

UC Santa Cruz

Institutional History of UCSC

Title

Peter Scott, Professor of Physics: Recollections of UCSC, 1966-1994

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Introduction

From 1991 through 1994, the University of California initiated three early retirement options for faculty and staff, known as VERIP (Voluntary Early Retirement Incentive Program), as a salary-saving measure during a period of unprecedented budget cuts. The thinking was that many senior faculty with high salaries would retire and be replaced by young faculty at the lower end of the salary scale. At UC Santa Cruz, a number of pioneering senior faculty opted for early retirement. Since many of these faculty might leave the area, the Regional History Project initiated interviews with a group of them in order to document their recollections of early campus history and their participation in the development of various boards of studies (at that time UCSC's designation for departments) which over the years has led to the campus's national academic distinction in a number of disciplines, particularly in physics.

Peter Scott, Professor of Physics: Recollections of UCSC, 1966-1994, is the edited transcript of a single interview conducted by Randall Jarrell on June 27, 1994. Scott received his B.A. from the University of California, Berkeley, his M.A. from the University of Michigan, and his Ph.D. from the University of California, Berkeley. He then taught as an assistant professor for three years at Stanford University. Attracted to UCSC because it represented an alternative to what he characterized as the machine-like educational atmosphere of UC Berkeley, Scott arrived at UCSC in 1966.

In this oral history, Scott describes his early history at UCSC, both in the physics board of studies and at Stevenson College. He relates a delightful opportunity to teach innovative seminars for sophomores at Stevenson College, among other anecdotes. He discusses the

groundbreaking research undertaken by UCSC undergraduate and graduate students in physics, particularly the “Dynamical Systems Collective.” Finally, he offers brief assessments of controversial issues within the University of California, such as the UC management of Lawrence Livermore and Los Alamos Laboratories, the narrative evaluation system, and tenure review. Above all, Professor Scott is a proponent of UCSC’s interdisciplinary approach to education, remarking that, “You can’t really write a thesis or write a story or create something that is not about something else.”

Scott’s research interests have included experimental work on the optical and microwave spectra of impurity ions in crystals. In the late 1970s he became interested in dynamical systems, especially those exhibiting chaotic behavior, such as dripping faucets and various types of mechanical systems. Although he retired in 1994, Scott continues to teach courses for the physics board of studies on occasion. He also remains interested in nonlinear dynamical systems.

Peter Scott is also well-known in the UCSC and Santa Cruz community as an environmental activist, becoming involved over the years in efforts, along with his wife Celia, to preserve open space lands (the Santa Cruz North Coast, the Pogonip, the Gray Whale Ranch) and to work to facilitate the awareness of our remarkable natural surroundings by members of our community. In recent years he has focused on transportation issues, with particular efforts toward reducing our dependence on the automobile. His other creative interests include songwriting, singing in choral groups and woodworking.

Scott kindly read the edited transcript and made numerous small changes and corrections, as well as adding several written narrations. Copies of this volume are available in the Bancroft Library at the University of California, Berkeley; and in Special Collections, McHenry Library, University of California, Santa Cruz. The Regional History Project is supported administratively by Christine Bunting, head of Special Collections and Archives, and Acting University Librarian, Robert White.

—Irene Reti

December 15, 2004

University of California, Santa Cruz

Coming to UC Santa Cruz

Jarrell: It's June 27, 1994 and I'm interviewing Peter Scott in his office at Natural Sciences II. Peter, please tell me what year you came to the University of California, Santa Cruz?

Scott: 1966.

Jarrell: And where had you been before that?

Scott: Stanford. I had a three-year appointment at Stanford as an assistant professor. Stanford has those. They're kind of like postdocs.

Jarrell: Yes. What attracted you to this campus and how did you hear about it?

Scott: You know, I'm not sure where I heard about it. That's curious. Maybe through Ron Ruby, who was here, or knew about it? I'm not sure. Maybe through people at Stanford. Maybe just through the general grapevine. But it sounded like a really wonderful idea.

Jarrell: What sounded like a wonderful idea?

Scott: Well, I was an undergraduate at UC Berkeley during the early 1950s, and it really seemed like a machine. I remember writing a letter to the icebox of the *Daily Californian*. You know, the letters to the editor column. I guess the idea is you're supposed to cool off

by writing a letter. That's why they call it the icebox. (laughter) But I wrote a letter complaining about feeling like a cog in the machine, or something like that.

Jarrell: You were part of the students at Berkeley just predating the Free Speech Movement.

Scott: Yes, exactly. So I had a lot of sympathy with Mario Savio and all that feeling, and also sympathy with Clark Kerr and Dean McHenry when they thought a campus like this might help bridge some gaps there. It sounded like a wonderful idea, so it was the only place I applied to for a job. (laughter)

Jarrell: Really? Do you remember what your interview process was like when you applied here?

Scott: I talked with Francis Clauser.

Jarrell: He was sort of McHenry's science advisor.

Scott: That's right. I came down, it must have been the year before, in 1965, and I remember parking just outside Natural Sciences I... had that been built yet? Maybe not. It was just being built, maybe . . . and talking to Francis. I walked around and . . . That was, I think, the first time I came down. He invited me to come down.

Jarrell: So he interviewed you.

Scott: Yes.

Jarrell: And did the chancellor interview you?

Scott: Yes.

Jarrell: Because in those days he did.

Scott: Yes, he interviewed everyone! (laughter) It was wonderful! And then we came down for a series of sessions in Keith Shaffer's house down by Pleasure Point.

Jarrell: The planning sessions.

Scott: Yes.

Jarrell: I've heard about those. I guess they later called them retreats.

College Building

Scott: I guess they were sort of retreats, yes. But they were kind of planning sessions to figure out how the college was going to be put together and . . .

Jarrell: And you were with what college?

Scott: Stevenson. So there was Bill [William F.] Shipley and Carolyn [M.] Elliott. I guess Charles [H.] Page must have been around. I remember various other people. Jim [James L.] Chrislock and the sociologist Mark Messer and his wife, Kathy Messer. People like that.

Jarrell: So this seemed like a very attractive idea, this campus, and those plans for an undergraduate college life on a small scale, a human scale.

Scott: Yes.

Jarrell: Were you involved at Stevenson with college building? Were you enthusiastic about that?

Scott: Yes. We had these wonderful sophomore seminars. I wasn't involved with the core course. Because always, I mean, even to this day . . . The people who are in charge of the core course were saying to scientists, "Come and teach a section of the core course." That implied to me that I should learn the material that the course was about. I should learn the great books and read them. If I hadn't read them I would have to read them. And I wouldn't feel comfortable doing a whole section. I would feel comfortable giving a few lectures about something like the history of science, or Newton and Ptolemy, the Babylonians. But I wouldn't feel comfortable talking about *Paradise Lost*.

Jarrell: So you were involved in teaching in the college, but not so much with the core course.

Scott: Yes. I was enthusiastic about those sophomore seminars. In fact, I still have a document about the history of the Wilder Ranch that was produced by students in that sophomore seminar.

Jarrell: Really? I've never heard of that. Did it ever go to Special Collections?

Scott: Yes. Rita Bottoms took it and it's in Special Collections. There were these three students that did this wonderful job of fantastically high-quality photographs, and good writing, and good research and it's like, much better than a senior thesis, produced by three sophomore students in this class. It was a class of eighteen or so: *Current Topics in Conservation*. We took a bunch of topics and two or three students to each. They worked on it and did these little projects.

Jarrell: That was very original. I'm fascinated with those days. There was a lot of local history that was done in the early days of the campus by undergraduate students.

Scott: Yes.

Jarrell: Very fine work.

Scott: Yes, so I have very good memories of those classes. We did that a few times. We did a couple of “Current Topics” seminars. It was kind of pre-dating the environmental studies board on the campus. We had this little group of environmental activists amongst the students and it was great!

Jarrell: That’s very interesting to me, knowing what I do about you now, that your interest in environmental issues goes back to those earliest days.

Scott: Oh, yes, and even before, to Stanford and Berkeley. I was in the UC Berkeley hiking club both as a graduate student and also as an undergraduate.

[added in 2004] For several years at UCSC I felt that my tendency to become involved in environmental activism conflicted with my interest in physics. Eventually I realized that there was no conflict, that the study of physics, which was in Newton’s time called “natural philosophy,” was really a way of interpreting nature—our environment.

There was another conflict for me that was also eventually resolved: I have always enjoyed music, and on several occasions I composed songs about the various physics courses I taught. At the end of a course—for the last twenty minutes or so—I would bring out my banjo and sing the song I had composed for the course, a kind of a course review. I would get the students to sing along, at least for the chorus. I offered this as kind of a treat, and of course the students enjoyed it, but since I was raised by a rather strict father, I thought it was cheating a little, to not spend every class moment with the

physics, even for those last twenty minutes. Then in subsequent years, students would arrive at the start of a course (like Physics 5A, for example) and someone would say, "I hear there's a song. Can we sing it?" Later on, I read that the learning of musical skills, like playing an instrument, or singing, tends to enhance the ability to think rationally. After that, I felt okay about using my songs in the courses I taught. We would sing our song at the beginning of a course. Some students would wonder what was going on, but then by the end of the course, when we sang the song again, they would understand, and it was wonderful. Now every once in a while someone will come up to me and say, "I had you as a physics teacher. What I remember about that course was that we sang a song!" It turned out to be a successful technique, to enhance the learning process by singing about the course material. [end of added comments]

Jarrell: Where had you grown up?

Scott: San Francisco.

Jarrell: So you're a northern Californian. You stuck right in the UC system except for a little detour to Stanford.

Scott: Well, yes. But then I was a graduate student at Michigan.

Relationship between the Colleges and the Boards

Jarrell: So when you started out you were involved in Stevenson College. And what was your board of studies in physics like? What did you think of this whole concept of boards of studies?

Scott: It was all right. I still call it the physics board of studies. Everyone else calls it the physics department, but I say the physics board of studies. I noticed the other night when Sandra [M.] Faber introduced Freeman Dyson . . .

Jarrell: He was here?

Scott: He was here. He gave a talk. And Sandra Faber referred . . . you know, she has to be one of the most establishment people on the campus in a sense, right?

Jarrell: Right.

Scott: She referred to the Board of Studies in Astronomy and Astrophysics. She used those words. I thought, well you know, maybe it's only people who feel inferior that somehow need to use the word *department* to legitimize themselves. (laughter) That was fine. But convenors were a bit odd, I must say, and we dropped that one after a while.

Jarrell: What were convenors?

Scott: They were chair people?

Jarrell: The chair people, right. And then they got rid of it.

Scott: Well, that was Dean McHenry's word—convenors.

Jarrell: Right. But does it seem to you, this is just my impression, that boards of studies are departments, period?

Scott: Sure. It's kind of like a connection to our history to continue using a phrase like that.

Jarrell: What was your board like in those early years? Who are some of the people you remember?

Scott: Well, there was Ron [Ronald H.] Ruby, and Jim [James D.] Currin, who were the first two people in 1965, fellows of Cowell College. Then in 1966 there was myself and Bruce Rosenblum and Michael Nauenberg. So there were the five of us that first year. Then the next year or so I guess George [D.] Gaspari and . . . who else came? Matt Sands came, I guess, but not for a year or two.

The first place I had an office was Natural Sciences I, [now] Thimann Labs. We had our labs and the whole physics board was in that building. Next door was, I think, Lawrence

Blinks, and on the other side maybe Jack Michaelson, or some economist. That was the only building with offices, I mean outside of Cowell College. Bruce Rosenblum, and Michael, and I were all in Stevenson because we came in 1966. We were all pretty young and had a lot of energy. I'm sure that in a more standard institutional environment, like Stanford or Berkeley, there wasn't any college to claim half your time. But since we didn't get involved in the core course, there were only social things, and these sophomore classes, and being involved in creating the structure of the college and the board.

We would just go and eat lunch in the dining halls. [F. M.] Glenn Willson's influence was in creating the fellows night every Monday night. We'd go first to the common room, on the second floor of the college, (for drinks and socializing) and then on to the high table in the dining hall.

Jarrell: All the things he did to make it a more amenable home.

Scott: Yes.

Jarrell: Some early UCSC faculty experienced tensions between the energy needed to build these colleges and the pressure to publish as part of tenure review. Did you feel that pressure?

Scott: It wasn't a problem. I could have put less energy into the college and more into physics. It worked out.

It's hard to keep going with an emphasis on individual colleges, each with its own academic program and each with its own group of faculty who somehow stick together and spend more time together than apart. There's the Oxford/Cambridge model, which I guess is what Dean McHenry and Clark Kerr had in mind, because they mentioned those institutions, and they hired people who were British. But it's a little bit like the qwertyuiop keyboard. You know it's not ideal. In fact, it was made up in 1875, or something like that, to prevent people from typing too fast. (laughter) Because those keys would jam on early typewriters if you typed too fast, and so you make up a keyboard that prevents you from typing too fast, but we're stuck with it because everyone else uses it and has learned it and to get out into a more ideal system would take an act of god or something, to destroy all the existing keyboards. I mean, you can't exactly destroy all the existing colleges in the University, just to create your own new model which might work more humanely and effectively in the educational system.

Jarrell: But Kerr and McHenry's original vision has been diluted considerably.

Scott: I think it's still true that somehow Cowell has associations with humanities, and Stevenson has associations with social sciences, and certainly there are large numbers of natural scientists in Crown College, still. But beyond that, I'm not so sure. As you say, it gets more and more diluted all the time, particularly as the academic programs of each

college disappear, though I see Todd Newberry is teaching a core course in Cowell College.

The identity of the college as an academic unit has been taken away. If I go and eat lunch now at the Stevenson College coffeehouse I don't notice too many other faculty there. There are only occasionally other faculty there. [They used to] hold a couple of other tables so that the faculty could go over, and if you were on your own there would be some social opportunity for faculty to have that sort of experience. That doesn't happen so much now, and I don't think it happens in Banana Joe's at Crown College or at Cowell College either.

Jarrell: So whereas you used to bump into faculty, it's more of an effort. Now, what about this floor?

Scott: Well, physics and astronomy now occupies the fourth floor. Most of physics is on the third floor, actually. And it's only certain people like myself who don't mind being on the fourth floor, who don't mind walking up and down stairs and getting good exercise all day, to be up on the fourth floor.

Jarrell: So you see people at your college and your board, but that other kind of interaction is rare.

Scott: That's true. It used to be chemists up here before there were other astronomers. And then before that there were mathematicians. And before that there were geologists. The reason there are counters and sinks up here is because originally it was designed for geology. These were double offices without this wall, and geology office lab spaces.

Jarrell: So colleges are here to stay.

Scott: Yes.

Jarrell: Do you think that's valuable?

Scott: I think it's valuable to keep some small-scale courses, and I think it's particularly valuable to keep courses that will allow interaction amongst disciplines.

The Verip Retirements

There are a group of fifty people or so now just retired and maybe another fifteen or so [have retired] in the previous two years.

Jarrell: Actually, I think it's supposed to be 150 people over the last three years. From all three verips. Or close to that.

Scott: Well, we're going to have a breakfast next July 7 down at India Joze [restaurant] with some ideas about what we could do. Because this is an extraordinary group of

people. And maybe do something a little more creative than what's here. I think there might be some communities that are actually doing that. I don't know whether you'd call it College Eleven, or what?

We went to one party awhile ago and there were about twenty of us there and we were kind of looking around the room and saying, wow, look at all these . . . you know, there's a lot of commonality here. Even though they crossed disciplines. I mean, we all know each other.

Jarrell: You've grown up together.

Scott: Right. And we've gotten used to each other. And so you know . . . I know how to get along with Mike Nauenberg now. (laughter)

Jarrell: Better than you did twenty years ago. (laughter) That's great.

Scott: Right. (laughter) And with people like Elliot Aronson and Hardy Hanson and Todd Newberry and John [S.] Pearse and all these wonderful creative people . . . you know, it seems like there is an opportunity there to do something. So who knows? I don't know what will come out of it.

The Physics Board

Jarrell: What do you think of the quality of the physics board here?

Scott: I think it's really good, still. Oh, yes. Students get a lot of attention from faculty. I think the tradition of faculty paying attention to undergraduates on this campus is one that's been there since the beginning and is still quite strong. Yes, we write narrative evaluations and we have good support for it, and we pay attention to students, particularly when they are in small groups, but even in large groups. Even within the physics board now it's not too difficult to get top-quality faculty to teach large introductory courses.

I don't know about UC Berkeley now, but certainly when I was an undergraduate there I felt very remote from faculty. It was not something that was based on reality, because when I was an undergraduate there I did in fact go and knock on doors of physics faculty because I was thinking of switching to become a major in physics from engineering and I wanted to find out what physicists did. So I decided to go down the hall and just knock on doors and ask, "What do you do?"

Jarrell: That's great.

Scott: Yes. (laughter) And it turned out it was wonderful, because I met all kinds of warm, human people. But nevertheless I didn't see [that possibility] in the distance in the lecture hall.

We had this last year one of the strongest groups of physics majors graduate this month, that we've had ever. One of the strongest and largest. Something like ten people or

twelve people either got honors or highest honors in the major. That's a lot. And in the process of choosing these students people were amazed. Several of them had gotten prizes and awards like the president's scholarships or fellowship, and about four or five people had gotten prestigious awards based on their senior thesis, which is another good thing that we do. Senior theses are not something that physics departments in the rest of the world do. But we do them. There may be more [institutions] starting it now, but I think it's because of our success. That's another one of the good things that we do for undergraduate students. A student may have a lot of energy to go and do the research and do whatever it takes to do a senior thesis, in terms of synthesis, but if it's treated by the establishment as something that's a little bit kooky and unusual, well then the student will pick up on that and not do it. And say, "Oh, that's not the standard thing to do? Okay, I won't do that."

Jarrell: But now it's the thing to do.

Scott: Yes. We demand one of every student. So it's got to be expected and it's got to be okay.

Jarrell: What about the graduate students?

Scott: We have good graduate students. I don't know of another group of graduate students in the world like that group—the "Dynamical Systems Collective"—that was here and working on their own, producing all this wonderful stuff without any faculty

direction. That happened starting in 1978 or so, but it merited a chapter in James Gleick's book about chaos.¹

I'm just reading right now a book called *Complexity* by Mitchell Waldrop,² another science writer, and he has a whole section in there on Doyne Farmer, one of those graduate students, and Norman Packard. Rob Shaw later (1988) was awarded a MacArthur fellowship. Jim Crutchfield, another grad student in the "Dynamical Systems Collective," is also mentioned. Those kinds of things are happening in our graduate program [and they] don't happen by accident somehow. They happen because of something about the structure of the campus that somehow validates it. Unfortunately we're getting a little bit away from that, getting a little bit more specialized. We're kind of losing, I think, the sort of yeastiness of that [approach].

In fact, I switched from doing solid state physics, to nonlinear dynamics and chaos because an undergraduate student (this is a nice example of why a senior thesis project's good) named Dan Nguyen, a Vietnamese student, was doing a senior thesis on [some now] classic maps in nonlinear dynamics³ and he had picked it up from some of these graduate students and came to me so that I could be his technical advisor. I said, "Sure I can be your technical advisor. I'd be happy to read your thesis and help you read in the English language," which he was having difficulty doing. So I read his thesis, and I thought to myself, wow, this is really interesting stuff. Then I was able to help him write

¹James Gleick. *Chaos: Making a New Science* (New York: Viking, Penguin, 1987).

²M. Mitchell Waldrop. *Complexity: the Emerging Science at the Edge of Order and Chaos* (New York: Simon & Schuster, 1992).

³Daniel Nguyen, *Some Simple Difference Equations with Very Complicated Dynamics* (Physics Board, 1979).

in English, and he taught me something about chaos. It was a wonderful interaction. Here's a way in which an undergraduate major . . .

Jarrell: Sparked you.

Scott: Yes. I mean, where else would that happen? I guess it could happen anyplace, but it seems like something Dean McHenry had in mind.

[added in 2004] I should mention that early on we had an experiment, invented and constructed by Ron Ruby, that was part of our introductory physics lab courses. It consists of a simple mechanical oscillator, an ordinary hacksaw blade, with one end clamped in a vise. The other end, when plucked, will vibrate back and forth at a frequency that depends on the length of the blade, but is quite low, around twenty cycles per second. The position of this vibrating free end is monitored by a simple photocell on which falls the light from a small bulb; the light beam is partially obscured by a piece of tape on the end of the blade, and the electronic signal from the photocell can be displayed on the screen of an oscilloscope. This signal thus reflects the motion of the vibrating blade, and is typically a simple sine wave that can be observed by the student performing the experiment. Thus the student can see the blade vibrating back and forth, and simultaneously see the trace on the oscilloscope going up and down. It's a very nice experiment, and we use it to this day in each of our introductory course offerings.

When this experiment was first tried out, one of the teaching assistants, who was the instructor in the lab course, noticed a rather odd behavior of this sawblade oscillator when it is being driven by an oscillating magnetic field. In this mode, the driving frequency may be gradually increased or decreased through the *resonant* frequency of the blade and so illustrate the classical bell-shaped curve of the resonant response. However, what the instructor (and the student) noticed was a peculiar deviation from this expected bell-shaped curve: When the driving frequency was gradually increased, the oscillation amplitude increased at first (as expected) but then *remained large*, and as the driving frequency was further increased, the oscillation amplitude *suddenly decreased*. Then, as the driving frequency was gradually decreased, the oscillation amplitude *remained small*, and then, at a lower frequency from that at which it had suddenly decreased, *suddenly increased*. This odd behavior was a kind of hysteresis, and as we discovered, arose because this particular mechanical oscillator becomes *nonlinear* when it is strongly driven. I happened to be teaching that introductory course, and became quite fascinated by this behavior. Later Bill Burke, another early physics (and astrophysics) faculty member, and I constructed a variety of nonlinear mechanical oscillators that were designed to display, in a marked way, a variety of such peculiar behaviors, including, eventually, *deterministic chaos*. That initial observation of the peculiar behavior of the sawblade oscillator in our introductory mechanics lab was what led, in part, to the development of the “Dynamical Systems Collective” later on.

UCSC was also rewarded in 1989, when PBS (WBGH) featured our work on chaos in a NOVA program. It happened unexpectedly. The physics board had arranged a one-day

conference on Statistical Mechanics in the fall of 1998, and Rob Shaw and I, thinking that some of the conference attendees might enjoy seeing a demonstration of our experiments on the Lorenz attractor and the dripping faucet, re-assembled our apparatus in our lab in Natural Sciences II, and invited the attendees to have a look. It was a low-budget effort, using our old, mostly scrounged apparatus, set up in our lab with its decidedly Sixties atmosphere (soft lights and all), but many came to enjoy the demonstration. Among those who showed up was a person from a British TV crew, who asked if they could come by a few days later to film us. We agreed to his request, but we had to stay up nearly all the night before the crew arrived to make sure the apparatus would work reliably. It was touch and go, but eventually it all worked out, and we were of course delighted when we saw ourselves on the NOVA program.⁴ [end of added comment]

We have a very strong theory group here. It's certainly true that many of the physics department people here are very highly thought of in the outside world. I remember a few years ago there was this publication that rates institutions according to how many citations faculty publications receive. Physics, in fact, came like number one on the list. Whoa! What is this? (laughter) That's what I mean, well thought of in the outside world. So they have the ability to get funding and they do good work. Mostly what I've been involved with has been peripheral. I'm not probably one of the most memorable persons.

Jarrell: What is the future for your students going on in the field of physics?

⁴*The Strange New Science of Chaos* (PBS/NOVA, 1989.)

Scott: When I was a graduate student at Berkeley I got invitations to go and visit various labs in the East and they were recruiting. And now these labs . . . some of them are sort of drying up a little bit—they're dying or drying up. So those jobs aren't there so much and so I think, what does that mean? This is a shift away from the kinds of activities that those people are involved in, to some other kinds of activities that will somehow replace them. Economics may not be too great right now but it could be better in the future. It's hard to predict what will happen. I think that one of the strongest things you can do, one of the most helpful things that you can do, is to help people learn how to think independently and to reason for themselves, to become self-sufficient and knowledgeable in a broad field. The thing that I worry about is that they're getting too narrow and specialized and losing sight of the connections. It's certainly true when I did a Ph.D. degree I wrote a thesis that was on a very specific topic, but that specific topic was set in the context of the whole field. You have to become really knowledgeable.

Other Political Controversies

Jarrell: What do you think of the University of California's management of the labs?

Scott: Oh, you mean Los Alamos, and Livermore? Yes, I've been opposed to that. It's a little bit ironic in that I know some of the people at Los Alamos, like Doyne Farmer worked at Los Alamos. He no longer is, but he still lives in Santa Fe. He was one of the graduate students in the Dynamical Systems Collective. I'm not sure whether the University of California has any legitimate handle on the Los Alamos National Laboratory even though there are good people there. I don't think that a university

ought to be involved in weapons making. But it may be that those labs are going to be no longer making weapons. So that's kind of an old question. The relationship will sort of die or transform. We won't have to worry about that for too much longer.

Jarrell: What do you think about the recent controversy over President David Gardner's retirement package?

Scott: Oh, I think there are some legitimate complaints. I certainly don't think its right that Gardner [got such] big rewards when he retired, and also when he was hired I thought his salary was too high. It was the highest salary in the whole state of California. It's another complexity-type problem. When you have this kind of ladder, and you can ratchet up the ladder, but you ratchet up the administrative salary ladder, and even though it doesn't have a whole sense somehow, but you're stuck there. Maybe that's how the regents feel. But it seems to me that it's just wrong, whether it comes from three conservative governors who maybe don't understand the University of California . . . [Ronald W.]Reagan, [George] Deukmejian, and Pete Wilson. None of them . . .

Jarrell: Jerry Brown.

Scott: Jerry Brown. I don't know whether he agreed with it or not, but anyway, those three, they appoint the regents. And the regents now seem more remote from the University workings than they did in the days of McHenry and Clark Kerr. I mean, at least in those days we had somebody like Elinor Heller who would look out for

particular architectural projects on the campus, monitor them and make sure that they came out right. And now there isn't anybody like that on the board.

Jarrell: Do you think the regents should be elected officials?

Scott: No. I don't think that's a good idea. Because I think the original idea . . . the regents originally had something like eighteen-year terms, to isolate them from the political process. I thought that was a good idea. But they are still appointed by the governor. They're political appointees. But I think if they become elected then it's too . . . I still think the University ought to have the space to be independent, to be creative, and be a little bit revolutionary. So you need to get the protection for an institution to allow that to happen. I'm not sure that electing the regents . . . We want them insulated from the ups and downs and fluctuations of the population; we want them also to be accountable, so not insulated. So we want them both insulated and not insulated. The question is how do you do that? And I don't know a good way but it seems like . . . why was it good in the past? I mean, in the past the Regents of the University of California looked out for the University and cared for it, basically, and they didn't treat it as just another business. Now they seem to treat it like a business. People that retire get gifts sent to them. A tiffany clock worth something like \$164 from the President of the University of California, thanking you for your services. I mean, this is a public institution. This is not a business. You might do that in the business world for somebody who's worked for the company a long time and make a little retirement gift. This is a public institution. If there's money going to be spent like that on people, thanking people

for their services, why not put it into student scholarships, something that will serve the people of California, for the purpose for which they intend. Not fancy clocks! That's crazy. Why don't they understand that?

[added in 2004. I still have that clock. It sits on my bedside table, and I am actually now rather fond of it.]

Jarrell: What do you think of the narrative evaluation system?

Scott: I think it has been maintained and I think we valued it. You know, last year there was a senate meeting where a discussion of narrative evaluations came up and faculty member after faculty member got up and said, "They're a good thing. We ought to keep them. Don't throw them away." And students were kind of amazed, I think. I know the administrative folks think that they're costly . . . and so on . . . but that's just because the bookkeeping is more of a problem. They don't do it very well.

Jarrell: What do you think of the tenure system?

Scott: I don't see too much in the way of disadvantages. I mean, it's certainly true that [some] people who have tenure have just kind of dropped out and do the minimal amount of work, but there are, it seems to me, many more people who put fantastic amounts of energy into the system. Somehow it seems that the idea is to encourage original thinking and to encourage creativity and encourage revolution . . . whatever,

and the idea is to provide a service to the social structure. The goal is to provide society with a group of individuals who can make it work in a lively way. But you don't have to have a bottom line there as to decide yes or no on whether somebody should be fired. So I think the tenure idea is a good one. It's very old in education. It's true you can get people who are irresponsible who just don't work.

The policies say that equal weight should be given to research and teaching and service, but it's not. Now it's probably . . . it depends on who's doing the administration at the moment. But it's sort of sixty or seventy or eighty percent research and the rest is other things, and sometimes if you do any service at all that's a discredit rather than a credit. I think that's wrong. But it seems to me we ought to stick to the rules. It certainly came up in my own personal case, because I do less research and more teaching and more service and so as a result I retired as an associate professor of physics rather than as a full professor. It doesn't matter that much to me. I have enough money to live. I just chose to spend more time doing other things rather than writing papers and getting published.

Jarrell: Thank you very much, Peter.

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