

Oral History Transcript — Dr. Charles Schwartz

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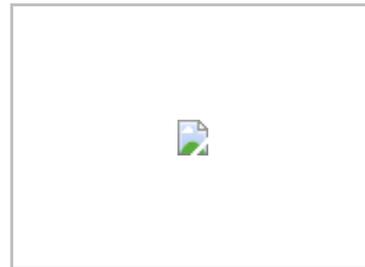
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Interview with Dr. Charles Schwartz
By Patrick Catt
At University of California, Berkeley
July 19, 1995



Transcript

Catt:

Today is July 19, 1995, we are in the office of Professor Charles Schwartz, Department of Physics at the University of California, Berkeley, and I guess I should mention for the record we're in 421 Birge Hall. I want to start off by asking if it is okay to tape record our talk?

Schwartz:

Absolutely, yes.

Catt:

Okay. And when it comes time for me to write my dissertation, or actually when it comes time

for me to defend the dissertation, any quotes that I will use from this interview I will check with you for any inaccuracy or if you do not want them to appear in print. Further, if you'd like, I'll also send you a full copy of the transcription.

Schwartz:

Great. That would be very good.

Catt:

Okay. The first question we'll start off with is your family's history of activism and related biographical information. Does your family have a history of political or social activism, I mean your parents, brothers or sisters, anyone in your immediate or extended family whom you would consider being "radical?"

Schwartz:

Well, no. My grandparents came to this country from Russia and other parts of eastern Europe about the turn of the century. And they settled in New York City. My parents...well my father got into business from some invention he had made in photography, he never finished high school. So he's a delightful, self-made American success story. And he's still alive today. Both of my parents are still alive today. So I had economically comfortable upbringing and lived in New York, later in parts of Connecticut. I ended up going to MIT. But politics was not a part of my interests nor my parent's interests. I was aware of one uncle was involved in some sort of political stuff. The best story I remember about him is he was accused of being a communist and he sued in court and won.

Catt:

This is when?

Schwartz:

It was in New York in the 1940s, I guess. I'm not exactly sure. Anyway, there were stories about some distant cousin who was thought to be active in the communist party but it was never really never spoken about. I only heard about that years later. As I recall my mother subscribed to a newspaper called PM which was one of the leading liberal newspapers in the 1950s.

Catt:

Do you know what the "PM" stands for?

Schwartz:

Well, it was an afternoon newspaper. So I was aware that my parents were Democrats. But I never really recall any discussion of politics. I mean even of liberal politics, let alone radical politics. So it was just not a part of my upbringing.

Catt:

How about your interest in science, how and when did you get that?

Schwartz:

Well, I was a bright kid in high school, and I'd reflect on how that evolved. Later on, as I became politically active, I thought about the structures of science, the sociologies of science, and the personalities of scientists, and of course I made the mistake of projecting from myself onto everyone else. But there's a certain pattern of kids who are not very socially adept like myself. Maybe one or two friends but very poor at social interactions and certainly not with girls and middle grades, but finding some success and not particularly good at sports and so on. Finding some success in academic work getting the little stars on your spelling lists and this becomes a strong reward system which allows the child to focus more on their academic studies and that becomes then a career track. We now call them nerds, dweeb, or whatever. I'm aware of all of that. And of course through high school and then college just lots of opportunities to focus on studies and doing very well and finding that wonderfully challenging and exciting and just not being interested in anything else.

Certainly not politics. So it's kind of fascinating to reflect when I was...say graduated at MIT in 1952, stayed on to graduate school, and in 1954 I got my degree. So 1954 is the time when the great Oppenheimer-Teller debates and physicists around the country extraordinarily polarized and the group that I was attached to at MIT, Viki [Victor F.] Weisskopf and others formed a strong pro-Oppenheimer camp, and the person I worked under was Jerrold [R.] Zacharias, a true political figure in the world of physics at that time. I was vaguely aware of some of the stuff going on, but certainly not interested and not really caring very much. Oh, I'd have lunch with a circle of people regularly, and they would say a few things about what was going on, but it wasn't opened up or maybe I was just so closed off, I don't know which of the two is dominate. But looking back I'm aware of there I was, and I was totally out of it, not aware of what's going on and not caring particularly. I mean my work, my career, that was everything.

Catt:

Well, it was a very exciting time in physics.

Schwartz:

Sure, but personally, it was an exciting time for me. I mean my career was going well, and my research was so absorbing.

Catt:

Why MIT? I mean, why did you select MIT to pursue physics?

Schwartz:

Why MIT? Well, I was going to high school...actually I went to a private high school, it was in Connecticut...a strange place, it opened weirdly and collapsed soon after, bankruptcy two years later. Anyway, I just barely got out and as I recall, I applied to Yale and to MIT. Yale rejected me so I went to MIT. I had lots of good grades in math and science, and so I said why not MIT! I think my father had hopes that I would...I know my father had hopes that I would go into his business, study optics and stuff related to photography, but I didn't want to do that. And when I got into physics at MIT I knew I wasn't going to do that. So I followed that simple track.

Catt:

You mentioned your Ph.D. mentor was Jerrold Zacharias. Do you recall any instances, besides the Oppenheimer trial, in which he may have taking what you would consider an activist role?

Schwartz:

Yes. I learned more about this years later on, obviously, from just reading the history of things like some of the early H-bomb debates, various other scientific studies that had big influence on defense policies. He was a large player in those things. So all these things were going on but under official secrecy. I knew he was a big operator, but I didn't really know or care what was going on. My mission in life then was getting my Ph.D.

Catt:

Do you know if he was in favor of the current relationship between physics and the government at the time?

Schwartz:

I don't know. I would guess yes. I mean, see I'm now projecting a lot of my later years analyses and philosophies back onto then, and that's not really fair. But my sense is these people were big players. They had a lot of connections. Now whether their clique was in the ascendancy or the descendancy, that is a secondary issue. Remember they're all well-connected, powerful people, and very influential intellectuals. I'm sure they were generally in favor of the arrangements that had them in those influential positions.

Catt:

As you were finishing your Ph.D., did Professor Zacharias, or anyone else on at MIT, put any pressure on you to go into academics rather than work for the government or in the private sector?

Schwartz:

Oh there's no question about it. I mean the all-pervasive snobbery of what's the greater achievement to be an academic. And theoretical physicists are the best of the best of the best. No question about it, right? In fact I can recall as a graduate student, I got very rapidly into some research projects, I was publishing a paper at the end of my first year and I finished my thesis at the end of two years of graduate study. This is a bit faster than it should be but things were working out very well. And I can remember...I mean I had just gotten married, I can remember going home and lying in bed and just sort of mouthing to myself the words "I am a theoretical nuclear physicist," and sort of glowing about that. And at that time those words had great magic. I thought they did. So this was total self absorption and career building. Then I... the first position away from MIT that I got was at Stanford as a research associate, I'd stayed at MIT after my degree, I stayed two years as a postdoc and then I came to Stanford as a postdoc and that got me a assistant professor position at Stanford.

Catt:

At Stanford were you with the physics department or at SLAC?

Schwartz:

On the main campus. SLAC was not yet built, but it was on the horizon. Bob [Robert] Hofstadter was doing his electron-scattering experiments, to determine nucleon structure, and that was a big attraction for me. Sidney Drell was the person at MIT who brought me along. He was an instructor or postdoc, I guess. Anyway, he was slightly senior to me...he was my mentor, I was a protégé or something like that. Anyhow he got me this position at Stanford and

we were very good friends for awhile of course later on his political career went one way and mine quite a different. We see each other occasionally, not too often. Then I had the deal at Stanford was that was an assistant professorship with no chance at tenure, so they let me know that. I had some actual serious troubles finding the academic job of the kind I wanted. Well, I got an offer from Washington University in St. Louis, and visited there. The people seemed friendly, I accepted the job, and then the job at Berkeley came up. I very embarrassingly told the people at Washington [University] I'd like to back out because I really wanted to go to Berkeley. I mean this place really seemed so exciting. And I'm not absolutely sure how I came to get the job here at Berkeley. I have a recollection of Viki Weisskopf visiting Stanford at some point in there, giving a lecture, and afterwards I somehow had the nerve to corner him and say "Viki, you have got to help me find a good job!" He didn't respond, but he must have spoken to somebody here, I don't know. Anyhow I just felt enormously lucky that I got a position here. I've just loved this place.

Catt:

You came to Berkeley when?

Schwartz:

1960. And again throughout this period no interest in politics or anything else. I mean even through the F[ree] S[peech] M[ovement] I was not involved. Interested, curious, on the fringes watching it, going to academic senate meetings, voting with those on the liberal side, but not involved. And then not thinking much about it. And again the early years of the anti-Vietnam War protests, I was not involved in those things at all, simply aware of them. An interesting experience in 1962, I was invited to spend the 6-week summer session in Washington, DC, as a junior consultant at the Institute for Defense Analyses [IDA]. This was arranged by Ken [Kenneth M.] Watson, who was, I guess I was a junior person on his research grant, and we worked somewhat close together. He was a member of the Jason Group, a part of IDA, and this was the year they were looking for the next generation of bright, young guys to get into defense consulting. So I spent 6 weeks in Washington, attending lectures, doing reading and seeing if I was the right kind of person to become a defense consultant as these other wonderful physicists. And it didn't take particularly well. I worked for Matthew Sands, who was more interested in arms control than in nuclear weapons, and wrote some silly little juvenile paper on how to solve world problems. But interestingly I came away with a notion that now I really understood things about the world that I just didn't understand before, just from being there, from being exposed to a certain set of important people. And this again is something I've looked back on later to understand how naïve scientists can so easily get co-opted politically. You feel that you're in touch with important people, important things and so and you absorb uncritically so much of what you're given. Then you're an expert on these things. I remember an episode at a party...You keep wanting to ask questions and I keep on talking.

Catt:

No, you're following my list here.

Schwartz:

Well, I think about these things. I mean I've told these stories other times. I try to think about myself, but psychoanalyzing your own history is a very questionable thing. But I try to see it as something perhaps fairly typical to try and understand how others in the profession act, how

the profession sits in the world, that's why I think these are somewhat useful. Anyhow, I remember a party having a talk with the wife of someone who was a postdoc here in the physics department, a few years younger than myself, not many. She, I think, was a graduate student in the English department.

Catt:

This was when?

Schwartz:

1965. President Johnson had just ordered the bombing of North Vietnam. And she is talking and saying what a terrible, terrible thing this is, this war in Vietnam, this bombing. And my response came out, fed by this background of having been to Washington a few years back, and my response was: "Well, it's unfortunate but it may be preferable to have these little wars than to have a big nuclear war." That was my answer to her. And her response was just sort of shock, I mean she just gave me a funny look. And that was the end of that conversation. But somehow that stuck in my mind and years later I come to look I remembered that. It had a real affect on me but it was buried in the back of my mind. And years later I bring that memory out and I said, "Gee, this is really interesting. What a stupid, arrogant thing I said." And then uncertain of where that came from. Okay. This little experience with the government and I thought that I had been given a glimpse of a greater wisdom and knowledge which I was then patronizingly giving to someone who was less informed. And of course from a later perspective I'd say how utterly stupid I was, arrogant and ill informed, but behaving in that manner of having superior knowledge.

Catt:

The first thing I thought of when you mentioned that reaction was of C. P. Snow's *The Two Cultures*. Where you have the humanists and the scientists playing off against each other, and writing that science is becoming more pervasive, gaining more power within society, and that the humanists and the scientists correspondingly are just splitting further apart. He says for science to work best and to operate arid to be progressive, you need to have the humanists criticizing, watching, and having dialogue with scientists, and vice versa.

Schwartz:

Well, I probably have never read that book, but I have it. It's always referred to. My image of it is that it would be the physicists who are taking the shots, from just hearing the title. I know what it's about; it's about how scientists rationalize and then decide, and everyone else is stupid or irrational and wrong. They don't understand. That's the typical scientist's attitude of the world, and that has always been my thought of what C. P. Snow is about. You're telling me maybe I should read it?

Catt:

Sure, it's a very short book. Snow was also a physicist.

Schwartz:

Yes, I know. Well, I'm going to tell you another very personal story. Again this has to do with the ways of knowledge and false knowledge. In 1966, my wife and I went to the East Coast to visit her parents with our kids, and for some reason which I can't explain, I picked up a copy of

The Autobiography of Malcolm X and I was reading that. Now the civil rights stuff was going on. I wasn't involved. I suppose abstractly. I thought that's nice of him and why I came to have this book I don't know. And it was a fascinating book to read, very fascinating. The part that fascinated me so much was Malcolm's life in which at several points he would sharply change the direction of his life based upon thinking and learning. And just as a scientist I found that so admirable, the search for truth but this guy is not just doing abstractly he's willing to upset his whole life when he comes to a conclusion that something he thought was true is no longer true and he has an interesting argument on that. And I just had this is...I developed an enormous admiration for this abstract as a scientist.

So that was one thing going on. And then another thing is within the cant of the Black Muslim, is a reference to the Devil; the white man. And the phrase is the blonde-hair, blue-eyed, white Devil. And that phrase is repeated many times in the book. And I found myself as I'm reading every time the phrase comes along, blonde-hair, blue-eyed, white Devil, I find I'm saying to myself that's not me, my God I'm Semitic. I have dark hair and brown eyes. Every time that phrase came up I was having this emotional reaction myself. And then the next morning I get up, go to the bathroom and shave, looking in the mirror and "Charlie you've got blue eyes!" I'd felt, just wow! So that's how people lie themselves out of protecting from others when they feel they're threatened. And I said, "Oh no, not me!". Well, that's an example of things going when the mind and world interact. But at that very same time, that summer of 1966, my brother, my younger brother died and he was an airplane pilot and he crashed, he died. And so I remember at his funeral, the family there, I saying to myself, "Well Charlie, what is the meaning of life? There's death, but what's the meaning of life?" And so this is I think a great emotional opening for me to all the stuff going on at Berkeley and to contradictions and questions and various kinds of emotional things that were erupting. To me that's the opening of what became my political life.

That's as I'd said before a self-psychological analysis, and I think there are other components of it. Within the same year I had the first fight I ever had with my father; delayed, adolescent rebellion. You know there's probably some of that there. And of course that characterizes a lot of my political work, confronting authorities, which I had never done in the past. And my personality was extremely shy. I can remember even as a graduate student and as a postdoc in physics, going to a physics seminar, I would think about asking a question of the speaker, some technical question, having enormous feelings of nervousness and stomach tremors, and not being able to physically raise my hand and ask a question. Sort of extreme versions of that. And then of course later on becoming very articulate, very public, and very pushy. So quite a certain amount of change going on.

Catt:

I don't know, but Malcolm X seems to be your reflection of a hero?

Schwartz:

Okay. I mean if I took him as a hero and followed that, wow! I'm really very proud if I'm living up to that standard. I'm not sure that I said that's the path I want to take but it's possible. Well... So what this means is compared to many other people who were "Red Diaper babies," who had a lot of that in their personal family histories and then bringing it into the political arena, I just sort of pop out of nowhere politically, except here I am, a tenured professor in physics at Berkeley.

Catt:

When were you tenured?

Schwartz:

Tenured in 1962. And again this year is 1966, during that year I was told that I'd been approved for promotion to full professor, as of July 1967, so that's reaching a certain plateau, a certain set of career anxieties, that are satisfied. Of course a good physicist is never satisfied. As Marty [Martin L. Perl, professor of physics, Stanford Linear Accelerator Center (SLAC)] may get, the Nobel Prize is always out there. And it may be that around this time I was in some sense telling myself, "Oh Charlie you're probably never going to get a Nobel Prize. You're good, you're very good, but you're not that good." That's something that has to do with looking for other avenues to express the ego, I don't know. [Interviewer's note: Martin L. Perl received the Nobel Prize for Physics in October 1995.]

Catt:

Did you feel that in 1965, now that you had tenure, that you had more free time, the teaching load was starting to drop down, and that you now had less time constraints upon you?

Schwartz:

No. I wouldn't say that because I mean this job is such a luxurious thing. You're teaching one course at any given time, and all the rest of your time is free. I'm a theoretical physicist, I'm not stuck in a lab, and I work mostly alone. That doesn't mean I'm lazy. I mean I'm a fairly creative person and always involved with computers a lot so there's a lot of getting up at night to go down to the computer to get my output, to fix it, to send it back into the next run. And my wife recalls my earlier times when we were first married, she was still going to school, she would leave the apartment in the morning, I was sitting in bed scribbling with a pencil and a pad of paper. She would come back at 3 o'clock in the afternoon I was doing the same thing. So this kind of work of the mind is very engrossing. We started a family very young, and I'd be sitting and just scribbling away with the kids around. In terms of more time, more likely it might have been the kids were well into school, so perhaps more time there. I'm sure my wife has a different view of that I imagine. So no, I don't see it as a time thing.

Catt:

The reason I bring it up is that it's been suggested by a few others I've interviewed that being a theoretical physicist, you didn't have to "push wrenches" as an experimentalist might have to, and that allowed one more time for the mind. When you have a lot more time to think on physics, sometimes the mind will wander onto other things and that's how an individual gets involved in the issues.

Schwartz:

Yes, I don't know because...Well, I mean in theoretical physics you're just chewing on a problem, you're chewing on it day and night, you're dreaming about it, it's there with you all the time. And that can take your mind away from anything else. As I say to my family, it's very well known, there's the professional life, it's in another universe. So it's hard to sort those things out. I don't take the theory of Lipsett and Ladd showing that you can rank the academic disciplines by their liberal to conservative spectrums, and physicists are the most liberal and that has to do with their capabilities of abstract thought. [Cf. Everett C. Ladd, Jr. and Seymour

M. Lipsett, "Politics of Academic Natural Scientists and Engineers," *Science*, 176 (9 June 1972), 1091-1100.] I think that's all bullshit. It all depends on which questions you ask about. If you've come up with the questions like, "Do you approve of graduate students unionizing?" then all your liberal physics professors become very conservative because they have a vested economic interest in that debate. So it's silliness. I think it has a lot more to do with surrounding groups and fashions of thought.

Theoretical physicists have a tradition on rather liberal if not radical thought, a tradition in which radical is the way to behave. Academia produces enormous pressures for conformity which is another whole side of it. I mean the word collegiality I translate as conformity. And of course it's very insulting to have the academician not cast as a flaming individualist. But certain modes of behavior and modes of thought are expected, you must get along with the group. How else would you get tenure? They have to think you are like them. I wrote a little essay, I never finished it or got it published, on how to measure the quality of academic work. My answer is a person is liked...I understood it. I'm a professor, a tenured professor at a high-class university, I am quality. As a matter of fact compare other people to me and that's how I judge quality. Of course that's how the system works. And that implies an enormous amount of conformity and I'm not saying that's necessarily bad, but it tends to be narrowing. So when you come to a question like affirmative action, it very interestingly challenges that whole structure.

Catt:

I'm curious, you mention authority, challenging authority. Isn't it almost endemic in scientific training that, especially in theoretical physics where you have to be a "radical" thinker as you say, that you're going to question the received view of everything?

Schwartz:

Right. It's wonderful to see how that tradition is bottled up. Einstein is the great hero, challenging the system, or classically Galileo and the Church is the usual way it's set up. Yes. So that's there and you're always looking to discover this great new thing. But you also know that there are other areas in which you don't challenge authority. If there's a senior professor that you're working for, you don't confront that person in the way that might make them angry. Or if you're a junior partner in a research endeavor, if you're an untenured faculty member, you're very thoughtful about how the tenured members of the faculty look upon you. You're not about to go throwing mud in their faces just to challenge authority. Certainly not before you get tenure, and after that you find another reason to repress those acts. So there's this abstract notion of challenging authority, but there's the reality of social constructs, social institutional arrangements, and that's very different.

Catt:

And it gets played out. The two words that come to mind "academic freedom," and it sounds like the freedom is there but you have to be careful how you yield it.

Schwartz:

Now in a sense, before I was political, I had some personal characteristics that were slightly nonconformist. My wife and I did not hang around a lot with the so-called intellectual crowd. And I remember some years later when one colleague said to me, "Charlie you are an intellectual." I really didn't want to believe that. I avoid things that seem snobbish. But this delightful thing: when I came to Berkeley, I understood that I was expected to be promoted to

associate professor with tenure at the end of the first year. When that didn't happen, I went to the chairman's office and I said, "I thought I was going to get the promotion this year. Can you explain to me why I didn't get it? Was there some deficiency in my work that I should know about or improve?" And the chairman looked at me with his mouth falling open! No one ever asked that sort of question before. Now there was a kind of nonconformist, slightly challenging-to-authority behavior. So there may have been some seeds of that.

Catt:

When you came here, was there a turnover going on in the department. Could you describe the social atmosphere in the department then? Was it a younger or an older faculty?

Schwartz:

There were some very distinguished, older people. The chair that I was just talking about was Emilio Segre, a wonderful guy. But it was in a great growth, boom period. Now the recent history of course was still the Oppenheimer-Teller thing plus the loyalty oath at Berkeley. So there was a very negative view of Berkeley from, if you will, the eastern crowd because of Teller and the loyalty oath. So Berkeley was in the dumps and was just starting to pull out of it. It was in 1960 that that stuff was old, they're into great expansion, hiring a lot of new people. So there are a lot of people came in within the same few years that I came in, from my age peer group. So this was a great growth period. But I remember talking to one person just before I completely accepted the job here, just asking about the "wars on the hill," the lab and the wars between the different cliques between [Luis W.] Alvarez and Segre, [Edwin M.] McMillan, which is really is right versus right in terms of politics, but it was just academic turf fighting. And I was told don't worry about them, they won't bother you, and they didn't. But I mean this place was inhabited by some fantastic dinosaurs—I guess most of them are dead by now—but fascinating people to interact with. Great arrogance, great power, and great clarity and straightforwardness about what they thought. I enjoyed them.

Catt:

Regarding your science and your expectations, I would imagine when you came here things were looking up. You're at an elite university, on a faculty surrounded with Nobel Laureates, some to be, and the money is coming in. It was the Sputnik era, and I would imagine your expectations were high?

Schwartz:

Yes. It's funny, things like money I just took for granted. Somehow there was always money available. Someone else would get a research grant and I was tacked on. So I never had to do much scrounging, but later on things changed. So I came here and I was totally spoiled. Well, you know, this good thing happens, then other good things happen. It was totally lovely. So I didn't think of it the way you did because this was natural, this was great. How else could it be? And in terms of the growth of physics, my career is what I was overwhelmingly interested in. What other people were doing, okay, but unless it related to what I was doing, I didn't really care. So it was a very, very narrow and simple kind of orientation.

Catt:

Okay. Between 1968 and 1974, which scientific societies or organizations were you a member of?

Schwartz:

The American Physical Society and nothing else.

Catt:

Not the AAAS?

Schwartz:

I joined that later on just to get their magazine, I think, for the news section.

Catt:

Okay. You were talking about the black power movement and civil rights. What were your thoughts and activities in that movement?

Schwartz:

Yes, again I was distant. You know observing, feeling on the liberal side of things, but not particularly involved. I guess my wife and I were socially involved with some people who were active. One black couple, a mixed Asian and American couple whom we were very friendly with, and they were very active in the NAACP and things like that. But we were not active.

Catt:

What about equal rights, or the feminist movement?

Schwartz:

Yes. Really not aware of that at that time. I mean even if you look at some of the earliest things that I wrote in Science for the People, the language is all masculine. I was totally in that tradition, so those awarenesses came later.

Catt:

Did you have a sense that there was underrepresentation of minorities and women in science, especially in physics?

Schwartz:

Yes. I mean...I'd like to say yes without saying any more about it.

Catt:

Okay. And what about your perception of the New Left student movements, especially Students for a Democratic Society [SDS]?

Schwartz:

Aware of them. I guess in many ways... is appreciate the right word? No, maybe that's the right word... But it was not for me and it was distant from me. And again I was not very well informed. It's not as if I'd read their literature.

Catt:

So with the exception of your aforementioned comment on the war, I take it you pretty much just focused on your family and your science?

Schwartz:

Yes.

Catt:

Now returning to 1965. When did you become involved with the antiwar movement?

Schwartz:

Yes. Well, the summer of 1966 is my turning point. Within several months after that, of reading Malcolm X, I began to pay attention. There was this petition summer here, to sign a petition to oppose the bombing in Vietnam. So I signed a petition. I saw literature from some people who were advocating withholding your taxes if you didn't approve of that sort. I started doing that. And then I guess by...so I guess during this period I...I'm responding to these words, I asked myself you know what's the meaning of your life and...and then very rapidly responding to the general climate of Berkeley and then recognizing...And my earliest moves I think were more moralistic than political. I just concluded that this war was wrong, it was immoral, and I should do something about it. Also taking into context I'm not just me a tax payer, but I'm a physicist and the physicists have something to do with the war.

I'm here at Berkeley, at the University of California, and we're connected to the Livermore Lab and nuclear weapons; that does relate to me and...I'm trying to remember at what point I started interacting with students, with students in physics who were active politically, because that's very important. But I think the first thing, this attempt to get physicists involved was just on my own gall. Clearly I picked it up from everything going on around me here. Well, I wrote this letter to the editor of Physics Today saying how we physicists should pay attention to the Vietnam War, we are involved, we ought to discuss it at least, and then having that letter rejected. So this, then, was probably the critical moment for me. I mean, you've run into a brick wall, so what do you do? Well, I started hammering at the brick wall. And I guess over a period of years, that is my history of becoming repeatedly radicalized politically, moving to the left, from trying to do what seemed rather simple, straightforward, liberal, moralistic things, and finding that seemed totally reasonable but the institutions are just not allowing it. So getting frustrated but also trying to see why. And of course, I had a continual influence of others around who were more radical. So I became both a student, a learner of politics, and at least within physics, something of a leader. That's how it went with me.

Catt:

Also in 1966, through Operation Camelot, it becomes known publicly that social scientists, specifically anthropologists, were being used, paid if you will, from the government, the CIA?

Schwartz:

Yes. This was much more of a scandal in the social sciences. In the physical sciences, we knew what physicists were doing. We understood about weapons and hardware and those sorts of things. And certainly I was aware of the number of academics who were involved, the advisers, and so on. A few years later I started attacking, criticizing these people doing that kind of work.

Catt:

This is also when classified research, or military connections to research, starts to get pushed more and more to the forefront as an issue. Or did this come later?

Schwartz:

Oh, it is in the late 1960s. Again that particular issue didn't get me so excited because already I was becoming more radical in my views of things. And this I saw then and see now, as a very liberal move. I mean this was a line which academics could take, which even universities could take, saying not allowing classified research on campus which was in a sense against the military but was not explicitly against the military, just finding some other principle of openness. So I certainly was in favor of that, but I didn't think of that as any big deal, whereas, in fact, it seemed to me that it was a way in which many liberal academics and the institutions could satisfy demands without doing anything really radical, without having to take sides. And again as I got involved with the APS, why did the leaders of the APS not want to have discussion of this, that left politics belong "out there." I very rapidly figured out the answer: it has to do with money; money that comes to physics from the government. These people were afraid that if their institutions, the American Physical Society, local physics department, or even university, were seen publicly as opposed to government policies, they might end up with some of their money being cut off. Clearly this is the fear of responsibility. But clearly that was what was going on. You don't solve your problem, but at least you understand your opposition with that. So you just keep hollering.

Catt:

When you look through the "letters to the editor" section, here's one where you write about before the amendment followed by letters to the editor and then various responses, some quite adamant in supporting you. [Interviewer indicating article entitled "Schwartz's Rebuttal," *Physics Today*, 21. (April 1968), 9-11.] Those that were opposing the issue of should the APS discuss politics, were saying physicists should not do that, that somehow this will tarnish the pure image, the objectivity of our science.

Schwartz:

Right. The best one of all is Edward Teller's letter, where he says the responsibility of physicists is to do good physics and leave politics to the politicians.

Catt:

And the response where it mentions how Teller talks about special interest groups, saying that Ed Teller is a special interest group of one and always has been. But this seems to really be a turning point for a lot of physicists regarding the issues of social responsibility, the war in Vietnam, and the APS's stand on each?

Schwartz:

Right. Well, clearly the sentiments were there, the tensions were there, and many other people in physics had things to say, so this just opened up the opportunity for them to be voiced. I suppose one could say this was a very healthy development for physicists, but I also could say so what? I mean what came of this? Not much really. It allowed people to blow off some steam. It led to the creation of the Forum on Physics and Society, to a panel on public affairs, and the American Physical Society taking an active interest in political issues. My view was it allowed the centrists—the people closely connected, if you will, to the Establishment—to monitor and control any such activity so that it would never be a political threat. So that science, physics in this case, would be more managed in a more sophisticated way but still in the service of the state, the existing power structure. So that's co-optation in a general sense...The APS has made

some extremely stupid policy proposals that were from the scientific point of view, but when they come to issues that are really tough, where the politics and the physics are very well mixed, they take a very cautious position. And that's just going to reinforce the will of the Establishment.

Catt:

Why do think they the leaders of the APS were so sure of that? I don't want to be so simplistic to say it's the younger physicists that are speaking out versus an older tradition that holds physicists don't get mingled in politics. But why was there such a reaction against talking about the issues?

Schwartz:

Well, I can only guess. I mean first of all, a lot of the people are on campuses, professors on campuses where students are raising these issues, and so they're aware of them. Maybe some of these people have a long radical, political history of their own. So the contradictions in them provided an opening of such. But I think the real reason...your question is why was there opposition to having these discussions, and I think it has to do with money, money and status. American physics had enormous amounts of money then and still has plenty. I mean the atomic bomb made physics a potent industry. And for the people in it, particularly those in leadership positions, what does it mean to be in a leadership position...well, I mean there's the intellectual leadership, so we're talking about the institutional leaders. So these are the people with connections in Washington, who have a lot to do with the funding, getting the right people into the right advisory positions, and seeing that the money keeps coming and understanding that these kinds of challenges could...well, believing or fearing that these challenges could jeopardize that. And you could imagine that a lot of that fear was overwhelming. Oh for instance, kids who had always had it good. The candy store is always open. That's describing physics as a whole through the 1940s, the '50s, and the '60s. And then in that position one becomes very fearful that someone is going to take it away from you. So I think an exaggerated sense on the part of many of the people who felt in responsible leadership positions, an exaggerated sense that this was dangerous, these radicals were dangerous. I can imagine that kind of reaction.

Catt:

I came across a quote from one physicist who said the reason the APS Forum really didn't take off until later was that physicists were almost being forced to work against their will because of the funding situation, where it was coming from, and that they don't want to bite the hand that's feeding them and that it doesn't make a whole lot of sense to question the authority or the institutions that are giving you the wherewithal to do your work.

Schwartz:

Sure. There was a famous episode that had to do with a couple people in the math department here. I think it was centered around Steve Smale. Anyway, these mathematicians [Jerzy Neyman and Lucien LeCam] voiced their concerns a little too public and got letters from their funding agencies, the Office for Naval Research and the US Army, that said, well if you really feel that way then we shouldn't be sending you this research grant. I mean I told you my little experience with my Air Force grant that came right after the Mansfield Amendment. I don't know that it's written up anywhere.

Catt:

It is. There is some discussion about...well, actually it deals with your abstract in the APS Bulletin.

Schwartz:

The pledge and the peace symbol, yes. You know, that had a lot of silliness on both sides. What I remember most about that episode was getting out my old drafting set I had as an MIT student, from the first year of taking mechanical drawing. I had no talent and I still don't, but still getting out the tools, drawing circles, drawing straight lines, inking them in, making it neat. I sweated over that! I can still see it's not all that good! That's why I became a theoretical physicist, because my hand skills were not up to the challenge.

Catt:

In looking through five years of the Bulletin, that is the only abstract with a symbol.

Schwartz:

Yes. Well there's something "in your face" about it, and the reaction to it was of that sort, people got very upset. It's a very unobnoxious symbol.

Catt:

Yes. I recall reading it being called "juvenile" by some people, or "inappropriate" and "unprofessional" by others.

Schwartz:

Oh, of course. I just think I felt a little silly. I mean there's a big fuss about was it. You know, I was silly, but they were sillier. So what is all this about? I guess this is the struggle for the microphone, isn't it? Trying to get a piece of the platform. I'm attacking their defendant, I guess it's something of that sort. And in fact I remember going to a number of physics meetings in which there would be a session of which some public issues would be discussed, usually by people of great stature. I would get up and challenge these people face-to-face in terms of their complicity with the war, through various insulting ways. This was not the sort of thing that was done before and...well, I certainly used a fair amount of bad manners, but there were real issues involved and I wanted to break out of that mold.

Catt:

It's been suggested that Bill [William W.] Havens, the Executive Secretary of the APS, was the leading or most reactionary opponent to what the "radicals" were trying to do.

Schwartz:

Oh sure. But of course we could see it was his mission to protect this great institution from challenges, intrusions, and so on. That was his job as Executive Secretary. I mean the other officers...see Havens ran the organization. The other officials...well, get elected for the year, it's an honorary position, and you don't have to do anything. So Bill Havens ran the show, and naturally he had to be the protector.

Catt:

He's the one you'd go see regarding official APS motions, right? For instance, there is an

incident in 1967 in New York when you and Brian Schwartz went...I guess before they'd have their closed meetings, they would allow for open business...

Schwartz:

The business section, yes.

Catt:

...and you went there and gave the petition which eventually became the Schwartz Amendment. It seems like the Schwartz Amendment really starts to kick things off in terms of activism within the APS?

Schwartz:

Yes. I mean it was a real interesting thing. Getting repulsed by the magazine [Physics Today] editor, then I guess I appealed it, and then I went to New York and there was a meeting of the APS Council at which it was discussed, and I have this impression of the meeting in a wood-paneled room with a bunch of serious older people and clearly they wanted me to behave properly, and I was very polite, but I kept asking why can't you publish this, what's the problem? So it was totally weird kind of thing. It was as if we were on two different planets trying to communicate. And I thought I was behaving reasonably well, and they thought they were behaving very well, but still it was just absolutely no meeting of the mind. And then figuring out what else can I do in coming up with their notion of amending the constitution. Of drafting something, and then taking it...I remember many days walking around this campus with the APS directory, finding people who were members of the APS, over in the physics department and many other departments, and showing them this thing and saying would you consider signing this.

You know, taking a petition around to people is, if you've never done it before, it's not an easy thing to do. I've done it a few times afterwards, and it's not an easy thing to do because you risk rejection, right then and there. If you're opposed, you don't give a damn. So it takes a lot of nerve. It took a lot of nerve to do this, but I did it anyway. Oh, the interactions were very interesting! Many, many people here looked at it, some signed it, and sometimes it would lead to interesting discussions. Some people would not want to sign, and then we'd also have an interesting discussion. So it's quite fascinating. And then I bothered a number of people who I knew at other places around the country, and many of them took it on to circulate it. So that was important, the doing of that. I mean my own personal investment, communicating, person-to-person politics, I don't enjoy doing that. But every once in a while you push yourself to do it, and I think that is the important work, making people communicate their views and so on. And clearly there was a lot of enlightened interest in the responses. Then, of course, we get into the formalities of the vote process, all the hanky panky that went on with trying to suppress this thing...

Catt:

How the ballots were sent out, then were resent along with the APS Council position as drafted by Havens...

Schwartz:

Yes. I was totally engrossed in it, full of great passions. It's a fine story.

Catt:

The debate over this occurs...I'm looking at the March 1968 Bulletin but I think it was in January actually, about the same time that Tet is grabbing headlines, and there's all this talk about the war winding down and the US is winning. Wait a second... here is the March 1968 edition of Physics Today talking about the APS debate, whether it should take positions on political issues. [Interviewer indicating article entitled, "APS Debates Whether to Take Positions on Public Issues," Physics Today, 21. (March 1968), 81-85.] There were statements read by four individuals, two pro and two con over the Schwartz Amendment at the annual meeting. You had ten minutes, Robert Adair from Yale, who would probably be con, had ten, Jay Orear who was pro, and Leonard Schiff from Stanford as the other con.

Schwartz:

Yes.

Catt:

Did you have discussions with any of them prior to this debate?

Schwartz:

I don't remember. Probably not Adair, I don't know if I've ever met him. Now Leonard Schiff, of course, was my boss at Stanford when I was there a few years earlier. Was he then APS president or president elect?

Catt:

The president at this time was Charles Townes.

Schwartz:

So...I don't remember and my guess is probably I didn't have a discussion with him. And did I have a discussion with Jay Orear? I don't recall. We might have had some discussion, but I just don't remember.

Catt:

He seemed to be one of the most outspoken supporters of it within the APS.

Schwartz:

Yes.

Catt:

Which leads to the question of...you suggested a few minutes ago that you were frustrated with, I don't know if frustrated is the right word, but that working within the APS it just didn't seem like you were going to be able to make changes...

Schwartz:

Well, see I...it's not clear to me how much my frustration had to do with whether I was winning or losing, or was I even getting a fair shake. I'm sure the latter bothered me more. I have a sense that the struggle interested me more than the votes, but I'm...I really don't recall clearly my state of mind from that time.

Catt:

Obviously the question I'm getting at is why SSPA? Why, all of a sudden, did you say let's organize our own group?

Schwartz:

Yes. Well, I mean Marty—Martin Perl—led me that way. Let's see, around June of 1968 was the vote, and a few months after it, he called me up and suggested we get together and talk about some things. He asked what will I do next? I didn't know what to do next! And so I went down and visited Marty in Palo Alto, and he said...

Catt:

Had you ever met him before?

Schwartz:

Oh yes. Socially, through friends. Yes, mostly socially. And I mean I don't recall if he was involved in the amendment...

Catt:

He'd written in favor of it.

Schwartz:

Yes. So we knew each other. Anyway, he said in all the other professional societies, there are all these radical caucuses going on, and the thing to do now is we should do such a thing in physics. He clearly had a more developed political sense in his history, and I said, "Okay, it sounds like a good idea, let's do it!" And so we invented the name right there, Scientists for Social and Political Action. I don't know how far we got the first night in drafting this thing [leaflet announcing the formation of SSPA distributed at the 1969 New York APS meeting] and finding a couple other co-sponsors. I know Marty suggested Marc Ross, concerning Vietnam in particular, and Michael Goldhaber. I'm trying to remember, was it he or I that brought in Michael Goldhaber? Michael was a fair bit younger, he had been I think rather active in things like SDS. I mean what age was I here? This is 1968, I am 37 years old, a full professor, so Michael's youth was important. I guess by this time I had already fallen in with the local people here, faculty peace committees and so on. I'd go to these meetings, I signed petitions, I was doing little errands like learning how you get a leaflet made, how you type it up, how you take it to a print shop. So I had that skill already developed. And I created this first announcing thing [Interviewee indicating leaflet entitled "Join SSPA"] and deciding to go to this New York APS meeting and see what we could do. So it happened that summer of 1968.

Catt:

It mentions in the article here [Interviewer indicating article entitled "The First Seven Days of SSPA," Scientists for Social and Political Action Newsletter, 1 (February 23, 1969), 5-6], this is from February of 1969, it talks about 30 physicists meeting in a room and then there's a petition signed by 300 or so who attended a radical caucus the next day.

Schwartz:

That's right.

Catt:

And they paid \$5 to join this newly-formed organization.

Schwartz:

Yes.

Catt:

Can you recall who was in the hotel room?

Schwartz:

No, no I can't. I mean outside of the people I've mentioned, I certainly remember Brian Schwartz, Maurice Bazin, Bob March...and I should be able to remember many others, but I can't, my memory is not very good. I think it was a not very structured meeting which was probably the case. I do remember one of the points, to which I credit Michael Goldhaber again in suggesting this, that this organization should be very much unstructured. And of course my habit was top-down. But Michael said no. He said that's one of the strengths of SDS; you have local groups that do more or less what they want but they don't take central orders and they just communicate very well. And my reaction was yes, okay. So I mean my development, interestingly, I think I always had an important position some kind of a leader there, but there were all these people around making suggestions to me of more left or non-hierarchical sense and I'm responding favorably to that. And today I'm very pleased about that. I'm very proud to have had that sort of reaction. Oh, I remember, some point after we got SSPA started, a call from Jeremy Stone [professor of physics, Cornell University], who was and I guess still is the head of the Federation of American Scientists, which is a very nice organization, has a long history, a certain status and stature. But my impression of them [FAS] was when you received their envelope for fund raising, and on the envelope were printed all the Nobel Prize winners who were part of their organization. And that's all they were, a list of Nobel Prize winners collecting money! Oh, a few of them would occasionally give briefings to senators on arms control or something like that. I wasn't against them but I had no interest in it.

One day, Jeremy said he thought it would be very nice if SSPA would become a chapter of FAS. Right, they had a long-steady membership, they felt the need for youth in more members, and I said, "Gee Jeremy, I don't think so, I think we're very different kinds of organizations. I think you guys do what you do and we'll be this radical organization. We can get along with each other." Again I'm very pleased that I took that approach. Marty Perl within a year or two went the other way. He felt, as I recall, his phrase was "when the magazine came out with a red fist on the cover," he said, "that wasn't the kind of organization I wanted." And so he wanted to get out of it and soon became interested in establishing the [APS] Forum. And so I said, "Sorry that's the way you feel Marty, but that's okay." I knew I wanted to stick with this even though it was at this time now [1970] basically taken over by the group in Boston who were very noisy, but to me but great, that's probably the right way to go, I'm happy to go along with that.

Catt:

It is curious as to how the idea for SSPA originates and is established by predominately California-based scientists, yet it quickly becomes "Bostocentric?"

Schwartz:

Yes. Well, see another important thing that was going on was the 'March 4' movement at MIT which started in the fall of '68 and was aiming toward that period, in early 1969, and Marty and I started this at about the same time. So we were aware of that thing going on as well. I don't recall that there were great efforts made to put forth SACC together with us, but certainly we were open to whatever happened. That organization again didn't live very long, though there was a faculty component which evolved into the Union of Concerned Scientists. Again like more established and polite things that faculty do. And I knew I wanted to be with the students and the noisier crowd. At this first meeting in New York I remember somehow word got out to come to my hotel room this night before meeting. I'd arranged to reserve a room at the hotel for one afternoon and have a public meeting and these leaflets, we're handing them out in the corridors, getting people to come, and then people coming to this room and being delighted that this room was packed, jammed full, and invited people to sign up and pay their five dollars. And quite a spectrum of people showed up, you know, it was just out of curiosity. And it started with two speeches. Marty Perl gave a speech and I gave a speech. All I remember of them was that Marty said this will not be a radical organization and I said this will be a radical organization, and we didn't have any further debates about it. Those two statements were made and there we were. Well, I thought that was just charming.

Catt:

Perhaps he couldn't decide if you were radical or not?

Schwartz:

Yes. Now maybe he knew what he meant by that, I wasn't sure I knew what I meant. But I felt that we should get quite explicit about it.

Catt:

You said you wanted to be with the noisier crowd?

Schwartz:

Yes.

Catt:

It seems like it was in a very short period of time you have made this transition from being, I don't want to say reticent, but from doing your science to now organizing a radical caucus of physicists.

Schwartz:

Right. I mean getting up the nerve to write this letter to the editor of Physics Today, that's a major step. But it's still just a letter. I didn't think of it as confrontational, so I do it but then it gets rejected. Okay. Then I start to ratchet it up.

Catt:

How about the effort to try and move the 1970 APS meeting from Chicago? I believe that came just after the 'March 4' activities?

Schwartz:

Right. Oh yes, I'd forgotten that detail. Well, you know...

Catt:

I guess we should talk a little bit about 'March 4' activities here at Berkeley first.

Schwartz:

Yes, okay. Well, Owen Chamberlain [professor of physics, UC-Berkeley] I think took the lead in organizing it. Again it may have been the FAS that acted as a network to encourage other people. I mean clearly there's the students at MIT starting something, faculty being involved, and it might have been the FAS as a national network getting to encourage things at other campuses. I remember a meeting that Owen Chamberlain called getting people together to do something on it, and I was there and I took a strong role in that. So there was some action that we had on this campus. As I recall we had two speakers, I gave a speech and Charlie Townes give a speech. The speech I gave was basically the same one I had given at the inaugural SSPA meeting, and I sweated over trying to rewrite my speech. I suppose there's a copy of it somewhere. Anyhow I don't know exactly what came out of our actions here. So by April of '69, Science for the People is already declared to be in existence, and I guess I'm advocating that here, and so some people are already involved, graduate students particularly, so that was the launching of SSPA. I do recall one coverage of the 'March 4' event by the San Francisco Bay Guardian, a leftist-type newspaper, and their description of some of the personalities. I was described as a "contact radical" and Townes was described as "baby faced" ... I think that gives some flavor of it.

Catt:

Professor Townes, was he the chairman of the department at that time?

Schwartz:

No. He was never chair of the department. I mean Charlie Townes is a whole other story in himself. He came to this physics department sort of as a surprise. The story was he did not get to be president of MIT in 1967, so he decided to move his empire here instead. And here most of the faculty of the department decide in hires of new faculty, but he got appointed from someone high-up near heaven, I don't know who, but my guess would be Segre or Alvarez. Anyway, he's an outstanding physicist, continues to do outstanding work, and he attracts lots of other wonderful people. At departmental meetings, I think, many other people saw him as this great pompous bore, I mean he would give advice on this and that, which would mean you'd have to pay attention because he's so important. But he's such a bother. On the other hand, he's a very serious, a very dedicated man, involved with church groups, and I heard him give public lectures on the nuclear weapons in churches and things like that. But I also know what he does. As an advisor to President Reagan in the 1980s, and the kinds of recommendations he made, I just get so mad. Again, a man with what he thinks is a very broad and well-built world view, which I see as a terribly narrow one. And he's been absorbed into the Establishment a long time ago, and he works very well there. They like him and he likes them.

Catt:

How was the idea of 'March 4' research stoppage or strike received here?

Schwartz:

I don't recall. My guess is that at this meeting which Owen Chamberlain called, I have this very vague memory of lively discussion of what does the strike mean, does it means we take some

time off from our regular focus on our research to have some public discussion of these general, political and social concerns, which meant to be nonconfrontational and that it's not really a strike. So my guess is that was left unresolved so that people could interpret it to suit themselves but that the event should happen. So it was much more a liberal event here at Berkeley. It did not have a strong student support, as they say it was arranged by faculty members not by pushy students. So it was a nice event but I don't think it was the critical event in the development of things here.

Catt:

Do you recall when SSPA evolves into SESPA, and then when SESPA evolves into Science for the People?

Schwartz:

Yes. Well, not precisely but there was...and somewhere at home I have a collection of some of their magazines, the engineers formed this group and...

Catt:

Spark?

Schwartz:

...this magazine's called Spark, yes. And what was the name of the guy, I don't know a big bear-like fellow, who...

Catt:

Ted Wentz?

Schwartz:

...who did all of it, that really did it? Ted Wentz, yes. And this group was called the Committee for Social Responsibility in Engineering, right. So maybe it's the year with someone else saying, "You know engineers are here, we're into things too," and I didn't need much persuasion to do that, to add "and Engineers" to SSPA. Again the original name SSPA clearly...I suppose I thought I was being broadminded by not saying physicists, instead of "scientists." And the rest was for "social and political action." Now what the hell is that all about? What did I mean by that? My friend Willy Chinowsky [William Chinowsky, professor of physics, UC-Berkeley] used to say "SPA!" just to rub it in, what a silly name it was. So it was the Boston group that made Science for the People, and I had no problem with that. Mix the two names, one name drops away, it doesn't matter, no big deal.

Catt:

It's not the name that's important.

Schwartz:

Right. Well, actually what I recall is of course, the big newspaper-grabbing things with guerrilla tactics at AAAS meetings that the Boston people were doing. I was not personally a part of any of those. I guess I was somewhere else. But I enjoyed reading about them, it sounded fine. When, I guess it was the founding of the magazine, I had some real concerns that a lot of focus going into the magazine meant that the organization was going to become more academic,

more “research and writing” rather than activist. And I didn’t want that to happen. I felt the activism was so important. Now I think I was wrong, and I don’t think the magazine lessened activism. I think it provided a very important focus that lasted for 20 years. And so that’s fine. And then my usual approach within organizations is people want to do something, great, do it. You don’t have to argue, you should do this or you should do that.

Catt:

Marshall Stallings, is he the one who came up with the “hand in the flask” symbol for SESP? I was just trying to corroborate that.

Schwartz:

I don’t know who it was. Here is the first issue of the newsletter that came from the Boston group. [Interviewee indicating copy of SESP News, 2 (No. 1, 1970).] And this, “Sigma Mu Phi, science mind-fuck.” That’s very juvenile kind of stuff, putting the dirty words into scientific literature. So this was offense, this was offensive to some people.

Catt:

I don’t understand what this means.

Schwartz:

Word games, right. Oh, you haven’t seen this before? [Interviewee indicating article on Page 2 entitled, “NASA: What is it?”]

Catt:

No, I haven’t. I never knew that’s what NASA stood for.

Schwartz:

How about this? “Science Mind Fuck Strikes Again.” Alright, so that’s a lot of angry folks writing.

Catt:

Tony Rosner? I’ve never come across his name before.

Schwartz:

I don’t know him. Though I see Brian Schwartz’s name on something here...oh, regarding the APS meeting in Washington. I remember the name Bob Ivano. (Tape recorder being moved, papers shuffled.) Herb Fox, I know. I think Herb had a large part in this publication. But again, a guy I think with a strong left, radical political background before any of this started. And very significant because he’s not academically based. So this was a transitional period for the organization, SESP.

Catt:

Okay. Who was the impulse behind the March Amendment?

Schwartz:

I was. Yes, it was all my idea and probably not a very good idea. I suppose I just thought, well I failed the first time so let’s try a slightly different approach to doing the same thing. It’s really

just trying to be very philosophical, and the first thing is very concrete, wanting to talk about Vietnam. So they [APS Council] created their argument that the society has this purpose. So I said let's broaden this purpose, just this general philosophical approach. So I guess I just wanted to try it again and I figured that the Schwartz name was identified with a loser so I asked Bob March [Robert March, professor of physics, University of Wisconsin-Madison] if he would be willing to front this, and he agreed to. And I don't know that much was accomplished by it. I don't know. How does it read to you?

Catt:

I'm struck by the irony of the March Amendment coming right after the 'March 4' movement activities.

Schwartz:

Yes. Have you contacted Bob March?

Catt:

Yes, I've talked with him.

Schwartz:

I haven't talked to him for a long time. I mean I liked him because he has a nice positive, effervescent personality which was good for us, for getting our message across.

Catt:

Sure. He had mentioned that you were the one that put him up to it. I recall he said, "Oh sure, I'll do it, what the heck! I was all in favor of the first one, I didn't mind!" He...I didn't bring a copy of it, but there was one part of it that he didn't like, the part about the APS should be for the dissemination of knowledge, well that means we should be able to openly discuss what goes on in physics, and that's what the Schwartz Amendment was getting at. But then there was this part about... I can't remember exactly what it said, but it was the very last sentence, and it talked to about moral... it almost has a tinge of this is a moral thing to do. He thought that was too strong.

Schwartz:

Right. You should get the words. What I remember the phrasing was that the purpose of the Society is to do dah dah dah, and to encourage those activities that contribute positively to the welfare of mankind, and to shun those that do not, and it's that shunning...

Catt:

Shunning, yes.

Schwartz:

Now I don't have moral words there, but it implies you had to make some kind of a moral judgment. But it's phrased around the impact on humanity which is what morality is supposed to be about, right, how it affects others. But I think the real objection here is not philosophical, it's concrete. To shun something... and I understood what I meant. That meant at some point there may be debates within the American Physical Society that one should not work on projects related to war. Therefore the Society could come to that conclusion and they could

take that position therefore encouraging it's members to shun certain harmful activities. And I think everyone else understood that that's what was being suggested here, and that's what people got upset about. That's too much. So the choice of words, I think, makes the difference between this and then it being just pure abstract philosophy and having something that there would be real struggle over it. And it lost probably for that reason. If it had won without those words, it probably would have been meaningless, and in faith of goodness we're not going to do anything about it. That probably was hard to get out.

Catt:

Okay. After...I just called SESPA, but I was being anachronistic, after SSPA was organized and after the 1969 APS meeting, did you have a sense of being treated differently here at Berkeley because you could be identified now as an organizer of this radical group?

Schwartz:

I don't know. I don't have consciousness of that. But within a couple years I was doing some things here, more on my own. Well, I mean it became rather clear soon after that not a lot of my faculty colleagues were flocking to join this organization. Maybe I knew that already. But there was very active group of graduate students. And so the group on its own had lots of good activities going on. Then occasionally I would go off on some little adventure of my own, like the Hippocratic oath, like the noon-time lectures at the Lawrence-Berkeley Lab. And these things created some really interesting tensions between me and my colleagues here.

Catt:

We're going to talk about that just in a second.

Schwartz:

Yes. So those were more individual things, rather than as a group. And these things that I as a faculty member felt I could and should do, certainly a group of students would have behaved differently, let's say, to do so.

Catt:

I'm led back to the question of why at this time did you feel that you were compelled to organize? It sounds like you wanted SSPA to be at the local level, a grassroots organization, and it's almost tailored for individual expression. Yet it seems like you tried to work within the system, and when that failed, you needed to have something like Martin Perl said: "It just was the time." In other words, it just seemed to be the next logical step, to organize. Then the whole thing would simply start to take off.

Schwartz:

Yes. Well, I mean Marty was right. It was such the time, for something that was needed. He just gave me a suggestion and I ran with that. And always frustrated that it didn't grow enough. That it seemed to saturate rather soon.

Catt:

Saturate?

Schwartz:

In terms of membership, as an organization.

Catt:

As in too many or too few?

Schwartz:

Too few, always too few. Plus there was all these issues that needed to be dealt with and we were the only people involved and these were the people who would deal with the issues.

Catt:

Why do you think SSPA was predominately physics-oriented at first? Or were there other scientists like anthropologists, biologists, psychologists, or chemists that were joining?

Schwartz:

Anthropologists were into their own group. Physicists had and have this selfishness about them. We are the real scientists; we are the leaders, and I'm full of that just as well. So that's how it started, physicists talking with other physicists. Of course SSPA was open to people in math, chemistry, and so on. But certainly we didn't make great efforts to find people, a few came along, happy to have them. Did we treat them a little less nicely than physicists? I don't know, maybe, I can't say. You see, I wasn't working from any theory or experience at organizations and building organizations, so I was doing what seemed natural, which may have been wrong, personality stuff that got in the way of organizing. I don't know. I think the group we had here was pretty good, but the graduate students or other students who were involved with it, I wanted them to be playing a large or the major leadership role. Of course I always wanted myself to be playing an important role as well. Just how that worked out is hard for me to judge.

Catt:

Why students? You said you wanted students...

Schwartz:

Well, in many ways I felt they were right. I mean the students who led the FSM, led the antiwar activities, who in many ways were and continue to be the ones who prodded me and taught me about what's going on in the world, and who amazed me into trying to have some impact and to think about change.

Catt:

Because in the public eye it seems one of a full professor makes a statement that has, in some sense, more of an impact than it would if you had 50 students because it could just be dismissed as well, they're just students, versus now if this professor...

Schwartz:

Well, that's why I was happy to be a full professor working with a group of students to, if you will, exploit whatever credentials I might have, and to the extent that within that group that makes me a more important person. I suppose that's gratifying. But on the other hand, believing in what's being done, working with the students and seeing that the truth about things, that the issues are raised, and interacting with them to accomplish that. I don't want to

say helping them, but working with them, hopefully in a mutually-advancing way.

Catt:

Did you ever participate in any sit-ins at Berkeley?

Schwartz:

Yes, that came a little later, though actually not through students. I've been arrested seven times over the years, semi-habitually in trouble I guess. The first time was 1968. The issue on campus was around racism. Eldridge Cleaver was giving a course that the Regents didn't want to be accredited, so the students decided to protest the Regent's decision. I supported that, but as part of a faculty group. Again there was a faculty peace group, a faculty left group that I was part of...

Catt:

Was it something like a radical faculty caucus?

Schwartz:

Yes. So by 1968 I was certainly involved with those groups. In the spring [May 17] of 1968 there was a Vietnam Commencement. A commencement ceremony held out in Sproul Plaza honoring all the students who were honoring draft resistance. This was a big event [Note: 773 students took the pledge, approximately 8,000 faculty and students attended], defying Governor [Ronald] Reagan, so it was a big show. And I was one of the junior members of the faculty group. I had errands like going out and renting the microphone that we would use in case the official microphone got shut off. So I was learning the ropes at the level of faculty organization, and in the process, learning a lot about many aspects of working with people about facts, about ideologies, and about social struggle; that's the important part. I learned a lot from the faculty people. Leon Wofsy [professor of immunology, UC-Berkeley] was certainly one of the great people here in that whole history. But also I learned from working with the students in that group. Then there was the student occupation of Sproul Hall in the fall [October 28] of 1968, over the Eldridge Cleaver decision.

I went down there to see what was happening, and in some vague sense to express my support and appreciation for the students, since I appreciated what they were doing, but not intending to join them in the sit-in. In hindsight I was courting danger, I suppose. I remember walking through the halls, speaking to students who were sitting there, and I was walking along checking with some official, perhaps the dean who was running around, and saying, "I'm a faculty member here. I'm just here as an observer, and I just wanted to let you know." Okay. But things got out of hand and the police came in and they took me away with everyone else off to the county [Santa Rita] jail. I was released the next day, and the charges were dropped. But it was both exhilarating and a scary episode. So the next day I came back and I was a hero, and we all went out to Sproul Plaza and I gave a speech. And then the next day there were students storming into other buildings, setting fires, and there went my new hero status. I'm walking around telling students to cool it, no violence and so on, but nobody's paying attention. You know, all kinds of chaos going on. I do recall either that night, or the next night, calling the Chancellor at his home...

Catt:

Who was?

Schwartz:

This was Roger [W.] Heyns. And I asked him, I don't remember exactly what I said, but it was about having the charges dropped or something like that, and...he was upset about this. And I was feeling pretty uncomfortable too as I was bothering the Chancellor at his home, and asking if he could do such and such to remove some of the what I thought was undeserved difficulties I was having. And the response I got from him was basically you're responsible, you knew what you were doing, you'll have to deal with this yourself; which I took to be intimidation. You shouldn't have done it, we want to make sure you won't do it again, so you're going to have to deal with it. He didn't say that but that's how I took it. So okay, that was a piece of my growing-up there, and that made me stronger I suppose. I didn't go crazy about it, I said okay. So I was arrested and the charges were dropped by the DA. And then in 1971, I fell in with a group of Quakers who wanted to go stand at the door at the local draft board to show their opposition to the war in Vietnam. But these were people, mature people, older, so I guess I fell in with a bad group of Quakers. And I remember we had a practice session, my first lessons in non-violence, how to stand there if someone pushes you. We acted quite backward, courteous, thoughtful, take what you're given, and I said, "Yes I like this." So we did it. This was with John Kelley, a math professor, his wife, and several other folks from here. And we stood there for many hours and we'd be very patient until eventually the police came and arrested us and then we went to court. There I just said "guilty" and was sentenced to five days in county jail, which was a very interesting experience. So on a number of occasions since then, I have engaged in sit-ins, more frequently at the university, on issues like why won't the president engage in public debate about this university's involvement with the nuclear weapons lab. See I wasn't protesting the nuclear weapons or the lab, I was protesting the lack of academic debate which of course had all kinds of political implications. Once I joined a sit-in of the president's office with a few students for many hours, and finally getting arrested. And in that case we actually had a trial and were acquitted.

Catt:

And when was that?

Schwartz:

This was in 1978. And on several other occasions, the big blockade of Livermore Lab in 1982 with several thousand people. I enjoyed that, getting carried off to jail. So that whole mode of non-violent organizing, action, and civil disobedience, but then in a thoughtful way rationalizing what had to be done. I love that mode of conduct.

Catt:

And what about the noon-hour lectures LBL?

Schwartz:

Ah yes. Well, that was, I think, a very Gandhian sort of exercise, not that I had studied Gandhi. At some later time I wanted to undertake a fast, and I decided I should do some reading and studying to understand Gandhi's theory of civil disobedience; it's not simple, it's complex. And I ended up in the library finding a whole wall of Gandhi's writings Which...well, I read episodes from one or two books. Yes, this is Lawrence-Berkeley Lab, up on the hill, it's just had its name

changed again. This is the place of Lawrence and the cyclotron and all that history, but originally part of the university but a little bit removed up in the hill. Financed by the federal government, this would be the Atomic Energy Commission, now the Department of Energy. Integrated with the university but still somewhat separate, so it has this ambiguous relationship. Many faculty members having staff appointments up there, and many just on staff. And from I guess the beginning of my relations as a faculty member having summer jobs up at LBL, just sort of available summer salary to do research there. Now there were a number of people associated with the lab, Owen Chamberlain in particular, who had been trying to get some kind of free speech program going there.

They were considering the Vietnam War and why couldn't there be some kind of discussions of those things there. But the management of the lab didn't want this to happen at all. Now the sorts of things you're talking about before, that maybe that stuff is okay for the campus, or in fact many people then and now still think that free speech ruined the University of California. I mean a couple years ago I got involved with an art project, that's one of the things in the boxes you don't have to look at, the Berkeley art project. I was just walking home one day and saying, "I love this campus but it needs some good public art." And fancifying that if I had millions of dollars what I might donate. See, now that's the terrible politics of individual, rich people. Now what could you do in a political way of creating public art and raising money? Then I said, "Oh the 25th anniversary for the Free Speech Movement is coming up in 2 years, let's have a 25th anniversary celebration of Free Speech Movement with the commissioning of a piece of public art to commemorate that!" So I created this idea, found a couple of art faculty to join it and watch this project, which succeeded in the end. Now there is a thing in Sproul Plaza which is the result of that, which is hard to notice, hard to understand, rather abstract.

Catt:

Yes, rather abstract.

Schwartz:

You found it? But the political fight around getting this thing approved and getting it installed. It was horrendous! You see, because a lot of faculty and other people still think the Free Speech Movement was not a good thing, and for the university officially to sanction it. See, all these fights got brought up again, and this was 8 years ago. So in 1970 plenty of those feelings combined with, of course, the people who run the lab, and hope they get their money from the federal government, and wanted to avoid trouble. So it's just a strong sense from the people who ran the lab, that they can't allow this kind of free speech. There had already been a year-long fight about this. The director had a committee say why there shouldn't be this policy. So I decided to confront it directly, defy authority.

So the first day of my summer appointment up there, I walk into Ed McMillan's office, and say, "Hi Ed! I'm here for the summer. I got a program for some noon-time lectures on science and politics. Here's a list of talks that I'd like to arrange, the first one will be me talking about the arms race and the ABM vote in 1970. Could we please reserve the auditorium for noon hour? We'll obey any rules, we don't want to interfere with work, people just voluntarily come, hand out some leaflets, use the auditorium, and that's it. Thanks Ed, "bye!" But clearly in the friendliest, nicest way, doing a very academic thing, but clearly challenging the rule that they had already established. So then we go through this game. A few people take notice when I

stand outside the cafeteria handing out a leaflet saying come to the first one of these and be in such and such a place. Then the establishment responds by sending a memo to every employee saying, "This event shall not happen!" and forbids it, which advertised it beautifully. We show up at noon, the doors to the auditorium are padlocked. There is this big crowd, so I said, "Let's all go outside and sit on the grass, bring your lunches." I gave my little lecture about ABM and the instabilities of the arms race. People ask questions. And getting to one o'clock, everyone goes back to work. Just beautiful, lovely. But the people in charge were quite upset, especially since I announced that next week I'm going to have John Gofman from Livermore come and talk about plutonium hazards. This is the guy...do you know about John Gofman?

Catt:

No I don't.

Schwartz:

He's the only guy who worked at Livermore in biomedicine. He's been involved in this issue, and was in on the original discovery of plutonium. He was the Atomic Energy Commission's chief man on what are the hazards of a low-level radiation. And mostly the issue here is nuclear power plants, radiation hazards, and threats. The AEC says this level is safe, and then some scientist somewhere said but my statistics show that this amount of radiation will cause so many cancer deaths in so many years. Some scientists were publishing that. Well, John was the official head of the biomedical group at the Livermore Lab and he was given an assignment by the AEC of give us the right answer to this problem. And as a serious scientist he looked into it. He concluded that the AEC was wrong, these other people were right, and the threat of plutonium causing cancer was even worse than what these other people were saying. Then his boss came down squashing him since this was serious stuff. So he became a great hero to the anti-nuke people. He's a fascinating guy. And I invited him to give a lecture at the Lawrence Berkeley Lab, this is semi-respectable, which he was happy to do it. But again to the people running the lab, paid by the same government agency, this was unacceptable. So then I got a letter from, an immediate letter from the director of the group that decides policy at LBL. He decided this was intolerable, and... I have the letter hanging up on my wall. Yes, here it is.

Catt:

"Dear Professor

Schwartz:

For open, flagrant, and repeated defiance of Laboratory authority, you are suspended without pay for a period of two weeks effective immediately. Further violation can result in further penalties. Sincerely yours, Edwin M. McMillan, Director." This is dated July 7, 1970.

Schwartz:

Yes, that's wonderful! And that's alright, open, flagrant, and repeated defiance, and I thought, that's exactly what I was doing! I was defying their authority and that's why they got upset and that's just what I was doing. So this then starts a whole process of personnel appeals, hearings on academic freedom. That takes a long time and, of course, the next year I don't get my job at the lab anymore. And they say, "Oh no, this is just done for routine purposes. We canceled Charlie Townes off the list, he's not coming in March because he's not very active in physics and so on. There's nothing to do, it's not political retaliation." So I collected information, those

arguments don't hold up. I go to the appropriate faculty committee for a hearing on academic freedom, and they can't see it. They say no this is appropriate thing, you broke the rules, you get punished. And then I actually got a lawyer, a free lawyer, an AFT lawyer, who said I'll take your case. We went to court, had a hearing in the Superior Court. It's wonderful, not a jury just a judge. Ed McMillan gets on the stand. The judge asks him some questions, the lawyers asks some questions. He's an honest man; he describes the problem. Well, what was the problem? "Well, Schwartz was going to give this talk up there." What were you afraid of? He said, "Well, we're afraid of the hard hats."

Catt:

The hard hats?

Schwartz:

The hard hats, the construction workers who work up there, who naturally have right-wing views, who figured that this was un-American, that they would come over and start a fight. This is his excuse. And then he sort of acknowledges that this is not an appropriate thing for us to be doing up there. And the judge understood that very well, and said yes on First Amendment grounds. So I got a ruling. I actually collected \$10,000 in back pay, but I never did get my job back.

Catt:

This is written up here, and in Daniel Greenberg's Science and Government Report. [Interviewer indicating articles by Philip M. Boffey, "Science and Politics: Free Speech Controversy at Lawrence Laboratory," Science, 169 (21 August 1970), 743-45; and Daniel S. Greenberg, "Radical Wins Compensation," Science and Government Report, 3 (March 1973), 8.]

Schwartz:

The saddest part of this was eventually that the faculty, not the lab just the faculty on campus, the Faculty Academic Freedom Committee said some generalized statement in support, but the Privilege and Tenure Committee couldn't bring themselves to rule against the administration in favor of this radical. It's not justice, it's that the family works in certain ways. So that was that. And really, what disappointed me was when I did my perfect Gandhian act of defying and then being punished, somebody was supposed to come next, there's another person who's supposed to come up and take my place and do that, and nobody did that. So I was discouraged about that. There were other faculty people who were certainly very supportive of everything but they were not prepared to do what Charlie Schwartz has done. And it's exactly that. It's necessary to move in the Gandhian mode of things, but it didn't happen. Now a year later they changed the policy. They do it in their own way. Someone else gets to head a committee to revise the policy. So this turned out...I feel I did exactly the right thing and eventually it worked out well, but the process is murky. So that was a very nice adventure.

Catt:

Here's an article from Science for the People in 1971, talking about...I think you may have wrote this as a matter of fact. [Interviewer indicating article entitled, "Report from Berkeley SESPA," Science for the People, 3 (No. 2, May 1971), 22-23.]

Schwartz:

Probably.

Catt:

Though I see here it's signed "BC."

Schwartz:

That would be Bob Cahn. [Robert Cahn, graduate student in the Department of Physics, UC-Berkeley]

Catt:

Yes. Bob Cahn. Well, this article talks about the LBL free speech affair and...

Schwartz:

Bob was also very much involved in that episode.

Catt:

...Owen Chamberlain's also mentioned. Did he ever join SESPA?

Schwartz:

I don't know. I mean Owen's a wonderful guy. He's not in the greatest health these days, but I love him. And in fact there was a celebration for his 75th birthday just 2 weeks ago. I didn't attend it. But a lot of focus was on his own work in war and peace issues. I think SESPA was not quite his style of things, but we interacted with him many times. And again as a person he is just a totally sweet person.

Catt:

So he was sympathetic to the organization, but didn't join.

Schwartz:

Right. It would not suit his personality to be acting the way that I act, not that he had to act like me, but he uses himself in different ways.

Catt:

Do you know of any faculty that were dismissed because of their activism while you were here? I know at Stanford there is the Bruce Franklin case.

Schwartz:

Well, I mean that is the only case one knows of, and there the specifics were going beyond First Amendment to inciting of violence. Now those are the charges and the facts, and the judgment of the case, I don't know about that. It was challenged many times. But it did not happen overtly. So in general, faculty are very timid and careful people, and certainly I was. For all the times I've been arrested, I was always thinking very carefully about what I would do, what I wouldn't do, and certainly taking some risks in my position. So I lost my job at LBL, but had my tenured position here. So I weighed that very carefully. There was one moment, I described this trial after the sit-in, the sit-in of the President's Office that actually had a jury trial in Berkeley in the later 1970s. And at one point the District Attorney, who I think was fed

information by the university lawyer who was sitting in the back of the courtroom, had me on the witness stand, was asking me about my role in organizing and leading students into this illegal action. And of course that's something I had paid a lot of attention to and any time I'm involved with others in a group contemplating civil disobedience, I do my best to discourage them, particularly those who are in more vulnerable positions. I'm very much aware of that. See, in my privileged position and role, I should not be leading them to personal jeopardy. So I pay a lot of attention to this. But I was being painted as the Pied Piper before the jury, and I was very afraid if that painting stuck, if I was then convicted, then that could be the opening for the University to move against me and challenge my tenure, and kick me out. In fact the jury did not buy any of it, and we were all acquitted. I was relieved, but was one point when I felt I could be in jeopardy. Not that I felt that I had done anything wrong, but I felt I could be painted so.

Catt:

Were you ever aware of an internal effort, either from the department chair, the dean, the president, or the chancellor, to say we should do something about Charlie Schwartz?

Schwartz:

Yes. There's this Hippocratic oath episode which is full of rough edges. But no. In fact, at one point I remember the chair of the department, who was at this point someone of my own age group, but still the chair, telling me that a certain promotion, maybe it was the promotion of full professor, maybe it was just a merit increase 2 years later something like that, probably the latter... anyway, he made a point of telling me that promotion was not being jeopardized because of some recent ruckus I'd been involved in. So who knows what attempts may have been made. I do not think that it got very far, and in fact, I think that many people in my department and elsewhere would be, and perhaps were, if they viewed it as protecting academic turf, that you don't bring politics in there. Now on the other hand, if I do something that does go beyond the pale, then I could be in jeopardy and the Hippocratic oath came pretty close to that. It got people really upset.

Catt:

I'd like to talk about that. Would you like to break for lunch?

Schwartz:

Sure. ...about my Hippocratic oath?

Catt:

Your version of the Hippocratic oath, yes.

Schwartz:

Yes. Well, I guess this idea came to me in late 1969, on how to work the politics of science institutions. Again, for myself a lot of the moral issues as well as political views. So the idea of the Hippocratic oath was out there as we know from the medical profession, people with certain knowledge. And how they use that knowledge? The Hippocratic oath says that the doctor's obligation is to the welfare of the patient. A very simple idea. And recognizing that in science and physics, absolutely no such concept has any place at all. I mean who does a scientist work for? Well, they work for the people who pay their salary. Who is that, and who is affected

by the work of scientists, of physicists? The whole world. Atom bombs and so on. So where is the sense of obligation? Something's missing. Well, I thought this was something that should engage the science institutions, like our physics department here. I wrote a note to each of the members of the faculty saying it might be a good idea if we were to develop, some kind of a Hippocratic oath for scientists, or rather for physicists, and perhaps incorporate this into our graduation ceremonies in some way.

Each one of us thinks of ourselves being socially responsible, in an individual way, but what does that mean? Wouldn't it be nice if only in a ceremonial way, we could convey to our students that we think it's an important concept, and we would like them to adopt it. Well, I got no response from anybody, pro or con. So I decided to do something on my own. I thought about this a while, and eventually I drew up a version of the Hippocratic oath for scientists. It was really very bland, saying something like, "The purpose of science is the enhancement of life, and not the causing of harm to man. I promise to uphold this principle in the research and teaching of my science to the best of my ability and judgment." So I was very bland. It's much weaker than the doctor's Hippocratic oath that says "I will give no deadly drug to anyone." I figured physicists had been in the murder business for a while, but let's put that aside. It's just the concept that there is a social obligation, social impact of your work, and that you should pay attention to it. It doesn't tell you how to behave, it just says that you should pay attention to it as best you can. I announced by writing a letter to the campus paper and having it published, that hence forward any student who wanted to study in my class or study privately with me, would be asked to subscribe to such a Hippocratic oath before I was willing to convey, impart to them my knowledge. I thought that was a part of my own social responsibility, that I should not give the knowledge away carelessly, because it can be used in harmful ways.

Therefore, I would require students to tell me that they at least adopted these principles, though I would leave it to them how to apply them. And I was teaching a graduate physics class that spring, and there were some interesting discussions between me and the students in the first few classes. For the first two sessions I led this discussion: what did this mean, and was this a bad thing to do? There were a couple of faculty who visited the class, taking notes. The discussions with the students were really very good, very interesting. What does social responsibility mean? What right have you to require that I take an oath? They discussed these things, and as it turned out, I did not kick any student out of the class. I didn't make them sign anything, I just walked around during the discussions asking them if they agreed with the general principle of responsibility. One student said, "I'm Hindu and I don't like the restriction to human life. I believe all life is sacred." And I said that's fine with me. There was another student who felt very strongly that he should not be forced to give to me certification of his moral bona fides. He just refused to do that. So I invited him to my office, we sat around and talked about all these issues for a long time. I told him I respected his position, that he felt he should not be obliged to show his moral codes to me, and I said on the other hand, I feel I have an obligation as a teacher not to hand over my knowledge to any student unless I have some reassurance that the student will handle that knowledge in a thoughtful way. And after our long discussion I said to this student, "Well, you're accepted in the class because I am convinced that you do in fact believe these principles." Well, he got very upset then, feeling that I had somehow tricked him into revealing his private moral side, which he was morally opposed to being forced to do. So it was very awkward. But it was an interesting process, and the student did stay in the class.

For my faculty colleagues and the administration, however, it was quite something else. I was called to a meeting of the department faculty where my colleagues are telling me this is a bad thing, you mustn't do it, you shouldn't do it with the loyalty oath, and what a bad thing that is to the university and so on. And I would repeatedly ask the question, What is there in this oath that you object to? Does this oath exclude anybody? And is there any particular philosophy or religion or ideology that this oath would exclude? I haven't told people that they mustn't work on weapons. I just said acknowledge that the work of science has an impact on society, and be thoughtful to the best of your own judgment. So who is this excluding? I wanted to deal with the substance of the issues. And nobody would ever respond to that. They would say, oh it's a bad thing, you shouldn't force people to take oaths, it's wrong, it's misusing your authority. And so nothing got resolved with it. So I was taken by my chairman to the dean, who took me to the Chancellor's office. We had a very similar discussion about what if the Governor should require an oath for the faculty here, what would happen? I said, "Well, let's have a look at the oath and see what it says." If it really draws ideological lines, excludes certain lines of thought that we ought to respect, then we should oppose that. And I said whom am I excluding with my oath here? Well, of course they never answered. Well, they could say this oath excludes a person who is totally selfish, who is dedicated to not considering the rest of the world in their work. And if that's who's to be excluded...I mean I'd like to have that discussion. Isn't this a public institution for the public benefit? But the people would never engage in any of that, just refusing to engage in the substantive. So I was not swayed nor repentant. This is the other letter that hangs in my office.

Catt:

This [Interviewer indicating letter from Chancellor Roger W. Heyns to Professor Charles Schwartz] is dated May 1, 1970: "From evidence supplied by Chairman [George] Trilling during our conversation several days ago, I am convinced that you exceeded your authority as an instructor when you required an oath or statement of principle..." What did you call it? An oath?

Schwartz:

I called it an oath, yes.

Catt:

"...or statement of principle from students as a condition of admission to your Physics 222 class this quarter, and further that you infringed upon the rights of your students." What was Physics 222?

Schwartz:

It was a graduate course in numerical analysis.

Catt:

"As a consequence I hereby reprimand you for this action. In doing so I am concurring in the recommendations of Dean Knight and Chairman Trilling. You should understand also that any further acts of this type on your part will result in more severe disciplinary proceedings. Sincerely, Roger W. Heyns."

Schwartz:

That sentence, of course, means if I kept this up I might get fired.

Catt:

It sounds like the same thing that happened to you earlier?

Schwartz:

Yes. These are my two trophies, these letters. So again, the way the system works, once you've been reprimanded by the administration, you can appeal to the Faculty Committee on Privilege and Tenure for a formal hearing to see if it's justified. And I thought that hearing would finally be a place where these issues could be debated. In the process there was an opinion memo from the Faculty Academic Freedom Committee that criticized and condemned what I had done, saying that is wrong to place any ideological criteria governing admission into the classroom. And I agree with that as a general principle about academic freedom. The question was, what ideological barrier had I constructed? Nobody ever answered that, so again frustrating. But at this hearing, which was open to the public at my request...I think a journalist attended but never wrote anything about it, and there was a tape recorder going that eventually it turned out it wasn't working.

So all I have is my memory and I tell the story many times about all of the interchanges. I had a medical doctor who had written about the Hippocratic oath come and talk about its significance, historically, which has an interesting background. But the interesting question is then, this concept of social responsibility, and the concept of academic freedom. Now this is a field for conservative philosophy, right? Nobody's freedom is infinite, it's bounded by their moral responsibilities. And that's Sunday School issues, right? Freedom versus responsibility. And here I'm raising it at the world's most famous public university, talking about freedom and responsibility. They want to talk about academic freedom, and I want to talk about the social responsibility. The question is these two things intersect. There's a boundary that has to be acknowledged and dealt with. And I could never get anyone to deal with, so I tried in this hearing. And one of the people testifying there was a law professor who was chair of the Academic Freedom Committee. So I said to this law professor, I said I want to find out what are the boundaries of academic freedom, in this case meaning that anyone in the university can explore any ideas that they want, research any topic they want, there should be no barriers whatsoever placed by any sense ethics. That's what I was trying to do in my class. That certain knowledge would be withheld, in suggesting that my knowledge would not go to some students who were not giving any indications that they would think about the consequences of how they use that.

So I took an example from research. I said to the law professor, "Suppose some member of the faculty wants to do research on the ways to make more efficient gas ovens for the extermination of certain ethnic groups. What would be the reaction of the Academic Freedom Committee to that person?" At once, he gave the response, "He is absolutely entitled to engage in that research. We have nothing to say from academic freedom!" I said, "I don't believe you. That's not how you would behave. There are human values that you would bring in here." But he would not acknowledge, could not, didn't want to admit that there was a lot to the debate. The next witness was the Vice Chancellor, speaking for the administration, who happened to be a chemistry professor. And I gave him this hypothetical, I said, "Suppose a student comes to you, says: Professor give me your knowledge of chemistry, of how to make explosives, I want to

put a bomb under the Bay Bridge at rush hour. What would be your response to that student?" He's asking you for knowledge and you know what he's going to do with that knowledge. And his response was, "It's my obligation as a professor to give him that knowledge." And I said, "I don't believe you. You'd call the cops. That's your response." But he would not talk to that. Well, I've told this story occasionally in classes, and I'd say to students, "What's going on here?" This is nonsense, they'd say, the responses from these two serious, responsible representatives of the academic community.

Why do they give these absurd answers to the hypotheticals? Well, we'd try to figure out what's going on. And my answer is, they understand that once they acknowledge there is a boundary to academic freedom, then the impacts of the uses of knowledge on society is a real problem that we have to face. Then you come to the difficult questions of where do you draw the line; who's going to argue about it; how is that resolved; what will be the political implications of that; and how will it affect our funding? All these questions are implied and that's why academics avoid them. They just don't want to get involved in the debate. So they'd take these absurd absolutist positions about what academic freedom is. So this is a nice lesson in academic politics, and all that is true, it actually happened. So the final outcome was the reprimand that is on my file. The following year I just dropped the deal. I never recanted it but I didn't continue to...I agree an oath is an obnoxious thing, not a very nice tool, but coming into it through a certain approach it seemed unavoidable. If I believe in the principle of social responsibility for the scientist, I mean I as a scientist have knowledge which can be used in a powerful way, whether I use it directly or give it to others who use it and that can affect people generally. If you want to extend the consideration of people to the planet, the biosphere, whatever. Fine, you can fill all those conclusions. And it, the concept of social responsibility, is that the individual scientist undertaking such a project should concern him- or herself with the potential consequences and should think about it, analyze it, and on the basis of that draw some conclusions. For example, I will work on this project or I won't work on this project, because I have a concept of the implications and I have a kind of responsibility for that. Now of course the counterargument is but you can't control it absolutely. Of course I can't control it absolutely. It gets into other people's hands, that's true. But still I have some sense of responsibility for what I do, and therefore I have a choice to make. And so this is the concept.

Catt:

The reprimand, was it just a letter that's in the file or was there lost funding or did you lose money from your salary...

Schwartz:

No, I was not publicly slapped on the hand. There's an official scale of disciplinary actions.

Catt:

This was simply a letter then, and that's it?

Schwartz:

Yes. There is a reprimand, a censure, a docking of pay, a suspension for a period of time, a demotion, firing, so it's all quantified. This is probably one of the mildest ones, but there's a threat of more if you don't stop. So it's a very rich, it seems to me, a rich story about an issue that continues. It's not an old story, it's a continuing issue. It's one of the central questions for the future of life on this planet. The power that scientific knowledge gives, how is that used, for

who's benefit, and who's put at risk? These questions remain unresolved, and probably will be for a long time. And what a lot of my career has been about is trying to get these questions addressed as part of the business we do, say in this physics department, which is training students and doing research. And the habit, of course, is to say those are not our concerns. That's for the philosophy department. I mean as individuals we're all good moral people, but as an institution we don't address such questions. And I'm saying no. I'm saying that as a science institution, we have a responsibility to address these questions. And this issue remains unresolved.

Catt:

Sure.

Schwartz:

Now I taught a course on science and politics for many years which I think my colleagues were happy about it. They felt, you know, not just Charlie's doing his thing but they felt good that this department had such a course. But that's very limited and nobody else would ever teach that course. In the early parts of this episode over the Hippocratic oath, I had the sense that a number of my colleagues in this department were really very, very upset with me. I have an image at one point of one very good dear friend explicitly crossing the street to avoid encountering me. And what I've guessed that was about, is that there was an implication in what I was doing. That I was high and moral, and others opposed to me were somehow less moral. And of course, they resented that because they didn't feel that was true, and of course I didn't mean to imply that. But I can imagine that as leading to people feeling quite hostile. So that...you asked at one point about my relations to my colleagues, that was the strain, a considerably strained period.

When I'm doing things that are attacking some place far away, they're happy to ignore me. When I bring up an issue that affects them within their own work place, then that creates problems. And then some of that came up again later in the late 1980s. I produced a series of booklets about job prospects for physicists and for people in other areas of science and engineering, specifically the military aspects. You may be studying physics, thinking about the wonderful parts of the science, your professors that are just doing so called pure science, but so many of the other jobs out there are for building weapons, and you should be aware of that's the career you're buying into. If you have your own personal moral feelings about that, I want you to be well informed of the pipelines you're getting trapped into. So I had all kinds of data, and the wonderful quotes from officials in Washington and leaders of the universities, about how they get Pentagon money to get people trapped into certain lines of research that will later pay off for the Pentagon. Honesty in career building which I thought was vital information for students.

Catt:

Was that part of your oath?

Schwartz:

No, it's quite a bit later. I mean there was a second oath which was promulgated by Science for the People which said explicitly I will not work on weapons research and war production.

[Note: This pledge reads: "I pledge that I will not participate in war research or weapons

production. I further pledge to counsel my students and urge my colleagues to do the same.” Cf. Science for the People, 2 (No. 2, August 1970), 2.] But that’s an explicit taking of a position. So that is not an oath that I would require students because that is certainly exclusionary. But it was one that was promulgated by folks in Science for the People. Though I think that started with some students here, they wrote up a little booklet about it and each of the students said why they are taking this pledge. And so it circulated widely, people would go to American Physical Society meetings and gather others in public pledge ceremonies. So this is of personal and political, and that went on for several years.

Catt:

Right. It talks about an exchange of letters here [Interviewer indicating article entitled “Two Views of the Pledge,” Science for the People, 2 (No. 2, August 1970), 2.] between you and Herb Fox over the oath.

Schwartz:

Yes, right. So clearly this oath is a personalized, moralistic act, and some saw it as lacking a political structure or analysis, or even having negative political implications, and that’s an interesting political debate.

Catt:

How was this received, this talk? [Interviewer indicating abstract for paper at 1970 APS meeting in Chicago, entitled: “AG1. I Pledge That I Will Not Participate in War Research or Weapons Production. I Further Pledge to Counsel My Students and Urge My Colleagues to Do the Same.” Bulletin of the American Physical Society, 15 (1970), 28.] I mean here it is in the middle of a group of talks on strong baryon interactions.

Schwartz:

Yes. Well, you know, where it got located is not up to me. I mean the group here was promulgating this pledge and I decided that this was an opportunity that arose, and it arose because...well, this is in the [APS] Bulletin which is what goes on at the regular meetings, they had recently switched to an offset printing where producing this, it used to be you would type it out and then it would get typeset and printed. But now the new scheme was, you would type out your own abstract and send it to them, and then they would just cut and paste and photocopy these things, and that allowed for such a thing like a graphic to be there. So those ideas came together and I sent this in. It was funny since at that time, I guess until now, any member of the Society, I think this is probably in the rules, can submit an abstract on any subject they want, much like the original “letters to the editor” of Physics Today, where they could argue this is not relevant. Though within a year or two they changed their policies and now anyone can write a letter. So within the abstracts they had no basis for objecting to content, but there was a lot of fussing about this symbol [Interviewee indicates the “peace symbol” which adorns the abstract]. Well, what’s a word versus the other? So this obviously was just irritating the Establishment and pushing an idea out there. They could just as well of ignored it, probably should have.

Catt:

This contrast of symbol versus word, it is intriguing when you consider that this is two years before the APS Forum is created, where you would find...

Schwartz:

Well, I mean it was their problem where to put it. I don't think I said where to put it. And I don't know what sense of outrage or humor got them to put it here.

Catt:

This would have been very interesting, I guess, for Al Wattenberg.

Schwartz:

No, I think you're confusing him with Alvin Weinberg, who was a former director of the Oak Ridge National Lab. Now this is Albert Wattenberg who's a high-energy physicist. I haven't seen him for many years. He's a cool guy.

Catt:

Yes, you're right. Now the ABM...during the 1970 APS meeting in Washington, DC, there was a SESPA-organized a march on the White House to oppose the ABM's deployment.

Schwartz:

Right. I'm not sure if it really was SESPA. I'm sure SESPA was somewhat involved. It may have been some other more independent people involved with that. Wasn't it in 1969?

Catt:

Yes, it says here April 1969. [Interviewer indicating article entitled "The Night the Physicists Voted on the ABM," Scientific Research, 4 (No. 13, 23 June 1969), 22-25.]

Schwartz:

The February meeting in New York was the first big meeting of the year. The April meeting in Washington seemed like another opportunity to do things. So some group of people organized it. I...

Catt:

Tom Kirk is listed as one. David Nygen...Martin Perl...Maurice Bazin...and Charles Schwartz.

Schwartz:

Yes. I don't know if we were all "Science for the People" folks, but I'm sure we got the idea, well, if this kind of stuff is going on...so great, people just doing their own thing. That's the interesting thing about that Washington meeting, there was a formal public debate on the ABM, organized by Brian Schwartz and the officials of the APS. And this was done in a respectable, scientific way, so they would get two famous scientists to argue for it (Eugene Wigner and Donald Brennan), two famous scientists arguing against it [Hans Bethe and Walter Rathjens]. It was the big forum at that APS meeting. And what I did was I got into the hall a while before the debate, and we'd put a little piece of paper as a ballot in every seat for each member of the audience to say after listening, I'm a physicist and I understand these things generally, I listened to this debate by these experts, and at the end my opinion is that I support or oppose the deployment of the ABM. So we put these ballots out, and afterwards we collected them all, we tallied them up and did a recount, and then we announced to the press that, well, what you saw happen there is sort of a neutral presentation, two physicists for, two physicists against, and we've taken a tally of this informed group of people and it was 3-to-1 taking the

position opposing the deployment of ABM. So that's a really different piece of information gathering, and it got a little bit of news coverage there. But it was another example of the Establishment trying to control an issue, and some of us trying to string it out in another way which, in fact, is more instructive; more comes out like that.

Catt:

In your opinion, was there a radical science movement? If so, what were you trying to do?

Schwartz:

I mean it's two parts. One was just making the point repeatedly, that science is engaged in human affairs, in politics, in war, and in economics. That it's not this isolated, pure intellectual thing on its own, and that science is political. That's the first step, which shouldn't be radical in itself, right? But it's radical only because the practitioners and the institutions of science traditionally say, "No, science is neutral. Science has nothing to do with politics." Now to understand that debate you have to say, what do you mean by the word "science?" And in my course [on science and politics] this is the first lecture. If by science you mean just what's in the books, that collection of knowledge, then yes that has no politics to it. But science is the work of scientists. It's a human activity. It's the work of doing research, of teaching, of learning, of deciding either this research project or not that research project.

It is a human activity, there are choices involved, and it has human consequences. And it's funded by somebody and all those reasons are imbedded in the world of human affairs and politics. So it's the abstract knowledge versus the human activity which differs. And, of course, once you talk about funding, well it's obvious that it's politically determined to an enormous degree. But that's the first step is acknowledging what this activity of science is. And it's radical only because the traditional mode of behavior within science is to say no, it's got nothing to do with us. So the second part then, is to engage in particular issues, and then you are partisan as a radical scientist. For example, trying to say the war in Vietnam is bad, we as scientists are contributing to that, so we're going to agitate and make noise this way. Or I could go the other way, Bill [William] Shockley, for example, convinced himself that race determines intelligence, and he made a public issue of this. He was doing what I might call a right-wing radical action in science, bringing politics and human affairs in. I don't know whether people who identify with right-wing ideology would be insulted with my giving that label to it. It's obviously a heavily race-invested set of opinions, so I apologize to anyone who feels that. But in fact there is a long tradition of those views being associated with a political act. Now the political left has its racist elements as well, I've discovered. So those are the two meanings of why it's radical.

Catt:

The definition that I'm somewhat testing is when you're a radical, you're striking at the root of something. So my question is, what were you striking at in science? Was it institutional, the way science operates as a community, or was it personal?

Schwartz:

Well, the standard Left answer...

Catt:

A very complex question, I admit.

Schwartz:

No, it's very simple. If you're a Marxist you got a simple answer for this. I was not, am not, a Marxist, but a lot of Marxist stuff is worth learning about. The standard Marxist view for me and for many within Science for the People, who advocated a strong component of Marxism, says capitalist society is organized to meet the needs of capital and capitalist class, and science is one of those "forces" of production. Is that the right word? That science is controlled generally by capital to serve the needs of capitalism, right? So that is a radical view. It's a strict left, radical, Marxist view of what science is in this society. Now one could say, of course, and I would say, okay let's look at the Soviet Union, a supposedly Marxist state. Science there is absolutely in the service of the government. No question about the political control of science there. And in this country it's somewhat more subtly done.

One of the tasks then, for radical scientists, is to expose the way in which the ruling forces of society, let's get a little bit away from Marxist language now, that the powerful sectors of American society to a large degree control and orient the work of scientists; the military, other government agencies, large corporations, through their funding and through the kind of jobs that they make available. So it's a lot more softer controlled than in the Soviet Union. In the Soviet Union, bright kids in high school are sent to scientific institutions, paid for, well-taken care of, and when they graduate they're told where and on what to work, for what the state wants. Here it's much subtler. Of course when you're a new Ph.D. in physics and you can't find a job, it's not that subtle. But in the times when money is flowing easy, yes, it seems no problem. As any professor in the university will say no one's telling me what to do. Maybe I'm taking money from the defense department, maybe I'm not. It doesn't matter, I do the work that I'm interested in, nobody tells me what to do. They look a little bit more closely, why are they being funded to do this and not something else, where will their students get jobs, and how does that serve the military and that's the kind of thing I describe later on in those other booklets. [Cf. Charles Schwartz, *Career Information for the Socially Responsible Physics Student, Social Responsibility: Volume 1* (Private publication, 1989); and *Information for Students on the Military Aspects of Careers in Physics, Social Responsibility: Volume 2* (Private publication, 1989).]

Catt:

The control of funding, I think you would agree, directs the research front in science. What problems, what areas scientists will research.

Schwartz:

Yes.

Catt:

Would you say that, as some in the science studies field argue, the knowledge produced by science organizations, these institutions for knowledge production, can be directed or shaped? That what problems the scientist will work on, in some very real sense, are defined and this determines the knowledge that's coming out of research? Which really gets at the issue of objectivity. Would you agree with that view, which is called the social production of scientific knowledge?

Schwartz:

I don't know. There's a couple of levels there. When you have say a military classification system, indeed they are controlling, limiting access to the knowledge. If you're talking about just by putting money here you're funding this research and so certain areas of knowledge come out. I'm not quite sure what phrase that you use means. If it's the concept that the way in which the science is done, as if the money actually affects the electrons and the atom that you're measuring, every physicist would say that's absurd. On the other hand, in the social sciences, I can imagine that happening. That the objectives of the funder can indeed contaminate scientific process and then determine the answers. We know this very well. Cigarette companies, for example. Okay. Asbestos companies have a nice documented history of that as well. Physicists would so no way that can happen. But still it's the issue of which questions are asked, which experiments are conducted. Here's an experience from around 1974. I received a letter in the mail from the Office of Naval Research. And after I had opened it and started reading it, I realized it wasn't really sent to me. It was really meant to go to a professor in the electrical engineering department who had almost the same name as me. But it was too late, I read the letter. And it wasn't really a personal letter. It was informing this professor, and obviously a similar letter written to many other scientists at universities around the country who worked with lasers, that the Pentagon had a big, new funded program in laser research coming up this year, it had a lot of money available for people who wanted to do research in certain areas, and inviting the faculty members to attend a seminar that they were going to hold in conjunction with a certain international quantum electronics meeting, that you might be attending.

It happened that meeting was coming up in San Francisco in a few weeks, and so I went to it. I attended this session...I managed to get in by telling some TV news people there, they were there with cameras, so they got me in the door. The meeting itself was very interesting. A couple dozen people sitting there in the audience, and I looked at them in terms of their age, and I have to say that most of them were people who had very recently gotten their Ph.D. or perhaps beginning assistant professors who were looking to build-up their vitae, or were from a big university wanting to get their own grant to pursue their work. And so they were very interested in seeing what this money was for. And the way this letter was written it said to come to the seminar and afterwards we'll be happy to talk with you about the shaping of your research proposal. Again, in my class I tell the students about it, I'm giving them a general discussion on how the grant system works, and explain what these words mean, right? "Shape your proposal. I mean this is what we want done. This is not the Soviet Union, we don't force you to work. We're just letting you know if you want to work on any one of these problems, we've got money available and we'll consult with you about how you phrase your research proposal. What you, of your own free will, want to do." Right.

Catt:

Certain key words need to be there.

Schwartz:

Right, you got it. So all this is set up and there's a lecture, a slide presentation given by a guy working for the Pentagon but in civilian clothes. And he had slides about lasers, certain power, certain frequencies, certain pulse rate and characteristics of what they were interested in. And everyone in the audience was carefully taking notes. The lecture was over, and he wanted to know of anyone had questions. And I asked him, I said, "I wonder if you could please tell us what are the objective programs that the Pentagon has in mind for these research endeavors?"

What are the applications you have in mind?” He said, “No, I’m not going to tell you any of that.” So I looked at everyone, and said, “Well, I’m sure everyone here is a socially responsible scientist, and that they should want to know what their work is going for, what are the consequences of their work, rather than sign on blindly. So I think you have an obligation to tell them what are the programs that these things are meant to serve.” And he just absolutely refused to say anything about that. And I waited for one other person in the audience to say something. But what I saw was a bunch of people just frozen, extremely uncomfortable. Their careers at their stage were very important, very tenuous, and I’m sure, I hope maybe they were upset by these proceedings. I left after that, but it’s again it’s how the system works. The system controlling science, very clearly controlling. And if you don’t like the money, you’re free to leave! But if you need money to do your research, to make your career, to get tenure, well we’ve got it. If you can find money somewhere else, good luck to you!

Catt:

So that statement I made earlier about scientists working against their will, may be because of the relationship between the university and the government, or the corporation. And the way that science gets funded during this time, it may have forced a lot of scientists to take on work they really didn’t want to. Would you agree?

Schwartz:

Sure. This comes back to some of our earlier discussion about the Hippocratic oath, about ethical codes in professions. In professions like law and medicine, were there’s a direct professional-client connection, there’s a long tradition of that. It’s a fundamental concept, and it’s an important piece of human respect, I mean in the use of people with knowledge and their relations to others. But when you come to something like science or engineering, it’s a very different scene. They’re not paid on a one-to-one basis, they’re paid by large institutions or the governments. Yet those questions must be addressed and they are then political questions. They’re not personal questions, but they’re institutional, social, and political questions. And who should address them? One would like to see universities addressing them. No, they avoid it. One might see professional societies addressing them. But again, largely avoided, or occasionally engaged in codes of ethics for professional societies. You don’t cheat in your research, be truthful, and you do what the boss wants you to do. That’s the basic rules.

Catt:

Perhaps you know of the sociologist of science, Robert K. Merton, who writes that science has an ethos of conduct, which has four segments [“cudos”]. One is you openly share your knowledge [“communism”]. The next says before something becomes an accepted fact, it must be verifiable, that you can take findings out and say it doesn’t depend on where this research is done. If it’s done in Moscow or in the US, it should be able to be reproduced and get the same results [“universalism”]. Another is scientists do not let their personal biases influence their findings [“disinterestedness”]. And the fourth says you don’t accept claims at face value, not without evidence [“organized skepticism”]. But one thing that isn’t in there is a moral component.

Schwartz:

Absolutely. Or the word “moral,” if you don’t like it, just talk about people. What has this got to do with people? And the typical answer of a scientist is it’s got nothing to do with people. “I’m just trying out the truths of the universe. I just happened to be here as an observer.” And

then it's up to folks to say that's not an adequate response. By folks I mean anybody. I don't like the atomic bomb, that really threatens me. So any ordinary person talking to the scientist: "I'm not satisfied that you don't concern yourself with that." That's what social responsibility means. I didn't work on the Manhattan Project, I was too young then. So can I say I'm not responsible for atomic bombs? No, I can't say that. I've taught several thousand students, scientists and engineers, in a number of physics courses in my many years here. I'm sure quite a number of those people have gone to work on atomic bombs because that's where the jobs were. So should I say that's not my responsibility? No, there's a direct cause between what I've done and the end product. Now does that mean I'm totally responsible for nuclear weapons? No. Does that mean I have only the responsibilities of any other citizen? No not there, but somewhere in between. I need to think about that, talk about it with others. Why shouldn't students engage in that kind of a discussion early on in their career in science? Those are the kinds of things I've tried to promote in my career, and overwhelmingly my colleagues want no part of that, within the department, within the classroom.

Catt:

If in a hypothetical scenario, you could get ninety percent of any scientific community, say within physics, to agree and to discuss these issues, do you think it would change the way physics would be done?

Schwartz:

It would have affects, sure. When I discussed this booklet at various times with others, I tried to find some other colleagues to work with me on it. I knew if I wrote it myself I'd do a very good job in trying to be balanced. And I think I did. But many would think it wasn't balanced. So if I could get other people involved...at one point in one booklet there's some letters with Edward Teller again criticizing this booklet by Schwartz, how it's so biased. And of course I immediately wrote Teller saying please work with me on the next edition so I could make sure I have all points of view represented. I would like to have your point of view expressed there. "Why?" he asked. Well, maybe it's good for the freedom of democracy to develop nuclear weapons. So I invited him to join me, but he never responded to that. But one of my colleagues, whom I know personally shares a lot of my political views, he said to me he's afraid of that booklet. He's afraid that they'll hurt him because some of the people who might be his students might be influenced by those views and would not want to do physics with him. So yes, it's threatened. On one hand, the implications might have an effect on the funding, and on the other, how it affects students. I believe Edward Teller did make statements in the early 1970s that the radicals were having a very serious impact on national defense because many young students were being influenced by those ideas, and were not going into science and physics where we needed them to help build our national defense. Now it's often hard to know when you believe what Edward Teller says, but I could say well I'm proud of the work some of us did then, if in fact we were impeding nuclear weapons development.

Catt:

Though you do see a trend in physics, chemistry, and other physical sciences of declining student population which, I don't know if it's causal, corresponds to the life sciences and the social sciences witnessing sharp increases in their enrollments.

Schwartz:

Yes, I don't know what to make of those things. There are fashions among young people,

fashions in dress, speech, or what to ingest. Or what careers are hot, what are not. I don't know what controls the forming of those fashions. And I use the word "fashion" to suggest that it may be very hard to get at any rational analysis of that.

Catt:

Okay. I suppose one could argue that the issue of social responsibility, that science should serve society, struck more of a chord with the social sciences and the life sciences. I mean there you're dealing with things that are alive, feeling, anthropomorphic, whereas electrons and chemicals are cold, nonliving constructs. And in connection with the war, the applications of physics, mathematics, and chemistry being equated to weaponeering.

Schwartz:

Yes, perhaps. That reminds me of another story from many years ago. There was a student in physics, a super bright student, who started engaging with these concepts of science and knowledge, and their uses in the world. He's an Asian-American student, was extremely bright, and he decided that physics was basically an anti-human subject, and he didn't want to venture into it any further. So he switched to biology. And biology, again intellectually challenging, but after a while he decided that it was no different, that it was another version of cold mechanical science, and that it was going to hurt people rather than help them. So he switched again, in graduate school this time, to sociology. And after a while he decided that sociology was no different either. The last I heard he had left the university and was going to be a community organizer in China Town. I have never heard what happened to that student again. It's a very sad and painful story. Someone really trying to deal with these issues and meeting frustration after frustration. And perhaps, in some sense, destroying his life or, I don't know, maybe he found some real fulfillment at the end. I don't know what the last chapter will be. But again, the sad part is this institution provided no help and guidance for him, and I am sure there are many such students out there. In fact the faculty does its part, it just closes off that part of the brain which helps the student understand these issues. That's sad.

Catt:

Well, this touches upon the question, what do you think were some of the impacts of radicalism within science on science, either at the local university or at the national level?

Schwartz:

Yes. I don't know. I really don't like questions like what's the impact on science. One can ask what's the impact on scientists or the institutions of science? What's the impact on people generally? On the nation? And the answer is, I don't know. I think it has done some good, but it's so indirect, so hard to measure. Probably its major impact is opening up the ways of thinking in people, of looking at the world, looking at science, looking at what's going on, asking questions and expanding critical thinking. Which is what we always need more of and more of. And in many ways the more we become a technologized science, the more we need critical thinking and not just a war between the technocrats and humanists, but those who can bridge, walk in between them. And hopefully that ability should be available to more and more people. What do the words "Science for the People" mean? It's just that. I mean I like the slogan for just that. Who's science is this? It's not the scientists' science. It shouldn't be the science of the powerful institutions. It should be science of and for "the people." It's an appropriate cliché. And that's a far away goal, though a very good one.

Catt:

Here's another abstract concept: do you think, from your personal perspective, that science is a good thing? Specifically, did you as a radical scientist make the distinction of not attacking science per se, whatever that is, but instead the concept of how science was being used, that science wasn't this pure, or beneficial, or progressive, or this "higher ideal" pursuit, and that it needed to be changed?

Schwartz:

Well, there's a couple of things here. I think the motivation for the period we're talking about, I mean activism, is this clear view that science was being used to do great harm in the world. Whether it's the war in Vietnam, nuclear arms race, polluting the environment. So this is a particular harm, an evil if you wish, and people saw it, people within science saw it, and felt they wanted to do something about. Now that's not just an abstraction about science. Today there are other issues like, well, a week or so ago an op-ed piece in the New York Times by Bob Park, a very nice guy who's one of the public spokespersons for the American Physical Society, talking about here come those anti-intellectuals again with their assault on science, the radical feminists' critique, in particular. It's the sort of thing that one would see periodically, pieces about why do people believe astrology and not astronomy, and why don't people know the difference. It was haranguing about that. And I've always understood what those pieces of work were about. They're really about why do people spend their money on astrology rather than on astronomy. So it's about turf, and money, and status. Those are just sickening, self-serving debates. The classical ones about what science is all about. Right, their attitude is science is not properly appreciated. And who's attacking science? Well, anti-intellectuals of course. That's a small fringe, but it's the sort of thing the leaders of the science establishment like to stand up and protest. But how do they deal with those, like ourselves, who talk about science from within science? Clearly we're not on that fringe, but we're bringing in real political critiques about what science is engaged in. So their best approach is not to argue with us, but to try to ignore us. Typically, they don't want to engage us in debate. Occasionally though, some will try to throw the radical scientists into the same pot with far-out people who don't understand the difference between astronomy and astrology. But that doesn't go very far. So it's very easy to see the birth of the radical science movement in, at least for the physical sciences, in 1969; the MIT action, our forming of this organization [SSPA). To figure out when it died, or is it dead, that's a much, much more difficult question. I mean the organization [SESPA/SftP) has by now disappeared, and the magazine [Science for the People) has died as well. But things continue in various ways. Certainly I think a lot of the consciousness has been well dispersed.

[Interviewer's note: The last issue is Science for the People, 21 (No. 2, May/June 1989).]

Catt:

Right, and with the US withdrawal from Vietnam in 1973, you do start to see a decline in the New Left overall, a breaking-up into factions. For various reasons, people start to identify themselves along racial, gender, or in some cases occupational lines. So instead of a united front attacking "the Establishment," the New Left starts to splinter into separate "sectlets." What effect do you think this had on the radical science movement?

Schwartz:

Yes. There was also a sense of in the 1970s, change in the national economy and then the interaction with radicalism, people having to worry about their careers more intensely, especially at the college level. And there certainly has been, it seems to me, an amazingly

powerful and continuing right-wing march. In the 1980s Reaganism, which I felt was abominable, and now once again the 1994 national congressional elections, which I find hard to believe. And it keeps going on. I don't know. This country never had one dominant trend, there's always many different flows going on, and certainly on the campuses. It's very strange.

Catt:

Okay. I have one last question. Do you think scientists, because they come from a position of expertise, have a special role in politics?

Schwartz:

Right. I would say most scientists are engaged in a special way in the political scene, whether they acknowledge it or not. This is what we discussed before. They are working on some particular project. Well, who determines whether that project should be researched? It's an external political agency usually. And the scientist may or may not give much thought to it. He may just be a tool. Now some scientists do undertake to become active, advocating for or against some particular thing relating to science, using their expertise. And then they are actively engaging in politics. It could be for or against many different positions in many different ways, and occasionally they can be accused of abusing their expertise. So sometimes they are then engaged in political debate. Clearly to me the great majority of scientists avoid that engagement. They try to hide from it, try to convince themselves that their work is neutral. And within the academies, or even within job circles, there's plenty of reinforcement on the notion that it's not my responsibility, that my work is neutral. So this is a continuing challenge.

Catt:

How did your involvement in the radical science movement, during the late 1960s and early 1970s, affect the ways you thought about science or did science after 1974?

Schwartz:

Really hard to say. I did less science because my involvement with science and politics became a big part of my career. So a lot of my time at learning, researching, teaching, public speaking, so on, was concerned with those other aspects of science. My production of physics papers certainly went down a great deal. That's fine, that's how I've chosen to redirect my career. Well, it's not clear how those decisions get made, it just happens. I'm sorry...the second part of your question, I had a second part to my answer. Remind me the way you phrased the question?

Catt:

Your involvement in radical science. How did it affect the way you do science after 1974?

Schwartz:

Okay, how does it affect the way I do science. I guess within the science projects that I do pick for myself, I have from time-to-time thought about this particular area that I'm trying to pursue. I think I might have some ideas that I might be able to develop this technique, sort of ask myself, "Is that a technique that would be particularly useful to the people of Livermore who are developing more hydrogen bombs?" And if I thought it might be, I'd say, "Well, maybe let's not think about that. Let's go think about something else." So there's been a little bit of

that. It's hard to measure that sort of thing. But yes, I paid a bit more attention to that.

Catt:

Okay. I don't have any further questions. If there's anything else that you would like to add?

Schwartz:

No, it's been a lovely interview.

Catt:

Yes, and a long one. Thank you so much.

Schwartz:

Sure.