and said, “Well, I am waiting for a letter now and if the letter says what I think it is going to say I am going.” He looked at me for the first time with his eyes as big as saucers… he had never imagined that I was actually going to leave… because I was a Princeton man. Where else would I go? I remember explaining to my colleagues, some of whom were equally incredulous, and I said finally, “Look, I have learned something about myself. I am not a priest. I am a missionary.” I still remember that. I liked Princeton and I still do, but there was nothing significant that I could do to change the institution. Co-education might have come six months sooner if I had stayed. There was nothing significant, whereas here I had some effect. I had the feeling I was doing something. It was a glorious opportunity, and, of course, it was a glorious opportunity to fall on your face. You were being given a lot of resources. It was chancy, and there is a sense afterwards… I think I have measured my enthusiasm for the product. It hasn't been everything that we dreamed. But I find it hard today, looking back, to imagine a human situation in which you get one hell of a lot closer in the real world to what you were starting out to do. Of course, if we had stopped to think about it, we probably would have admitted that we weren't going to achieve everything we wanted, but it really did turn out well and even the battles we lost were well worth fighting, well worth the effort. So, I think the pride and warm feeling about it, the comradery and all which certainly did make it possible, were right.

RINGROSE: I think that the long-term historical record is probably going to show that among the new institutions started from scratch in the late '50s and '60s this has been the most successful.

ARNOLD: I think so too. The only one that we ever compared ourselves to in the old days was SUNY at Stonybrook, and if you look at it then and look at it now… In fact, I would say that if I am looking at other examples, I would look at Irvine. I think that Santa Cruz has gone off in a somewhat funny direction. Irvine started out with several disadvantages. It didn't have Scripps. They were in Orange County which I can't imagine was a plus. Their chancellor, to put it bluntly, was not an academic visionary. But I think they have done very well, and I think they have built a very good foundation. I think they will do better. My son went there. So, if I wanted to name another place that started then that did well, I guess that would be the one I would name. It is different from us in very significant ways, it is centralized and so on, but it is another campus of the University of California.

RINGROSE: Is there anything else that you would like to add to this good discussion?

ARNOLD: Thank you, well, Louise would laugh if she heard me, I feel a little talked out at the moment. She is convinced that on my deathbed I will still be talking. I am trying to think of some good last words.

RINGROSE: There will always be opportunities to make additions.

ARNOLD: I think it has been a chance to relive old times and I don't have anything very much on my mind that I haven't worked into the conversation up to know, but if I think of something, I will let you know.

[END OF PART THREE, END OF INTERVIEW]