

Regional Oral History Office
The Bancroft Library

University of California
Berkeley, California

Sierra Club Oral History Series

Laurence I. Moss:

Sierra Club President, 1973-1974, Nuclear Engineer:
Energy and Environmental Policy

Interviews conducted by
Ann Lage
in 1992

Copyright © 2014 by The Regents of the University of California

Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the nation. Oral History is a method of collecting historical information through tape-recorded interviews between a narrator with firsthand knowledge of historically significant events and a well-informed interviewer, with the goal of preserving substantive additions to the historical record. The tape recording is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The corrected manuscript is bound with photographs and illustrative materials and placed in The Bancroft Library at the University of California, Berkeley, and in other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

All uses of this manuscript are covered by a legal agreement between The Regents of the University of California and Anne K. Brennan dated September 13, 2013. The manuscript is thereby made available for research purposes. All literary rights in the manuscript, including the right to publish, are reserved to The Bancroft Library of the University of California, Berkeley. Excerpts up to 1000 words from this interview may be quoted for publication without seeking permission as long as the use is non-commercial and properly cited.

Requests for permission to quote for publication should be addressed to The Bancroft Library, Head of Public Services, Mail Code 6000, University of California, Berkeley, 94720-6000, and should follow instructions available online at <http://bancroft.berkeley.edu/ROHO/collections/cite.html>

It is recommended that this oral history be cited as follows:

Laurence I. Moss, "Sierra Club President, 1973-1974, Nuclear Engineer: Energy and Environmental Policy" conducted by Ann Lage in 1992, Regional Oral History Office, The Bancroft Library, University of California, Berkeley, 2014.



31. *Laurence I. Moss 1973-1974*

Photo courtesy of the Sierra Club

Laurence I. Moss (1935-1999) was a nuclear engineer and consultant on environmental and energy policy. This oral history focuses on his role in the Sierra Club in the 1960s and 1970s. He gave key testimony in the House Interior Committee in 1966, defending the club's position against plans to build dams in the Grand Canyon for energy production. Moss helped the club undercut economic rationales for the dams, arguing that nuclear power would be more cost-effective. In 1968 he was elected to the Sierra Club Board of Directors and in 1973 the board chose him as the first non-Californian to serve as Sierra Club president. As president, Moss focused on overcoming serious budget deficits, improving management information and control systems, and establishing clear program priorities. Ironically, it was during his term as president that the board of directors was persuaded, with strong support from the club chapters and grassroots activists, to declare its support for a moratorium on nuclear power plants. In the oral history, Moss expresses his regret at the failure of the board to subject the decision to a rigorous analysis of costs, risks, and benefits of nuclear vis-à-vis alternative energy technologies. The oral history also discusses Moss's contributions to the fight against the Supersonic Transport and to national energy policy in the 1970s, including the Clean Air Act legislation and the National Coal Policy Project. In later years he became an advocate for market-based solutions to environmental problems, as opposed to increased government regulation.

Table of Contents – Laurence I. Moss

Interview History	viii
Tape 1, side A	1
<p>Family background, parental values—Education in public schools in New York City—Undergraduate education at MIT, chemical engineering—Influence of Professor Warren K. Lewis—Graduate education at MIT with specialization in nuclear education, master’s degree in 1958, interest in problem solving—First job with the Atomics International Division of Rockwell International, in charge of critical experiments in the SNAP [Space Nuclear Auxiliary Power], 1959.</p>	
Tape 1, side B	10
<p>Influence of experiences in the White Mountains as youth and of Ansel Adams’ <i>This is the American Earth</i>, joining the Sierra Club in 1959 after moving to Los Angeles—Work in Santa Susana test laboratory for nuclear experiments—Concern about smog in Los Angeles and Kern Plateau forest logging issues—Meeting Dave Brower circa 1965 at meeting about Kern Plateau issues, reflections on their respective modes of thinking—Role in opposing dams in the Grand Canyon, and the economics of a nuclear alternative to dams for power production—Testimony at House Interior Committee hearing.</p>	
Tape 2, side A	20
<p>Testimony on Grand Canyon dams at Senate Interior Committee hearing—Discussing nuclear power and other energy sources with David Brower, qualitative thinking vs. quantitative analysis of benefits and risks—Elected to the Sierra Club Board of Directors in 1968, a time of rising tensions in the club—Opposing the Diablo Canyon nuclear power plant, on scenic grounds, and proposing an alternative site in San Joaquin Valley—Thoughts on conflict between Executive Director Brower and the board of directors.</p>	
Tape2, side B	28
<p>Continuing discussion of roles of boards and executive directors—Trying to focus on the issues—Brower’s departure as executive director “probably for the best”—Concern about deficits the main reason for the board’s action, not ideological differences—Moss’s term as president of the Sierra Club, 1973-1974: focus on balancing the budget, setting priorities, and weeding out marginal activities—Concern with issues of technology and public policy—A year as a White House fellow as assistant to the secretary of transportation, 1968-1969—Observations on and accomplishments as a White House fellow on highways and flyways in national parks.</p>	

Tape 3, side A	37
<p>Developing interest in using economic analysis and free-market solutions to implement sound environmental policy, rather than regulations—Lessons from the White House fellow year and ensuing environmental campaigns: skeptical about the actions of governmental agencies—Organizing opposition to the Supersonic Transport [SST]—Initiating successful suit against the Environmental Protection Agency to prevent significant deterioration of air quality in relatively clean areas of U.S.</p>	
Tape 3, side B	47
<p>Role of news media—The coalition against the SST and the successful campaign—Sierra Club governance issues during his presidency, decision-making style—Controversy around Dave Brower’s nomination as honorary vice president of the Sierra Club—1972 vote for club president.</p>	
Tape 4, side A	56
<p>Kent Gill as vice president—Changes in the publication program during Moss’s presidency—Relationship between the club and the Sierra Club Legal Defense Fund—Relations between the Sierra Club and the Sierra Club Foundation during Moss’s presidency—Working with board members as club president—Primary goals as a one-year club president: improved management information and control systems and establishing priorities, strengthening Washington office and eliminating less important programs—Success in improving club’s financial situation—Choosing conservation priorities.</p>	
Tape 4, side B	66
<p>Political pressure within the club to pursue a lawsuit against off-shore oil drilling permits during the 1973 Arab oil embargo, unsuccessful outcome—Planning for the move of club headquarters from Mills Tower, leasing rather than purchase—Concern of some board members about a non-Californian as club president—Major environmental issue during Moss’s presidency: the energy crisis—Testifying in Congress during a period of hostility to environmental objectives resulting from Arab oil embargo—A proponent of pollution permit trading systems and pricing energy at true costs, including environmental costs—Promoting economic incentives rather than regulatory means of controlling pollution—Differences with Natural Resources Defense Council.</p>	
Tape 5, side A	75
<p>Chair of the Federal Energy Administration’s environmental advisory committee, impact on policy—Objecting to smoking during Sierra Club board meetings—Working with the Sierra Club’s Washington Office on energy legislation in the 1970s, conflicts with consumer protection groups on energy pricing issues—</p>	

Sierra Club energy policies in the 1970s, considering social justice aspects—
Contingent valuation [CV] method to quantify the value of impacts of air
pollution and other environmental quality of life issues.

Tape 5, side B

84

Interest in risk/benefit analysis—The Sierra Club board’s position in favor of a
moratorium on nuclear power, 1974: Moss’s disappointment in the board’s lack of
interest in subjecting the decision to a rigorous analysis of costs, risks, and
benefits of nuclear vis-à-vis alternative energy technologies—Discussion of
components of informed decision making—Board members, temperamental
styles—Thinking about the primary functions of the board of directors—National
Coal Policy Project, bringing together industry and environmental leaders to
develop consensus on coal policy, 1975-1980.

Tape 6, side A

94

Getting participation in the National Coal Policy Project from all national
environmental organizations except the Environmental Policy Center—Positive
results from the project—Designing an energy-efficient house—Current position
in charge of environmental, health, and safety activities for W. R Grace &
Company subsidiary, Grace Specialty Businesses.

Interview History—Laurence I. Moss

Laurence I. Moss assumed the office of Sierra Club president in 1973, taking up the mantle first worn by John Muir, who had founded the club in 1892 and served as its president for twenty-two years until his death in 1914. From the beginning Muir had a broad vision for the California-based club, encouraging exploration and enjoyment of the out-of-doors as a means to promote an army of advocates for wilderness and park preservation. The sixty years following his death saw tremendous expansion in the club, in membership, influence, and scope of its environmental concerns. In 1969, the club underwent a divisive internal upheaval, with a tempestuous battle between the board of directors and charismatic executive director David Brower, resulting in Brower's departure. Tensions from the upheaval still were very much alive among board members when Larry Moss, a thirty-eight year-old nuclear engineer, who was seen as a former ally of Brower, took office as the first non-Californian president.

In his oral history, Moss discusses how his training as a nuclear engineer influenced his subsequent approach to problem solving, decision making, and leadership. While giving full credit to the strengths of eloquent club leaders like Brower and Martin Litton, Moss contrasts his preferred rational, quantitative-analysis approach to difficult decisions. He tells how he first lent his analytical talents to the Sierra Club on the issue of dams in the Grand Canyon. His congressional testimony in May 1966 undercut the analysis of the Bureau of Reclamation on the economic value of the dams; he proposed nuclear power as an alternative to future Colorado River dams.

As club president, Moss focused on overcoming serious budget deficits, improving management information and control systems, and establishing clear program priorities. Ironically, it was during his term as president that the board of directors was persuaded, with strong support from the club chapters and grassroots activists, to declare its support for a moratorium on nuclear power plants. In the oral history, Moss expresses his regret at the failure of the board to subject the decision to a rigorous analysis of costs, risks, and benefits of nuclear vis-à-vis alternative energy technologies.

The oral history also discusses Moss's contributions to the fight against the Supersonic Transport and to national energy policy in the 1970s, including the Clean Air Act legislation and the National Coal Policy Project. In later years he became an advocate for market-based solutions to environmental problems, as opposed to increased government regulation.

The oral history was recorded in 1992, when Larry Moss came to San Francisco from his home in Connecticut to join in the club's centennial celebration. We met for one day, May 1, 1992, for a five-hour session. Processing of the interview was delayed for several years, contact was lost with the interviewee, and we later learned that he died in 1999. In 2013, we were put in touch with his widow, Anne Brennan, who graciously signed the necessary legal release to make public this important contribution to Sierra Club history.

In researching Moss's career in order to better process the interview transcript, I found, with the benefit of Google search, JSTOR, and Lexis-Nexis—all unavailable to me when I conducted the

pre-interview research in 1992—an intriguing bit of history relating to Moss’s experiences as a nuclear engineer. In his oral history he states that he worked from 1959 until 1968 at Rockwell International’s Santa Susana nuclear field laboratory, as part of the SNAP program for Space Nuclear Auxiliary Power. What he does not mention is that a reactor at the Santa Susana field laboratory suffered a nuclear core meltdown in July 1959, not reported publically until 1979, which resulted in radiation releases, deaths, and injury at this experimental nuclear reactor, the first built exclusively for civilian use, to produce power for Southern California Edison.¹ While this apparently was not the program Moss was assigned to, he was commuting from his Canoga Park offices to these same Santa Susana field laboratories and must have been aware of the nuclear accident. Rockwell asserted when the event was finally disclosed in 1979 that radioactive gases were released at “allowable emission levels.” However, a 2011 newspaper report calls the Santa Susana site, near Simi Valley just north of Los Angeles, “one of the most challenging cleanup jobs in the state, possibly the country . . . contaminated by a vast menu of radioactive isotopes and toxic chemicals.”² I very much regret that I did not know this history when I conducted the interview with Larry Moss. We could have had a more in-depth and insightful discussion of his stance on the risks and benefits of nuclear power vs. other energy sources.

The Larry Moss oral history is part of ROHO’s extensive collection of interviews on natural resources, land use, and the environmental movement. It joins more than a hundred others in the Sierra Club Oral History Series. Links to online transcripts from the series are available on the Regional Oral History site at <http://bancroft.berkeley.edu/ROHO/collections/subjectarea/natres/sierraclub.html>. Interviews with Phillip Berry, J. Michael McCloskey, William E. Siri, and David Brower discuss Moss and his role in the club. The Laurence I. Moss papers are available at the American Heritage Center at the University of Wyoming.

The Regional Oral History Office was established in 1954. ROHO conducts, teaches, analyzes, and archives oral and video history in a broad variety of subject areas critical to the history of California and the United States. The office is under the direction of Neil Henry and the administrative direction of Elaine Tennant, director of the Bancroft Library, University of California, Berkeley.

Ann Lage
Interviewer
Director, Sierra Club Oral History Project

Berkeley, California
July 2014

¹ Kristen Shrader-Frechette, “Fukushima, Flawed Epistemology, and Black-Swan Events,” *Ethics, Policy, and Environment*, vol. 14, issue 3, 2011, pp. 267-272; *Science Newsletter*, December 7, 1957.

² Michael Hiltzik, “Santa Susana Clean-up Effort is a Mess,” *Los Angeles Times*, December 9, 2011, Part B, p. 1.

Interview with Laurence I. Moss

Interviewer: Ann Lage

Interview date: May 1, 1992

[Tape 1, Side A]

Lage: Today is May 1, 1992, and we're here in Berkeley's Bancroft Library interviewing Larry Moss. We want to start with personal background, not in great detail because we have so much to cover, but to find out what early influences might have moved you along the path that you did move along.

Moss: Well, the earliest important influence, as it was for most people, was my mother and father. My father was born in London, England, came to the United States when he was about twenty years old. Met my mother many years later, and they married when I guess my father was in his thirties. I think I was born when he was about thirty-nine. Both of them were strong believers in what's generally known as the American dream, that people could achieve great things in the United States if they had the opportunity to do so, if they applied themselves, if they studied, worked hard, and so on. In their own ways each of them developed that in their own lives. They also had a strong feeling of fairness and justice. They were very supportive and loving parents. They—

Lage: What kind of work did they do?

Moss: My father started out in various odd jobs. In the late 1920s he worked as a salesman for a small business selling cutlery, knives for chefs and restaurant supply stores. The business fell into hard times during the Depression, but my father had saved some money, and he bought the business from the previous owner in the depths of the Depression and then built it up and made it a successful enterprise.

This, by the way, was in New York City, where we lived when I was four. We lived first in Richmond Hill in Queens. Then when I was about eight or nine years old we moved to Forest Hills, another part of Queens with an excellent public school system, which I can talk a little bit more about later.

But getting back to the earliest years, the environment, the atmosphere in the family was one of great opportunity and unlimited possibilities if we

worked hard, got good education, applied ourselves; the value of education was stressed highly.

Lage: How do you remember that they put this across? Did you have brothers and sisters?

Moss: One brother who was three years and eight months younger than I.

Lage: You were the oldest son.

Moss: Yes.

Lage: How did they put it across? Was it kind of preached, or was it more subtle?

Moss: There were some family anecdotes. My father, for example, went to a public school in England. By a public school, I don't mean an English public school which is a private school, I mean a real—

Lage: The equivalent of our public school.

Moss: Yes, equivalent of our public schools. It was in a poor part of London on the east side. I think they had four or five thousand students in the equivalent of our high school. There was a competition each year for one scholarship to an English university—Oxford or Cambridge. My father would sometimes talk about his experience in that competition, where he did very well, and he was very proud and came in second, second in a school of four or five thousand. He wasn't able to go to the university. But the importance of that was impressed upon us.

There is also no question that whereas in terms of material standard of living we lived fairly modestly. Any reasonable expense would be justified, except for education. We had no limits or restrictions on the colleges we could consider.

And I feel because of this experience that it's something that one generation can pass on to the next. It is much more important to do that—to give a child the best education that they can take advantage of—than to pass on material things.

Lage: When were you born?

Moss: 1935.

Lage: You grew up as a child in the Depression.

- Moss: Yes.
- Lage: What were the experiences?
- Moss: Just in the way my mother and father lived and the way they reacted to different circumstances. They taught by example. It was important to be fair and honest and not to have any prejudices—to judge people on their abilities and on what they contribute—rather than on superficial things.
- Lage: Was there a religious influence?
- Moss: Well, my mother and father were Jewish. There was never a big issue about that since we chose it consciously, so it was something that was passed on.
- Lage: Did you follow the religion? Did you celebrate the holidays?
- Moss: They were not terribly observant Jews. We frequently did attend the most important services of the year. But religion was not a big issue in the family. I think the ethical values that are a part of the Jewish tradition were of influence—justice being one of them, more so than turning the other cheek. The intellectual environment in which Judaism flourished, to which it contributed, were I think important too.
- Lage: It all blends in. How about politics? Was that a subject of discussion or firm commitment?
- Moss: I think my father voted, I'm not sure about this, but I think he voted mostly for Democrats in presidential elections and often for Republicans in local and state elections. I suspect my mother tended to vote more for Democrats even for the state and local ones. It might have been because of their feeling that Democrats were more sensitive to social issues. And of course this was during the Depression—at least part of it was during the Depression, a time I remember. During the Roosevelt administration they had a very strong and dynamic and compelling political figure to lend their support to. We didn't discuss politics very much in the family. Perhaps occasionally in terms of particular issues.
- Lage: It wasn't discussed around at the dinner table nightly.
- Moss: No.
- Lage: Tell me about your education now. You mentioned something about the public school where you lived.

Moss: I started with a small public school in Forest Hills, PS #3. About the only person I remember there was the principal, a nice lady who I suspect is dead by now or else she's in her nineties. Very supportive and encouraging towards the students.

Then I went to a larger public school after I left the elementary grades. It was further away from our house, PS #101. I guess one teacher I remember particularly in that school was a pretty good disciplinarian, which I liked quite a bit. She never had to discipline me. I was a pretty good kid. But she kept some of the more unruly members of the class in line so I could learn with fewer distractions. [chuckles]

Lage: Was that a problem then? That there were unruly elements in the school?

Moss: Well, not unruly in the sense of what is experienced in many schools today. But there could have been minor class diversions: people talking in class or one student bothering another student. She wouldn't tolerate that.

Lage: So you were pretty set on those educational goals at that time.

Moss: Yes.

Lage: Did you go to MIT [Massachusetts Institute of Technology] as an undergraduate?

Moss: Yes. Before that I went to Forest Hills High School, another public school. The teacher I remember there the most was a science teacher, a biology teacher who gave me my first experience of science. The logic and orderliness of the scientific method such as I understood it then, which was—

Lage: Before the chaos theory.

Moss: Right [laughter]. But I did love science and math and that was one of the reasons I applied to MIT, as well as a few other schools. I decided to go to MIT, although I had a bunch of other choices, for what probably wasn't a very good reason. Because I suspected I was interested in a career in science and math, but I didn't know enough about what those careers were to be able to pick one, to pick a field like science or engineering. And MIT had about the greatest menu of different offerings—twenty, twenty-five different majors in science and engineering. I thought after a year or two there I would have a clearer idea of what I wanted to do and there would be a first-class department in my field that I could benefit from.

Lage: Sounds like a pretty good reason for picking it.

Moss: Yes.

Lage: Leave your options open. And did you find that was a satisfactory experience at MIT?

Moss: Yes, very satisfactory. I enjoyed it there quite a bit and in fact continued on to graduate school after completing my undergraduate work in chemical engineering. Incidentally, I started out in chemistry as a major. Of course, that was what my high school science teacher had taught.

In my sophomore year, I wanted to take a rather ambitious program in which I would have satisfied all the requirements up through the end of the sophomore year in both chemical engineering and in chemistry. Even then I was beginning to suspect I might like engineering more than science.

When I proposed this curriculum to the faculty advisor in chemistry, he said it was rather irregular because one of the chemistry courses I was proposing to take, because it was the one that fit into my proposed schedule, didn't have quite the same laboratory hours as the one that was required in chemistry. So he said he couldn't think that it could be arranged. So I went down over to the faculty advisor for chemical engineering. Of course he was delighted to see the schedule I had proposed. So I changed my enrollment [laughter] and became a chemical engineer.

I went back to the chemistry faculty advisor to explain to him what I had done. By that time, a few hours later in the day, he had cleared my schedule with the department chairman. But I said I had made the change and I might as well stick with it. I could always change back if I wanted to. Turned out that I didn't want to because of some good experience I had with the faculty of the chemical engineering department.

One of those faculty members, probably the most senior member of the MIT chemical engineering faculty, and a person who, at the time and I suppose still is, is known as the father of modern-day chemical engineering, was Warren K. Lewis. Unlike the experiences I hear about in many colleges and universities these days, at MIT—at least MIT at the time I was there—a number of the senior professors taught the freshman and sophomore classes. Warren K. Lewis taught the first chemical engineering class that I was exposed to. And he was an important influence in a number of respects. He taught the importance of isolating the important, the vital elements of an issue or a problem, so as to evaluate them and proceed towards a solution. The need to make an informed

decision when you had enough information, but not necessarily all information that you would like to have.

Something else that I remembered later when I testified before the House Interior and Senate Interior Committees was the value of—after you've done the analysis, coming to a conclusion, making recommendations—of being able to defend it. Even in the face of unreasonable and possibly irrational pressures. It was part of his teaching technique to attack each of the students when they presented their recommendations.

Lage: And did you understand the value of that at the time? Oh, you did. "This is part of my technique. I'm doing it for your own good."

Moss: He didn't say that.

Lage: You figured it out.

Moss: I figured out there was probably some method in this. But he would attack students not only substantively, but also personally, explaining to the class how ignorant they were of this and this and this, and so on and so forth. And most of us learned to cope with that and to be able to defend our recommendations even in the face of it.

Lage: And probably to be very well prepared.

Moss: Yes. When I testified before the Senate and House committees there were members of the committees who launched that kind of an attack on my testimony. I sat there listening to them, thinking of Warren K. Lewis [laughter]. And after they had finished, I said, "If you have any questions about my testimony I would be glad to answer that question." Because in most cases they didn't have any questions to ask.

Lage: They were just attacking.

Moss: Right.

Lage: Interesting. So he really his advice sounds as if it applied to a lot more than chemical engineering.

Moss: Yes. It applied to having a certain self-confidence, self-esteem of—after you'd done your homework well—of being able to defend it even in circumstances which might prove to be difficult.

Lage: And then the earlier things you mentioned were sort of rules for problem solving.

- Moss: That's right. Another important thing about science or engineering education at MIT is that, although I suspect a law education or a liberal arts education are valuable in their own right, but perhaps with a somewhat different orientation, there's a great emphasis upon quantitative thinking and quantitative analysis, and I'll get back to that later when we talk about Dave Brower and me and issues like nuclear power.
- I finished as an undergraduate with a bachelor's degree in chemical engineering. Didn't really consider any other graduate schools. Pretty early in my senior year I expressed an interest in continuing at MIT, and they approved my application right away. So I took nuclear engineering as a graduate student, taking the various courses and spending a semester down at the Oak Ridge engineering practice school, which MIT had at Oak Ridge, Tennessee, working in some of the facilities there.
- Lage: And how did you happen to choose that?
- Moss: Well, master's degree students in nuclear engineering had two choices, chemical engineering as well. They could either write a master's thesis or they could attend a semester at the MIT engineering practice school. I'd already done a bachelor's thesis. And I felt that the semester at the practice school would be especially valuable in exposing me to some practical kinds of engineering problems and experiences. And indeed it proved to do that.
- Lage: Why do you think that engineering attracted you more than pure science? It was sort of by chance that you worked into engineering, but it kept you there. Was there a certain quality to the thinking or the work?
- Moss: Well, one factor was that I was looking for a field, a professional career, where people would be judged on their merits and on their ability to contribute. And I felt that science and engineering were such fields. Whereas some other professional and non-professional careers might have been more subject to prejudice and discrimination in judging people on other bases than their ability to contribute. I think that's changed a lot in the last twenty or thirty years. And even at the time I was considering a career that was much better than it was twenty or thirty years before that.
- Lage: Do you mean the effect of social prestige or—
- Moss: Well, in my case discrimination against Jews might have been a factor in some careers.
- Lage: Was there a reason that engineering won out over science? Or should I separate them like that?

Moss: No, it's quite proper to separate them. Engineering involves the practical application of science in that it meant to solve problems. That appealed to me. Solving problems, creating value, building something that wasn't there before that could serve some beneficial purpose. Of course the two are closely coupled and one can't exist without the other, but my instincts made me think that I would enjoy the practical side of it as much as the theoretical side. So engineering I thought would be a good vehicle for fulfilling that.

Lage: And so how did you happen to switch into nuclear engineering rather than chemical?

Moss: As an undergraduate, I took a lot of chemical engineering courses. One of the fundamental courses in chemical engineering. I felt I had a good grounding or foundation in that subject. Nuclear engineering appealed to me because I could take another set of courses in somewhat different field. Although at the time at MIT it was part of the chemical engineering department. And I just wanted to learn. Part of what I've always felt that grades were secondary to learning. Grades would take care of themselves. When you stress what you are learning and made efforts to learn more and more and more. In fact, that indeed was the case.

Lage: I would guess that from talking to you. You got a master's degree, then, in engineering.

Moss: Yes.

Lage: What kind of work did you get into? When would this have been? Let's get a date here.

Moss: My master's degree was in 1958.

Lage: And when did you enter MIT?

Moss: '52. My bachelor's degree was in '56. I left MIT very early in '59. I stayed on awhile after the master's degree. I was a research assistant at the MIT nuclear reactor taking some more graduate courses. My first permanent job was with what is now Rockwell International, the Atomics International Division [AI], which had two primary activities during the years I was there. The first, and I was not involved very much with that, was the design and construction of the nuclear power reactor in Nebraska using inorganic fluid to moderate and cool the reactor. The second, the one that I was primarily involved in, was the design and manufacture of small nuclear power reactors to be launched into space and used as sources of

electrical power for the payloads in space. That was called the SNAP program for Space Nuclear Auxiliary Power.

Lage: This was only on the drawing boards, I would guess.

Moss: It was only on the drawing boards when I first joined the company, but it quickly reached a greater degree of fruition.

I started out as a research engineer involved in the analysis of some of the nuclear physics aspects of these reactors. Again the senior research engineer or the project engineer was responsible for specific projects that were part of the whole. I was the engineer in charge of critical experiments for that program. Critical experiments refers to low-power nuclear physics experiments that are run with nuclear reactors before bringing them up to power and producing a lot of fission products which makes them radioactive. So in a critical experiment program you can do a lot of things that have easy access to the nuclear reactor that you can't have later when—

Lage: Is it the first stage of these experiments, but more easily managed?

Moss: Yes. And you start out with critical experiments with something other than the final reactor design. You start out with much simpler assemblies or building blocks, which you manipulate in various ways and experiment with to learn more about the nuclear physics of the system. And then that leads to being able to specify the design of the actual reactor to be built. Then, when that is built, you test that in other critical experiments. Then you pass on the fuel elements to another facility that brings them up to power and tests the operation—at power.

Lage: It sounds as if you're getting managerial experience in here.

Moss: Yes. I was in charge of a unit and in charge of the critical experiment facility, and then as a project engineer I was responsible for what we'll call reactor transient and destructive tests. You can imagine that the prospective problems with a small nuclear reactor that's launched into space are vastly greater than a big power reactor that sits in one location. You can have a launch abort, and the reactor can plunge into the ground or to the ocean. Or after several years of useful life, we hope, the reactor can re-enter. My job was to find out as much as we could about what would happen under those different circumstances.

In the reactor transient and destructive tests, I headed up a program which designed and built test reactors which were subject to transient and even self-destructive tests at the National Reactor Testing Station in Idaho, a

remote location so that we could verify our theoretical calculations about what would happen.

Lage: You mean you let these things fall to earth then. Is that right, or—

Moss: Well, we didn't actually let an operating nuclear reactor fall. We tested mock-ups of the reactor against impact barriers. We mounted the mock-ups on rocket sleds and slammed them into concrete barriers and plunged them into water tanks to see what would happen. We didn't do that in Idaho. We did that in New Mexico at—

Lage: Los Alamos?

Moss: No, not Los Alamos, a base near Alamogordo.

Lage: That sounds fascinating.

Moss: It was. It was. And it was very rewarding too when you spend several months doing a highly theoretical calculation which makes certain assumptions about physical and nuclear properties of, for example, the fuel substances that we were using in these reactors, and predicts on the basis of these assumptions that a certain result will happen under these unusual circumstances. And then you go out and test it, and indeed that's exactly what happens. Even though a less sophisticated analysis might have predicted something quite different. It's a rewarding process to go through.

Lage: Is that what happened in most cases—that your theoretical analysis was proven to be correct?

Moss: Yes. That's right.

[Tape 1, Side B]

Moss: Well, that was just one of a number of things I was working on. It was, I think, funded with about two or three million dollars a year. This was in the 1960s, so it might have been the equivalent of six to ten million dollars a year now. So that will give you an idea of the scope of the program and roughly the number of people that would today maybe be \$100,000 per person with overhead and supporting staff and so on.

Lage: Tell me what the next step was after Rockwell and how long you were there.

Moss: Well, now we're getting into the period where I became involved in one way or another with the Sierra Club.

[tape interruption]

Lage: Just after we turned off the tape I had asked you if you were still with Rockwell when you got involved in the Sierra Club, and you said yes. So let's go on from there. How did you get involved?

Moss: Let me back up to several years to my childhood again and talk about environmental things. Neither my father nor my mother were what could be called environmentalists.

Lage: There really weren't too many then.

Moss: That's right. The term was not as commonly used then as it is today. But they did like to go to rural area, to the mountains; they liked natural scenery. And when they exposed me to that, I immediately fell in love with that kind of environment.

Lage: Where did you go?

Moss: I remember we quite often went—and when I say we, this was not always with my mother because she was ill for many years during this period—but my father and I and often my brother went to the White Mountains of New Hampshire. I remember staying in the Crawford House in Crawford Notch where I would, as soon as I got there, look around for someone to hike with me on the trails. My father didn't enjoy doing that very much. I found the son of the manager of the hotel who liked to do it. He was a bit skeptical of taking me along on the hikes because he didn't think I could keep up. I was about eleven or twelve and he was probably eighteen or nineteen. But he tried it, and I did keep up, and we had a number of great hikes together—Upper Crawford Path, for example. That just added to and enriched the experience and my knowledge of the natural world.

Lage: I think both Francis Farquhar and George Marshall were two Sierra Clubbers who started out in the White Mountains, if I remember correctly.

Moss: Yes, not surprising at all. I went to a summer camp in New Hampshire during some of my teenage years. It was called Camp Stinson on Stinson Lake. I think it's near Plymouth, New Hampshire, in the southwestern part of the White Mountains. Every Tuesday we would go on a day hike climbing one or another of the mountains. And once or twice a summer we would go on an overnight, staying in one of the AMC [Appalachian Mountain Club] huts, climbing one of the higher peaks. I was so much

involved in reading about the different trails and mountains that pretty soon I was the one planning all the hikes for the camp. I remember I took them on one hike that turned out to be up the mountain along a telephone pole going up to the fire tower—the telephone pole line. [chuckle] That was probably one of the low points of my hiking planning period. I enjoyed it but—

Lage: No one else did!

Moss: —some of the kids were complaining. [laughter]

Lage: I'm glad we went back and picked this part of your childhood up, because in the first pass through we didn't get it.

Moss: All this was on the level of responding very positively to the beautiful scenery and the environment. But on an intellectual level I think the greatest influence on me was the book *This is the American Earth*—the first Sierra Club exhibit-format book with the wonderful photographs by Ansel Adams. And the great text that kind of established a framework for thinking about the environment.

I joined the Sierra Club in 1959, the year I moved to California. The Sierra Club was not as much of a national presence then as it is now. I knew about it before I moved to California, but the move was my own impetus for joining the Club.

Lage: How did you know about it? From the book *This is the American Earth*? I can't remember when that book came out actually. [published 1960 by the Sierra Club]

Moss: It was around '58 or '59 I believe. Well, from the book, but even more than that from just reading. I read some of the major newspapers every day, subscribed to journals like *Science* magazine, *Chemical Engineering News*, and a whole bunch of others. In the news sections, I would occasionally read about something the Sierra Club was doing.

Lage: It just wasn't as much in the public eye at that time.

Moss: That's right.

Lage: But I'm sure it came up. The Dinosaur National Monument controversy.

Moss: For someone who's interested in environmental issues, it was not difficult to hear about what the Sierra Club was doing. I don't recall reading a lot about the Dinosaur controversy at the time it happened, although I learned

a lot more about it later. It just seemed like the appropriate thing to do to express my own values and by that time I had grown to appreciate that each generation in turn had to protect and preserve these areas that I valued so much. And do their part to accomplish that.

Lage: Did you join at the time when you had to have one or two sponsors? Or did you have a sponsor?

Moss: No, I don't remember that.

Lage: I can't remember exactly when that was discontinued.

Moss: Yes.

Lage: I think it was after '58 or '59.

Moss: Yes.

Lage: You don't remember any particular person who fostered your entry?

Moss: No, I don't. If we could go back [chuckles] into the files and take a look—

Lage: For a long time David Brower was just signing applications. You know, when they would come into the club, he would sign [as sponsor].

Moss: That might have been it. Of course I didn't know David at the time I joined the Sierra Club.

Lage: And you were living where?

Moss: In Los Angeles. My offices were in Canoga Park in the San Fernando Valley. During maybe two or three of those years, I would commute to the hills just west of the San Fernando Valley—the Santa Susana Mountains, where we had our test laboratories for nuclear experiments. Not the reactor transient and destructive tests, because they would produce significant emissions and radioactive materials. We did those in Idaho. So I would fly up there, later in the period I was with AI. And for the actual experiments.

Another influence was the smog in the L.A. Basin. I remember my feelings at the end of the day usually driving down from the Santa Susana Mountains to the San Fernando Valley and seeing a blanket of smog over the valley. Thinking about living in that polluted environment and how that had to change.

During this time, the 1960s, 1964 and 1965, I had made the acquaintance of a very active person who was not an environmentalist at all—he

happened to be a real estate broker in the Kern Valley near Lake Isabella in California. And largely through his encouragement, I bought some land in the Kern Valley which resulted in my learning more about environmental issues in the southern Sierra Nevada and meeting some of the local people like John and Pauline McNally and Ardis Walker, who were active in the effort to keep the Forest Service from logging virgin forest on the Kern Plateau in the southern Sierra. I admired what they were doing and appreciated the value of preserving this natural environment. Although my intellectual awareness of the importance of preserving diverse ecosystems was not the same then as it is now. They invited me to some of their group's meetings, especially—

Lage: I'm just wondering what group. Was this a local group or a group of the Sierra Club?

Moss: A local group working in loose collaboration with the Sierra Club and its leaders. I think it was called the Kern Plateau Association. They thought it was valuable for me to be involved, I guess because by that time I was a local landowner. Although I didn't live in the area, I owned land. And secondly because of my engineering and economics background and analytical skills, which might be useful in the effort. They invited me to what became an annual meeting of the Kern Plateau Association to bring together people to talk about the issues. That is when I first met Dave Brower. They invited Dave to that meeting as well.

Lage: Would this have been '64 or '65?

Moss: Probably around '65. I would say '65. But I could be a year off one way or the other. I remember Dave arrived at the meeting a bit late. He didn't come up and introduce himself. He just left his car. And on a little downslope below his car, he started loading film in his camera. So I walked on over and introduced myself, and he was polite, but my name didn't make any connection. There was no reason for it to. But then I went my own way and listened to what was going on at the meeting.

But later in the day, he came up to me again and said that he didn't realize that I was the person that Pauline McNally and Ardis wanted him to meet. We talked a bit about the issues, and he told me how he looked at them. I found that a valuable experience.

We followed each other in our cars down to Bakersfield. Dave was leaving from the airport and then I was driving back to L.A. Dave told me after the drive that he was impressed that I negotiated the canyon road down to Bakersfield with such great skill. He didn't see my brake lights go on once. Little did he know that I had a blown fuse! [laughter] So even

when I was using the brakes the lights didn't go on. I checked it after that ride and found the fuse was blown and the lights weren't working.

Lage: Now you say his analysis was useful to you. I'm sure that this'll come up during the course of this interview, but as you describe your own mode of thinking, and as I stereotype Dave's mode of thinking, they seem very different.

Moss: They do seem and are indeed very different. I do want to get into that in more detail later. Dave is more of a qualitative thinker, and I am more of a quantitative thinker. I like to put numbers on things and make judgments based on quantities as well as qualities. Dave is much more poetic and artistic in his temperament and in his outlook and makes judgments based upon what he thinks is right or wrong. Of course, I do some of that too. But if the quantities are important in making that judgment, I am much more inclined to look at it that way. And to make the decision on that basis.

Lage: In this first meeting, though, you did respond to his message.

Moss: In the first meeting, his message was that the Forest Service was not protecting the forests. The Forest Service was dominated by people who had come up through the ranks of, first, the educational experience of college and university schools of forestry in which commodity values were emphasized. And then that was reinforced within the culture of the Forest Service by positive messages being given to people who worked in that side of the Forest Service's operations. And rather negative messages were being given to people who worked in other aspects of the forest operations—like preservation. They didn't say it in quite those words, but that's the way I would say it nowadays.

And that made sense to me. At least I was willing to give it the benefit of the doubt while exposing myself to the ideas of other people and reading more about it and learning as much as I could.

I continued to help the local people in their efforts as much as I could, although I don't regard the work I did on the Kern Plateau as being of major influence on the outcome. I think that other people—

Lage: But it was your first exposure.

Moss: Yes, my first exposure, and I helped out where I felt I could contribute something that other people perhaps could not.

A few months after this experience, Dave called from, I guess, San Francisco or wherever he was travelling at the time and asked me to attend a meeting at the Grand Canyon on the South Rim where a number of Sierra Club people would be presenting the case against the building of dams in the Grand Canyon. This came about because a Richard Bradley article had appeared in the *Reader's Digest*. An article critical of the dams. The *Reader's Digest* had received a lot of criticism about that article from the water and political establishment of the western states. And the *Reader's Digest* was concerned about this criticism. It felt exposed and isolated. The *Reader's Digest* is not known as a muckraking journal.

Lage: No. [laughter] Not used to too much controversy, I'm sure.

Moss: That's right. And people from Mo [Morris] Udall to Barry Goldwater to the governors of some of the western states were telling them that they had made a terrible mistake and done great injustice. So they decided to sponsor a workshop on the issue on the South Rim of the canyon. I'm not quite sure what they expected to happen at the workshop. The way Dave explained it to me, when he first called, was that this was an opportunity for the environmentalists to present the issues involved, and why they felt as they did, to a larger national audience of media people. So the *Reader's Digest* thought when other media people became educated on this issue they could go and do their own thing and maybe the *Reader's Digest* wouldn't be the sole brunt of all this criticism.

Lage: Oh, I see. Did it have people from the other side involved?

Moss: Well, yes, we did. I don't think it started out that way. But the political and water establishment figures started telling the *Reader's Digest* that they couldn't do this—that they should be invited and given equal time on the program to present their side of the case. And the *Reader's Digest* agreed to do that.

Well, I showed up at the meeting a few minutes late, after it had first begun. Dave was on the podium. I was kind of grungy because I had slept out the night before on my drive from Los Angeles—slept out by the side of the road, on a spur dirt road—I hadn't shaved. And I thought I was there an hour earlier than I really was because in Arizona they do funny things with daylight savings time. I guess—yes. They were an hour later than California was. And as I walked in, Dave looked up and saw me and introduced me as the Sierra Club's expert on the nuclear power alternative to the Grand Canyon dams. Which was the first I'd heard of that.
[laughter]

I didn't say much—I probably didn't say anything—during the next two or three days of the meeting. I just listened and formed the opinion that a few aspects of the economic analysis that the Bureau of Reclamation had done to justify the dams were probably not justified. So when I got back to Los Angeles, I contacted Alan Carlin, who was also at that meeting, and Jeff Ingram, who was the Sierra Club's southwestern representative in, I think, Tucson, and discussed it with them.

Lage: And you met them through the meeting. Both of them.

Moss: Yes, that was the first time I had met them. Alan and I worked on an economic analysis of those dams, while making some of the unreasonable un-economic assumptions we were forced to make by government protocol. For example, selecting an unreasonably low discount rate of about 2 and 7/8 percent to do the cost-benefit analysis when the government itself was paying, I don't know what in those days, six or seven or eight percent.

Lage: But the government itself had selected the 2 and 7/8.

Moss: That's right. But even using that terrible assumption, we were able to show that other alternatives, specifically a nuclear power alternative, built in those years could provide power at lower cost than the dams. The dams, as you must know, were proposed not to store water, but to produce hydro-power to sell at a profit—to act as a cash register—that was the phrase of the Bureau of Reclamation—to finance the other new dams to be built and an aqueduct system to be built to bring water to central Arizona, the Central Arizona Project.

Lage: So these dams were just for hydro-electric—

Moss: Just for hydro-electric, not for flood control—

Lage: —in order to finance dams someplace else?

Moss: —and not for irrigation, because Lake Mead and Hoover Dam below the Grand Canyon had ample storage capacity for any water that got through the Grand Canyon. You didn't need any storage in the Grand Canyon. The walls to the Grand Canyon were so steep that the volume of water in storage in the reservoir would be rather low anyway. It was just an economic advantage the bureau alleged to have a government-financed dam which would sell hydro-power at a profit. The profit to be used to subsidize the Central Arizona Project.

I think there were two key aspects to our analysis. The one that I worked on with Alan was the economics of the alternatives in producing power.

Lage: Many alternatives or just nuclear?

Moss: Well, we focused on the nuclear power alternative because we felt, and I still do, that it had fewer environmental problems than the coal-burning alternative. In fact, the coal-burning alternative was the one that was selected by the bureau after we succeeded in blocking the Grand Canyon dams. And the Navajo [Generating Station] at Page was built with poor emission controls.

Lage: Is that Four Corners? Or is that another one?

Moss: No. It's another one. The Four Corners were built even earlier. The Navajo plant is a few miles, I guess west of Page, Arizona. No, it's not west. It's just above the town. Just above the entrance to the Grand Canyon. It has been the subject in the last year or two of negotiations—largely successful negotiations—to enter into a settlement agreement to put on pollution control equipment to very substantially lower emissions from that plant. One of the reasons why the Bureau of Reclamation and the utilities like the Salt River Project were willing to consider this recent initiative was because there was an economic advantage in doing it brought about by the new program of trading allowable emission permits. Which is another interest of mine I want to get back to later—

Lage: It comes up later.

Moss: The coalition to tax pollution. Anyway, Alan and I and I think Dick Ball, who was also at RAND Corporation.

Lage: Now, Alan Carlin was at RAND.

Moss: Yes.

Lage: And Jeff was with the Sierra Club.

Moss: Yes.

Lage: Were Alan and Jeff also MIT people? I've heard you referred to as the MIT trio.

Moss: Yes, that's right. I know Jeff was, and I believe Alan, I think as a graduate student. I think he went somewhere else as an undergraduate. MIT has a very strong economics department. The analysis I worked on with Jeff,

and Jeff took the lead in this and did an excellent job in doing some of the calculations, was that it turned out ironically that the new dams to be built in the Grand Canyon, the so-called Bridge Canyon and Marble Canyon. Those dams were not the key factors in subsidizing the Central Arizona Project. One, we did the calculation that the Bureau of Reclamation did and took out both the costs of and the revenue from the two Grand Canyon dams. At the end of the fifty-year period, you ended up with about the same amount of money with the Central Arizona Project subsidized as with the dams in the calculation.

Lage: So the cost of the dams cancelled out their benefit?

Moss: Yes. And what was paying for the Central Arizona Project were hydro-power sales from existing dams on the river, most notably Hoover Dam, but also to a lesser extent Parker and Davis dams.

Lage: Goodness. I hadn't heard that brought up so much.

Moss: Yes. But you haven't interviewed Jeff yet.

Lage: That's right. [chuckles] Did you testify, or—

Moss: Yes. We went back first to the—the first committee was the House Interior Committee. The ranking Republican member of that committee was Craig Hosmer. He was also a leading light on the joint committee on atomic energy, incidentally. I testified with Dave and I guess Jeff. I'm not sure who else was there. Dave would probably remember. We presented this analysis. Dave talked about the environmental and ecological issues. I think we had a fair impact on the congressmen. I say that because those congressmen who favored the dams seemed to be somewhat upset and then launched a kind of personal attacks that I described before—

Lage: So that was one of the instances where you got these personal attacks.

Moss: Yes. Craig Hosmer was one of those who did it. He started out after I testified talking for about three or four minutes about how in all of his career in the House, he had never come across such prevarication, such material spun out of thin air, and so on. He had a number of colorful phrases. [chuckles] You know, all of this time while he was going into this discourse, he didn't ask any questions. That was why after he finished I said that I would be glad to respond to any questions he had about specific issues in the analysis. [laughter] Which, of course, didn't make him any happier. [laughter]

Lage: I can imagine.

Moss: Incidentally, just to follow up on that before I forget—about three or four years later at a party at the house of another congressman, Ed Reinecke, who represented a district in California, I met Craig Hosmer in more of a social setting. The issue had been decided then. He remembered me and he congratulated me on my testimony and said—

[Tape 2, side A]

Moss: I suspect that Alan Carlin was there to give testimony, but I'm not positive about that. And then, probably two or three months later we testified before the Senate Interior Committee. There the ranking minority member, and very strong proponent of the dams, was Gordon Allott of Colorado. I don't know why the Republicans took this role, I don't think of environmental protection as a party issue, and in fact I think there is a lot in the environmental agenda that a conservative would respond to, conserve values and resources. In fact the roots of the environmental movement, at least one portion of it, became labelled with that word, conservation.

Gordon Allott was incensed at our testimony and I guess, by that time, he had been tipped off by his House counterparts. He didn't choose to debate us on any of the issues on the merit. His big thing was that the Sierra Club was involved in a conspiracy to pay the travel expenses of people like myself to come to Washington to testify.

Lage: [laughter] This would be the kind of thing he brought up at the meeting?

Moss: In testimony. If you go and read the hearing record, you'll see that he asked each of us who paid for our tickets. It was just absurd in the light of, first, the facts that we were not paid for our time and our efforts.

Lage: Even if you had been, I wouldn't consider that a travesty.

Moss: Right. Even if we had been, we certainly weren't going to do anything that would tarnish our reputations for the few dollars the Sierra Club could pay us for our time, if they chose to do it—which they didn't [laughter]—and the subject never came up in discussions with the Sierra Club, with Dave Brower or other Sierra Club leaders. Ironically, I remember when Dave called me to tell me about the Senate testimony and the schedule for the hearings, I said I could do it, and he said "Okay, I'm getting tickets, air tickets, for all of us so we can travel together and discuss our testimony on the way out there."

When he told me that, a few days later, before the testimony, I sent the Sierra Club a check for, I think three hundred dollars, as a donation to

cover what I felt would be the expenses for my tickets. [laughter] And then I go back to Washington and Gordon Allott is attacking me and the others for somehow compromising ourselves and being, in effect, economic prostitutes.

Lage: Had the issue of the tax deductibility [for donations to the Sierra Club] come up by this time? The ad and the IRS.

Moss: I'm not sure when the IRS acted. It may have been a few months after this testimony, but I'm not positive about that. I doubt that the tax deductibility issue would have come up by virtue simply of the Sierra Club paying travel expenses.

Lage: They were more incensed with the ads.

Moss: Yes, that's right. Grassroots lobbying. And grassroots is a dirty word [laughter] in some circles.

Lage: It wasn't even in that much used at the time, really. And the grassroots lobbying was nowhere near as extensive as they have now.

Moss: That's right. I guess it started, as I understand it, with the Dinosaur National Monument campaign, but only, you know, on a limited scale. The Grand Canyon campaign was a major expansion of that kind of effort, both in the use of advertising and in the use of direct mail appeals, and in the use of the media.

Lage: Did you testify those two times, or was there more involvement?

Moss: Yes, there was a lot of other stuff. I remember doing TV editorials on the issue on a Los Angeles TV station. Actually, in rebuttal to other editorials they had made saying this was a good thing for the economy of the West and the securing of additional water supplies for Southern California.

Lage: Did you ever have a discussion with Dave Brower at that point about nuclear power, or was it more just a convenient alternative?

Moss: I think even during that time Dave had misgivings about nuclear power. He didn't understand it as well as he understood power from fossil fuels.

Here we get into a difference between qualitative thinking and quantitative thinking. When I approach an issue like that I look at the pros and cons and the consequences of each of a number of alternatives, and look at that not only in a qualitative way but also a quantitative way: how many pounds, how many tons, how much toxicity, how many people are at risk,

what is the probability of distribution for the hazards, the number of people who can be affected by a single incident, and the consequences of that incident.

Whereas Dave looked at it in our discussions—and I remember one series of discussions we had on this on a trip that he invited me to in Glen Canyon, when it was filling up with water behind Glen Canyon dam but before it had reached a high level so we were still able to get into some of the beautiful spots that were remaining.

Lage: This was a rafting trip, or was it too late for that?

Moss: It was too late for that; it was not a floating-down-stream kind of trip, but we were on the lake, the reservoir. Ken Sleight organized it, or at least Dave asked him to organize it—Ken is very active now in the Southern Utah Wilderness Alliance. He is a rafter and outfitter in that area and conservationist. Two people from *Life* magazine were along; that was the reason for organizing the trip. They were doing a story on Dave and the Sierra Club. One of them was a photographer, the other one was involved in—

We visited these places and talked about different things, and my conversations with Dave about nuclear power, and this by no means was a major portion of the trip, just one of the things we talked about among others was nuclear power as an energy source in the context of other energy sources.

It became apparent to me that Dave was comfortable with energy sources that were familiar, that had been used by man for a long time, and he was not at all sympathetic to the idea that the scale of use would affect the environmental outcome and the hazards to people. I talked, for example, about using wood, a renewable resource, as a source of energy and argued that if everyone had their own campfire or their own wood burning fireplace or wood stove as a primary source of heat or cooking that the result would be environmental unacceptable.

Lage: That is now becoming accepted thinking, isn't it?

Moss: Oh yes. Dave in his way didn't say he agreed or he disagreed, but he just didn't give much weight to the argument that something that man had lived with for thousands, or tens of thousands, of years posed as much of an environmental threat as something completely new, like nuclear power. Well, in some ways nuclear power is completely new in that man is harnessing the forces of nuclear reactions, but in other ways the presence of radioactive materials in the earth's crust is very old, and radioactive

materials are very widely distributed and are not distributed in a way that a trained engineer would choose to distribute them if he wanted to isolated them from the environment or from people.

Lage: You mean radon?

Moss: Well, radon is one example of that. I felt at the time, and still do feel, that with the reprocessing of nuclear fuel, which is another big subject we can come back later to if you want, the separation out of the radioactive materials and the isolation of them in fairly small quantities in physical terms, in terms of pounds or tons and in terms of the volume of space that you need, and the engineering of depositories that isolate this from the human environment and from the natural environment, at least the natural environment that we value the most—I'm not talking about six thousand feet underground in a single formation—that this was a probably lower risk to people and humans than was the growth of some of the fossil fuel alternatives.

But Dave was not the only one who engaged in qualitative thinking on issues like this. I would say Martin Litton is another example of that. They are essential in contributing to an effort like the Sierra Club and to the mobilization of public support for environmental issues. The Sierra Club would not have developed as it did, or would not have developed into being an effective force, without them. But I think their strengths at times became weaknesses and lead them to take positions which were not supportive of a primary value of protecting the environment.

Lage: Were there other things besides this issue of nuclear versus fossil fuels that you are thinking of, or are you primarily thinking of that one issue?

Moss: Well, that was the most dramatic example, and it came to a head while I was president of the Sierra Club in a board vote on changing Sierra Club policy, but if I thought some more I would probably come up with a few.

Lage: We'll probably come up with them as we move along. Should we get you on to the Sierra Club board; is that the next step?

Moss: It's a reasonable step.

Lage: When you went on this trip behind the Glen Canyon dam, do you remember the date of that? Were you a board member yet?

Moss: No, I was not a board member, I don't think I was a board member then. I joined the board in 1968.

- Lage: And how did that come about?
- Moss: I had been attending a number of Sierra Club board meetings in connection with my work on Glen Canyon. So I got to know some of the directors and some of the other volunteers active in the Sierra Club. A few of them approached me early in 1968, I think it was, and asked if I would be interested in running for the board. I'm sure that Dave was one of them, but I think there were others as well. Granted, of course, that Dave was not a director, he was executive director.
- I agreed to do it because I like the kinds of issues that were being discussed by the directors and felt that I could contribute a somewhat different view point, and by bringing the kind of quantitative and analytical skills to some of the issues that were under discussion, maybe help develop Sierra Club policy on those issues and help the club become more effective in achieving its objectives.
- Lage: If you had been attending meetings you must have seen the rising levels of tension surrounding the board meetings.
- Moss: Yes.
- Lage: How did you feel about getting involved in that? What contribution you could make to that?
- Moss: Whatever apprehension I felt was not sufficient to dissuade me from running for a seat on the board. I realized at the time, as I still do, that working in an organization like the Sierra Club is not a very orderly process. It can get unruly and people can become unhappy with one another for various reasons, some good, some bad. My sense of organizational dynamics was by no means as developed then as I hope it is now.
- Lage: You were quite young actually, early thirties?
- Moss: About thirty-two. I did not have a lot of experience with volunteer organizations. My motivation was to use my skills, such as they were, to help preserve environmental quality and preserve these natural areas that I valued. I was very much results oriented, not process oriented. Other people making important contributions to the club and other volunteer organizations were much more process oriented.
- Lage: Tell me what you mean by that.

Moss: I think the worst aspect of it, and there were some pretty bad aspects, but the worst aspect is that they tend put a higher value on achieving a position of prestige, value, and power within the organization than of accomplishing a given result. The best aspect is that they become the sustaining core of an organization because they are concerned about the committees and the operations. They have a personal stake in sustaining it so they help it to withstand stresses from the outside, or even from the inside, during critical periods.

Lage: So maybe it takes both types.

Moss: Yes, it takes all types to make a volunteer organization run and to be successful, and the Sierra Club had all types, as any large organization of its kind would. What we saw during that period was a bringing to a head of some of the, up to then, more hidden frustrations and anxieties which had developed over a period of several years.

Lage: Did you think of yourself as coming in as part of a pro-Brower slate?

Moss: No.

Lage: Which is the way I think others may see you.

Moss: Yes, they might.

Lage: Somebody referred to you as a Brower disciple. You don't seem like the sort that would be a disciple.

Moss: It's a person who didn't know me very well.

Lage: You didn't see yourself that way.

Moss: No. But I did support Brower in a number of key votes that were held during that period. My reasoning for doing it was that the positive contributions that Dave was making outweighed the negative aspects of his executive directorship.

Dave did have, and probably still does have, some negative aspects to his personality and to the way he operates in the context of a large membership organization. He is absolutely dedicated to protecting the environment, as I am and as probably all the directors were, but with Dave, once he decided how that should be done, he was generally intolerant of differing views on accomplishing the general purpose. He was certainly intolerant of tactical compromise to achieve a strategic result. I don't like compromise, but I can see the value of occasionally

withdrawing from a battle in order to win the war. More so now than maybe when I was thirty-two. [laughter]

Lage: That does happen over time. Are you thinking about battles within the club now, or conservation and environmental battles?

Moss: Both. Usually the two were combined, as they were, for example, with Diablo Canyon when, before I joined the board, the board had approved in a majority vote—actually I think Martin Litton was the only dissenter—to endorse the use of that site as the location for a nuclear power plant. Now as I recall, Martin was not present for that first vote, but then at the next meeting he was furious at what the board had done, based on what he felt was insufficient information, and I think I agree with him.

It was not pointed out when some of the local Sierra Club people made their pitch to the board at the first meeting that the reactors would be "hidden in a slot in the canyon," how great the impact would be and that this was the only stretch of coast between Los Angeles and San Francisco where both the road and railroad did not hug the coast. Neither was present in the Diablo Canyon area. It was not wilderness; it was ranch land and pasture land, but it was largely undeveloped and of enormous environmental value, and could become of even greater environmental value. And I accepted those arguments.

Lage: You were thinking scenically, not—like later it became a nuclear power issue.

Moss: In my mind it was always a location issue. That was not the right place to put a nuclear power plant, or any industrial facility. I would not want to put a residential development there, anything that would alter the natural environment for the worse. In fact, I got together with Alan Carlin, and I think Dick Ball, but I am not sure about Dick on this one.

The reason I hesitated before about Dick's role on Grand Canyon analysis was that I don't remember whether he did one or the other, but I don't think he was with us on both of them.

But we did another economic analysis showing you could put some nuclear plants in the San Joaquin Valley, along the western edge of it, using agricultural waste water—which would otherwise contaminate low-lying elevations in the San Joaquin Valley, as we later found out around Kettleman [City]—and evaporate some of the waste water to concentrate the waste and dispose of it in a more economical way, and usefully employ that water's ability to absorb heat to act as the cooling system for a nuclear power plant.

- Lage: How did you come up with that idea, and the realization about the toxic quality of that agricultural water?
- Moss: We knew it wasn't water you wanted to drink or keep around. Plus the Bureau of Reclamation and the California Water Project plan had proposed building a very expensive drain, the San Luis Drain, to take that water into the Sacramento Delta, which I didn't think was a very good place for it either. When you use irrigation water in a place like the San Joaquin Valley, there is a lot of evaporation that goes on, salts are leached out, the water has to go someplace. It was just putting things together.
- One of the things that I like doing, and I think I am pretty good at doing, is taking information and techniques and technologies from diverse fields and piecing them together in a logical way to come up with concepts or projects. I'm still doing that. I think I came up with that idea and discussed it with Al, and we did an economic analysis. He did most of the economic analysis part of it, showing indeed that this could be done, and it was probably a little less costly than building the Diablo Canyon plants.
- We sent a copy to the PG&E people. A few months later discussed it with their engineers, and they said "Sure, it looks fine. We could do that."
[laughter]
- Lage: But they didn't.
- Moss: But at the time, they were experiencing rapid exponential rates of growth in electrical power consumption. Of course, we didn't think that would persist into the future, or should persist, but they felt they needed every single viable site in California that they could get, and they had Diablo Canyon. They had bought the land. I think by that time they had probably gotten at least their preliminary permits. And they weren't about to give that up, even if they had another site someplace else in the wings.
- Lage: They could use it too.
- Moss: Yes, they could use it too.
- Lage: Did you think the Diablo question was central to the discontent about Brower or the final break?
- Moss: No, I don't, and I will tell you what I think is central in a minute.
- The Diablo Canyon issue was very aggravating for the club, because the board made a decision, and then it was being told by a few people who disagreed with it that they had done a stupid thing. Slowly as this issue

was presented again and again to the board, more and more of the directors decided that it probably was a stupid thing, and voted to reverse the decision. That was embarrassing for the directors, who had voted the wrong way to start with, and especially embarrassing for those who had some discussions, I think, with Pacific Gas & Electric Company.

Lage: Are you thinking of William E. Siri? It was under his presidency that it happened.

Moss: Yes. And who had some of their personal credibility on the line, that they and the Sierra Club could make a decision and stick to it. So it was obviously a source of deep unhappiness and unpleasantness within the Sierra Club, and resulted in an element not only of disagreement on the issue but of personal attacks on the individuals involved. Which I think was very unfortunate. I think all the people involved were acting in a way they perceived to be protective of the environmental quality over the long run, although you might say that some were more willing to compromise on that issue than others to achieve what they thought was a strategic purpose. I don't think that would have driven Dave out of the Sierra Club by itself.

I think a majority of the board began to feel—and Diablo Canyon was only one element of it; the so-called international program of the club was another element of it—that Dave was not susceptible to direction from the board, and they were indeed a board of directors. It was their reason for being on the board, as well as, some would say, especially some of the lawyers, a statutory obligation for them to indeed direct the policies and broad strategic purposes of the club, and to exercise due diligence in that exercise of their responsibilities. After a period of a few years of dealing with Dave on issues like that, they had passed the point of no return. They couldn't continue to work with him because he was not acting in the appropriate organizational context.

Lage: Did you see this at the time, or is this looking back on it?

Moss: Well, you know the Sierra Club was the first board of directors I served on. I've served on a lot of boards since then, and I soon came to realize that there are other ways for an executive director to—

[Tape 2, Side B]

Moss: I came to realize, and well after this experience, that some of the most influential and powerful presidents and executive directors that I worked with in my capacity as a member of the board, were not confrontation at all and could achieve all or most of their purposes with a different style. A

style of keeping the board well informed of events as they unfolded, of the reasons for believing that certain things were better than other things; developing a strong foundation and good working relationships with board members so that it was more likely than not that we would give you the benefit of the doubt.

I think Dave could have done that more diligently, although, of course, he was working with a number of strong people on the board, strong personalities who could not have been reasonably expected to agree with him on all the issues. When that happened and when a majority of the board felt that way, I believe that he should have retreated—I believe more strongly now perhaps than I did at the time—and perhaps, if he felt strongly about it, brought the issue up again, but in a slightly different context when the time was more right for that issue.

- Lage: What you say sounds eminently reasonable, but not very possible in the context of that time. It seemed like there was so much tension and ill-feeling already.
- Moss: We had a number of strong personalities interacting with each other in a way that became destructive to the organization and, to some extent, the issues.
- Lage: How did you experience getting onto the board in the midst of these long-standing divisions?
- Moss: Even though this was going on, I always gave first priority to board's involvement in the issues, on specific issues, and that is where I focused my energies. I regarded all of this as an annoyance, and something detrimental to the ability of the club to accomplish its primary objectives. But I had lots of annoyances and lots of aggravations trying to accomplish these results, mostly from people outside of the club who were on the other side of these issues. Those were my primary concern. So during this period, my involvement on the board with regards to this issue was one of just trying to figure out what would keep the club in the best position to be effective on the issues, and it wasn't always a black and white decision.

As I have said before, I think each of these individuals had both good arguments and maybe some bad arguments to support their position—the organizational issues position. I end up voting to support Dave on most of the issues that came before the board, but I was not entirely happy with the situation that had developed, and I would have liked to have seen a more positive and friendly atmosphere and environment in which to conduct club business. When Dave did leave as executive director, I regarded that as a closed case. That is, he would find a suitable vehicle for his talents

and energies and skills, elsewhere he would be effective, but that his role was not to be executive director of the Sierra Club, the head of the staff, and that was probably for the best.

Lage: Did you see a break in continuity at that time, in terms of the club's aims and direction? Would you call that a turning point in the Sierra Club history?

Moss: No, not at all. I really believe that some of the people who left with him to give their energies to Friends of the Earth felt that way, and they held up the international program as an example. I don't think it was at all; I think a strong majority of the board would have supported an international program if they felt the club could afford it.

That was what, I think, was the thing that did Dave in more than anything else, the fact that he got the Sierra Club in a position where we had run up large deficits, and that made a number of the directors really nervous about what they were acquiescing to, in terms of Dave's actions leading to these deficits and a threat to the continued viability and effectiveness of the club. I should have had concern with this, talking about later, the year before I took over as Sierra Club president the club ran a deficit of more than \$500,000, which was a lot of money for the club in those days. I guess it still is but even more then.

Lage: But the deficits continued when you left.

Moss: Well, it didn't in the year I was president. We ran a surplus of \$250,000 in my year, in part because of actions that I initiated or catalyzed and took myself. I think I brought a number of organizational management skills, not all of them on my part but the people I brought in to cope with that problem. If Dave had been more sensitive to the need to balance the budget and really build up the Sierra Club financial resources for the good battles of the future, I don't think the board would have kicked him out. I think they would have gladly gone along with him on some of the more ambitious and financially dangerous aspects of his program, among them the publications program and the international program.

Lage: It seems like that the administrative sophistication was much less.

Moss: Much, much less. As a matter of fact, after Dave left the situation got worse not better under—what year did Dave leave?

Lage: He left in 1969, and Phil Berry became president and Michael McCloskey executive director.

- Moss: Phil Berry was president for how many years?
- Lage: Two years and then Ray Sherwin.
- Moss: Under Phil and Ray the financial situation got worse and worse, culminating in the last year of Ray's presidency when we ran a more than \$500,000 deficit. That was the irony of it, that the people who were most vigorously against Dave because of his poor management abilities—and I think there is a lot to be said for him having poor management abilities, although he had great inspiration abilities but there is a difference—had not very many of those abilities themselves, and produced a situation where the financial viability of the club was further threatened.
- Lage: That is ironic, but they more or less continued, it seems to me, with the environmental program, the expansion onto those new environmental areas.
- Moss: Yes, they did. I don't think that was an issue. The issue was money. Whether the Sierra Club was being managed in a responsible way. Whether it was living within its limited resources. Now Dave's viewpoint on this, with some good reason to have this view but I think he overdid it, was that if we did what we had to do on these environmental issues, in our being the United States' and world's leading organization for preparing these positions and issues, then the money would take care of itself: people would donate money, join, leave us money in their estates.
- Lage: And it did happen to an extent.
- Moss: To an extent it did happen, but not as quickly as he was hoping. He allowed the expenditures to outpace the income. He did give freer rein to all the truly skilled staff people; Denny Wilcher comes to mind.
- Lage: Was Denny [Wilcher] with the club then?
- Moss: When I became active in Sierra Club affairs, I think he was there, and I assume he was there for years before. Denny impressed me as a guy that had been around almost forever, but I could be wrong about that.
- Denny was an outstanding fund raiser. He did it, not in the first instance by asking people for money, but by finding out more about them, about the people and their interests. Why they had contributed fifty dollars to the Sierra Club when the membership was only about nine dollars or twelve dollars. He got to know a lot of people that way and found out which issues motivated them, what they would respond to. Then when something came along that he felt was close to hearts of any one or groups of these

people, he would let them know of an opportunity, and that would often result in very significant contributions, a thousand dollars, five thousand dollars, ten thousand dollars, or more by the individual who he had gotten to know and understand and to share in the values of the club.

But even that wasn't enough to overcome some of the new projects that spent a million—not only the new projects, but during Dave time, and during the two succeeding presidential administrations, I don't think much had been done in terms of weeding out marginal activities.

That is another thing I brought to the club during my administration, making very conscious decisions about priorities and putting the money where we felt we could get the most impact, and cutting to zero, if we had to in order to get that money raised, activities that we felt were marginal, certainly not less important in the minds of certain people who had a lot of objections to this, but something we felt could best be carried on the local level perhaps with local support or that maybe within the strategic purpose of the club, what it was trying to accomplish on the big issues and not support those other things.

- Lage: We have a lot to discuss when we get to your presidency, I can see that. Just as a little aside, Dave Brower in his interview [1980] says that he showed you the Earth National Park ad, and you said "Go ahead and run it." Although he recognized that you had no authority to do so.
- Moss: [laughter] Was I a director at the time?
- Lage: Yes. That was the ad that was the final straw, for Ed Wayburn at least.
- Moss: Oh, I see. If Dave remembers it that way, that's probably the way it happened. It doesn't stick in my mind as being an event—
- Lage: I just wondered if he often used you as somebody to bounce some of the problems off of, asking you how would the board take this.
- Moss: If he did, that was probably a mistake on his part, [laughter] because my political sophistication in board affairs was not that great at the time. But I was very much of an activist, and even now I would probably say, whether or not to run an ad is not a board level decision. [If other people in that circle—?] if they want to run an ad, I don't think we would bring it before the board for discussion.
- Lage: That is another thing that comes out when we look at this thing from a greater distance, the board was so involved in day-to-day activity, that later in the 1970s they began to drop as the organization got larger.

- Moss: Now, my memory is a little hazy on this point, but if at the time the board had put Dave on a short lease with regard to authorizing expenditures, because they were concerned with the deficit—
- Lage: I think they had, I think that was part of the problem.
- Moss: If they had set up specific expenditure limits that he must not exceed without board approval, that would be another story. I don't think they did at the time. I don't think he violated a very explicit numerical guideline of that nature.
- Lage: Did you get involved in the election of 1969 with the Brower slate? You were already a member of the board. Did you get involved at all in trying to get a Brower slate elected?
- Moss: No. I think the subject would sometimes come up when I had discussions with individual Sierra Club members and they would ask me what was going on, and I would explain it as best I could, but I didn't go out and campaign for a Brower slate. I think I may have voted for it, but I am not even positive of that.
- Lage: You didn't help choose the slate, or is this just not a style of electioneering?
- Moss: I don't recall. All this was about twenty-five or thirty years ago. [garbled]
- Lage: What I do remember in Dave Sive's interview, he said that it had been his suggestion that you do bullet voting, I guess pick fewer people and just vote for those few people, and that you and Dave had not wanted to do that, that you wanted a full slate. I don't know if this is important.
- Moss: This is really getting into a hazy part of my memory, but there might have been some discussion like that. I don't know, I don't remember it. If there was I probably would have said I didn't think that was a better approach than having five good candidates, and they would have to know that each of those five would support Dave as executive director, and to continue as executive director if that was the issue.
- Lage: I'm not sure if these things are terribly important now.
- Moss: I had a lot of discussions with other directors and with Dave at the time, and I don't remember exactly who said what.
- Lage: Should we talk about this period before you became president, the Berry and Sherwin presidencies, and the problems and the issues?

Moss: Before we get to that, we talked about Glen Canyon, but I took off on a somewhat different direction in my career after 1968, which might prove of interest because it took place during the time when I was a director of the club and was involved in various environmental issues.

In part because of my involvement in the club on Glen Canyon, [garbled] and other issues—Diablo Canyon—I became more and more interested in how decisions were made in government and elsewhere on big projects and policy questions—things that related to how technology was used. There was no question we had the power to build dams in the Grand Canyon, or build things like the SST. The interesting question was should we do it and how should we address the question of whether or not we should do it—what kind of information was needed to make that decision.

In 1968, or maybe late 1967, I became the aware of the White House Fellows Program. Actually I had probably become aware of it through reading articles about it in various journals. During the years I just mentioned, I decided to apply to the program because I looked on that as a way to expose myself to more of what was going on in government and governmental decision making, and perhaps decide if that was an area of career interest for me, not necessarily with the government, but working on issues of technology and public policy. So I was accepted into the program, and started in 1968, it is a one-year program.

Lage: Tell me a little about the program and how you get accepted into it.

Moss: It's competitive. You fill out a multi-page application form listing your accomplishments, your education, your public service activities, community activities. Whatever you think is worthy of notice. I don't know how the applications are these days, but probably why they wanted to be a White House fellow, several open-ended questions like that. It's highly selective, first there is a lot of self-selection that goes on. People will get the brochure and the application form, and about ninety percent drop out. [laughter] They don't sent it in.

Of those that do, and I think there are about seventeen hundred or two thousand applications a year, there is a preliminary screening done by staff of the White House Fellows Commission in Washington. Then the applicants that survive the initial screening, forms are sent to regional committees that have regional interviews around the United States. Those that are recommended highly by the regional committees, are selected to be—and there is a further screening process at the national level—national finalists, there are about thirty of those.

Those thirty spend a weekend, in our case, at a retreat with the members of the presidentially appointed Commission on White House Fellows. There are a series of interviews both formal and informal. At the end of that weekend the commission makes its decision and selects any number that they want. It can be as few as eight or nine, it could be as many as nineteen. As a matter of fact, in my year we got the largest number, nineteen. We were a vintage crop. [laughter] Then the successful candidates indicate which cabinet secretaries or top White House aides they think they would like to be assigned to.

Lage: So you get some choice in that.

Moss: [laughter] I'm not sure about that. I don't know anyone who got his choice. The director of the commission staff kind of discusses with the principals, the people at these agencies for the White House Fellows Program, where he might think the individuals might best fit in, and after a series of discussions the decisions are made and we were told of our assignments. I was assigned to the secretary of transportation, which was very interesting. I was an assistant to the first secretary of transportation, Alan Boyd, and then to the second one, John Volpe, the former governor of Massachusetts, who came in when the Nixon administration replaced the Johnson administration.

Lage: In what years were you a White House fellow?

Moss: 1968 and 1969, September to September.

Lage: So you were there during a transition of administrations. Very interesting.

Moss: Yes, very interesting. The White House fellows are among the only people in an agency who have been exposed to and often participated in high level decisions of that agency before the transition and then would see the new crew come in, and by the way the fellows are often involved in preparing the transition documents for the new crew. This is done by design since it is considered to be valuable to have a body, a person here to talk about the issues to the new people, as well as having just reports and documents.

Lage: Which person did you ask to serve under, or what department?

Moss: Secretary of the interior and the director of the Bureau of the Budget, those were my two choices. The Bureau of Budget because of the central role in government of the Bureau of the Budget in shaping the president's program and allocating resources. It's a rare opportunity to get a grand view of government as a whole. Secretary of interior for obvious reasons,

because of my strong environmental values and interests. Stewart Udall was the secretary at the time I became a fellow, and then he left with the end of the Johnson Administration.

Lage: Walter Hickel came in then.

Moss: Yes, Wally Hickel.

Lage: Were most of the White House fellows about the age you were?

Moss: There is no age limitation, you could, theoretically, be any age. But most of them tend to cluster from maybe twenty-six or twenty-seven at the lower end to maybe thirty-eight, thirty-nine at the high end. There are outliers, there are people who are younger than that, and people who are older. So, I was towards the middle of the range.

The program is not intended to train you for a position in government. It's founding statements, which John Gardner, who at the time was secretary of health, education, and welfare, was one of the key people in setting it up, they emphasize the importance of going out into the community and to the business world and wherever, and using what you have learned from this experience as a fellow in helping you to succeed in whatever capacity you choose to become involved in, but public service is always given high merit. We have congressmen and senators who were former White House fellows, Tim Wirth, Garrey Carruthers of New Mexico, Colin Powell, the chairman of the joint chiefs of staff. In my group the chairman and CEO of Levi Straus was one, the vice chairman of Wells Fargo Bank—

Lage: But was he chairman and CEO at the time?

Moss: No, he's become that since. The president and CEO of some of the largest distribution companies in the United States. I worked with a guy in software distribution. Some of us who have written books and done excellent scholarly work in business related specialties, business relations with Japan. I think the program was extremely valuable to me, both in accomplishing a few things, and this happened even though I was not the White House fellow with the secretary of interior, but during the closing days of the Johnson administration I did work with Stewart Udall to put some things into effect that I felt should be done before we got a new administration.

Lage: Were these national monument kinds of things?

Moss: Well a little bit on that, but I didn't play a prominent role. I remember that the question of regulation on the overflights of aircraft over national parks

and wilderness areas was one really positive regulation during the final days of the Johnson administration.

Lage: So that related to transportation.

Moss: Yes. It was, of course I [encouraged] the secretary of transportation as well. One nice thing about the program is that you get to meet all the other cabinet secretaries, and you hear a lot about them, not only from what they say but from what their White House fellow says about what is going on, so it does give you a broad view of government as a whole. Which is why White House fellows are often used to be their department's representatives on inter-agency task forces, because they do have that broad view and they are used to working with other departments.

We tried to accomplish a few things like that, and had some limited success. On the aircraft noise thing, we'd taken a few shortcuts and a few months later the rule was suspended. People at D.O.T scheduled public hearings and so on. Which was done, and another rule was put into effect as an official result. In public transportation we were concerned about implementing new environmental laws and regulations. For example, Section 4F of the Department of Transportation Act, which states that park land is to be used for highway purposes or other transportation projects only if there are no other viable alternatives.

[Tape 3, Side A]

Moss: Up until that time it was said that every major new highway was aimed for a park. The reason it was aimed for the park was the highway department people figured that was free land already owned by the government, so they wouldn't have to spend their own money to acquire it. But with this new legislation that had been at least reversed. A good case had to be made to that there were no viable alternatives. Nobody is selling short the ability of state highway commission people and the Federal Highway Administration to justify [laughter] a highway but at least the people on other side of that issue had a degree of ammunition they did not previously possessed.

Lage: So did the secretaries of transportation use you in kind of an environmental role?

Moss: In part. Because of my background I was also used in a role of evaluating new technology proposals, some were interagency studies, for example the SST.

Lage: So did that come up during your stint?

Moss: Yes. At least from the standpoint of learning about it. Learning how different agencies and different individuals in government reacted to it, and how they were reaching their decisions. That was part of it. But I didn't oppose the SST until I left government.

During this time [garbled] occurred [garbled] with Glen Canyon and the SST and all those other issues, I became very much aware that in many cases the government was the environmental despoiler, and not the protector of the environment, that there were important interests within government that pushed projects regardless of their economic or environmental liability. A lot of government money was used to some things that were very bad for the environment.

I believed that this was adding insult to injury. The fact that tax money was being collected from environmentalists like me, and then used to despoil the environment when in many cases that despoiling would not take place, in many cases, in a free market economy because the projects were so obviously uneconomic. Of course, not everyone, not every taxpayer, can agree with all government spending, I wouldn't press this argument to its final conclusion.

Lage: [laughter] It's still offends, doesn't it?

Moss: Yes, it is a motivating factor in convincing me that one role I could play was to point out that this was the case, and to expose some of the people involved in proposing these projects for what they were. That is, acting in a fairly narrow subinterest, using government money to promote an undesirable. That got me interested in the techniques of economic analysis, which I proceeded to implement in various ways, and which I continue to be involved in various ways.

One of the influences was the publications of Resources for the Future, especially some of the people who were involved in the early days and published some the seminal works on how people should think about environmental quality and pollution. Pollution, after all, is largely caused, at least in industry and commerce, by people who, they think of it as free public good, something they don't have to pay for the very limited capacity of the air and water to absorb effluent and emissions. The fact they don't have to pay for it means they tend to overuse it.

“The Tragedy of the Commons” that Garrett Hardin wrote about in his important essay in *Science* magazine during the late 1960s—those writings were very persuasive to me, very logical and I believed then, as I believe now, that the underlying economic factors and motivations have to

be changed to make people internalize these costs in their own decisions. We have to put prices on—

- Lage: And it fits with our free-market economy, but it seems to be rejected by those who most believe in the free-market economy.
- Moss: It certainly was rejected by the Reagan administration, but in part accepted by the Bush administration, largely because of the support of the Environmental Defense Fund people and EPA. I think we have seen a lot of progress in this area, the trading of pollution permits, for example, which for the first time will make it in the economic self-interest of the company to cut back on emissions and effluent. Up until now we have set up a system of incentives where they encouraged to play a game to assert and even to prove that the technology is not available to solve the problem, because if it is available they have to implement it, and if they implement it, it costs them money.
- Lage: And if they can prove it's not available—
- Moss: Then they don't have to implement it. So they avoid, or at least defer the expenditure. Terrible psychology.
- Lage: Right. They certainly weren't interested in developing new technology.
- Moss: Terrible psychology, but embraced with great enthusiasm by [many] people who have had the benefit a legal education, because they think in terms of prohibitions against unacceptable conduct, and you allow acceptable conduct, rather than on the economic factors that motivate most people and most organizations. Lawyers tend to advocate the command and control approach, pass a law or regulation and then people will be forced to adhere to it.
- People find a lot of ways to contests laws and regulations. First, they fight it in the courts for five, or ten, or fifteen years. Then even if they lose they have another opportunity to show that even if the law is valid, it doesn't apply in their case because there is no technology to do it. So the fact that in 1970, we passed in this country a Clean Air Act and Clean Act amendments, which established specific national air quality standards, which had to be met in most places in 1975 and everywhere else by 1977, we found out did not make it happen.
- Lage: Still not met in many cases.
- Moss: That's right.

Lage: I wonder if we shouldn't think about a break, we have been at this for a while.

[Interruption in tape]

Lage: We are back now after lunch. I wanted to ask, you had mentioned at lunch, that the White House Fellows Program did kind of bind you closer together with the other fellows and shaped each of you, and I wonder how it might have changed your direction in some way.

Moss: The first point I would make is that it confirmed my feeling before that year that I wanted to redirect my career, at least for the time being, into the public policy on technology issues that I had begun to be active in, rather than to do engineering design work and testing work.

The second thing is that, by giving the fellows a very intimate experience of how decisions were made in government, it made me aware that the decision making process was not as rigorous or sound as a person viewing government from the outside might be led to believe, thinking that the resources of government, all the people at the beck and call of government.

That confirmed some of the ideas that I had come to as a result of the experiences with the Forest Service on the Kern Plateau and the Bureau of Reclamation and state government officials on the dams in Grand Canyon. But it was important to have them reinforce that; it gave me a lot more confidence in dealing with government officials, or with the public on issues on which the government had a position. Knowing that a small group of people on the outside could do as good, and probably a better job, in analyzing those issues than the government was doing. Maybe not better than the government could do, but better in many cases than government was doing.

Lage: But did you still have a view that a good, well-formed argument would lead to a [good decision]?

Moss: That's an interesting question. In terms of my long experience, I had both successes and failures in that regard. By and large successes: in Grand Canyon, in stopping the federal subsidy of the SST, in doing a few other things we worked on quite hard.

One of the failures I had in the early 1970s, was in trying to implement my feelings about the need to have economic incentives and disincentives imbedded in pollution control strategies. Not to select the goals, but once the goals were selected through a political process, to achieve the most

efficient and effective mechanism for accomplishing those goals. So along with George Alderson, I set up the Coalition to Tax Pollution. We funded it, hired a small staff, worked on that for a year or two, and at the time it did not succeed. We achieved only limited success in getting conservation group support, and dropped the coalition after a couple of years.

But even the failures sometimes later become at least partial successes. In recent years, there has been much more emphasis on using economic incentives and disincentives, like pollution trading programs. My view about your question is somewhat biased by my experience. On a relative scale I felt that persuasive arguments, effectively presented, can be of influence; indeed ideas are important. Even if they are not immediately successful, they often educate people to a new way of thinking about things, about the environment, or about methods of accomplishing objectives efficiently and effectively.

Now having said all that, one must be aware of the fact that many decisions are made on a different basis; narrow economic self-interest. I think the job of an environmental activist is to expose the interests involved in such a debate and to frame the debate within a broader framework in which the issues are more correctly perceived by the public and by decision makers. I think if one is able to do that, then the chances of success are reasonable but not perfect.

Lage: It takes some people power there too.

Moss: It takes some people power, and it takes a certain amount of inspiration and intellectual power. One of the things I did as president of the Sierra Club, in 1973-74, was to establish a Sierra Club research office, which I don't think lasted more than a few years. But the board supported that at the time, because they had seen the power of an analytical approach in making important contributions to success in these issues. They agreed with me that an in-house capability to do that kind of analysis was important. The two people I hired for that purpose have since gone on to do important things, even though I don't think the Sierra Club has a research office now.

Lage: I don't believe so.

Moss: The effort is not entirely without value.

Lage: I wonder if we should talk more about the SST, before we get back into the club, because you said this began during that White House Fellow year.

Moss: No, during the White House Fellows year I was exposed to the argument for and against government subsidy of the SST, but it wasn't until I left the program that, through a set of circumstances, I became active in organizing the group to oppose the SST, and to conduct the lobbying effort in a more professional way. Up until that time the SST opposition had been fragmented and not always to the point, and not politically experienced.

I remember one list I saw from an SST opponent, before I got involved in this in a serious way, purporting to show the congressmen and senators who were opposed to, or supportive of the SST, or on the fence. Simple errors were made in that list, like calling a congressman, a person who was a congressman, a senator.

This is getting ahead of the story, but one of the things we did rather well on the SST fight, was to count votes. The administration pressed for a vote during a time when our count showed that we would win, and they would lose.

Lage: [laughter] They hadn't done their vote counting.

Moss: They hadn't done their vote counting as well as we had done ours. It wasn't a sure thing; we had some undecided people, but with a reasonable break in those undecided votes we knew we had the votes.

Lage: But weren't opponents kind of disheartened. The story I've heard is that they thought it was something they couldn't beat. Lloyd Tupling [Sierra Club representative in Washington DC], I think, told me that. He just thought that it was a foregone conclusion that this was going to happen.

Moss: I've come across that in a number of instances. The SST, and also when I originated the idea of suing the EPA—William Ruckelshaus, the administrator—to establish that he was required by law to prevent significant deterioration of air quality in the relatively clean areas of the United States. After I sold it to Mike McCloskey and Jim Moorman, and had discussions with the attorney that Jim put me in touch with in Washington, Bruce Terris—who was a very accomplished person and who had appellate court experience bring cases to the Supreme Court, which was really unique—we tried to decide who should be co-plaintiffs with the Sierra Club on that suit, and the first organization with thought of was the Natural Resources Defense Council, because more than any other environmental group they had taken the lead on air pollution issues.

So I met with them, reviewed with them the existing law, regulation, why I thought the EPA was taking the wrong position on this. Their view was

that it would be nice to prevent significant deterioration but probably it couldn't be done. There was nothing within the law that would force it to be done.

Lage: Was it that the law was hazy on the issue?

Moss: In fact, the law was somewhat hazy on the issue. I think we had a clear statement of the purpose of the law, but not a detailed elaboration of this as a specific objective. I think the reason for that was that they were too close to government. In their work trying to implement clean air legislation, they dealt everyday with people in the agencies and became almost a partner. I don't mean they agreed with government all the time, but they were working partners in developing regulations and [supplemental] laws. Sometimes they would oppose the government position, sometimes they would agree with it.

But they were too close to the nuts and bolts, and they couldn't see the forest, the forest that I saw was that this was an enormously important issue, to think that vast areas of the United States could be allowed to be degraded to the mediocre levels of the national air quality standards, which on an average annual basis would allow for visibility of only twelve and a half miles. In other words, on an average day you couldn't see across the Grand Canyon; completely destroying a key element of the esthetics of the West and other wilderness areas. To think that was not an issue that, first, was worth an expenditure of resources on, and secondly, to which many people concerned about environmental quality would want to respond to once they were educated about it was—

Lage: Yes, it has a lot of emotional zip.

Moss: The documents prepared by the EPA showed pretty clearly that there would be these effects. We weren't inventing these effects; they were in the documents: the visibility effect, the acid precipitation effect. To have a Clean Air Act that had the stated purpose of protecting and enhancing the air quality, allowing for that to happen seem to be—

Lage: Almost encouragement it almost seems to me, to say it's okay you almost encourage industry in that direction.

Moss: Exactly. That was the time, you will recall, when the coal and utility industries kept talking about building well in excess of a hundred enormous nuclear power plants in the western United States, near the western coal deposits, and transporting the energy by wire, in the form of electricity, to the markets where it would be needed.

- Lage: Now do you mean nuclear or coal plants?
- Moss: Coal plants.
- Lage: You said nuclear.
- Moss: Sorry. I don't think that was a Freudian slip but maybe it was. The nuclear plants would not produce anything like that amount of air pollution, if any at all. But nobody was proposing to build nuclear plants way out there.
- Lage: So when NRDC didn't—
- Moss: So NRDC decided not to sign on to the suit.
- Lage: Did anyone sign on?
- Moss: Oh, yes. New Mexico Citizens for Clean Air and Water, John Gardner's [?] group did, and they leaped at the opportunity. [John was an engineer] who had worked for some of his colleagues in the organization. They understood the importance of the issue; it was in their backyard. They were delighted. We had a third organization that joined the Sierra Club, I forgot which one it was.
- Lage: Was that through the Sierra Club Legal Defense Fund, or did you have that yet?
- Moss: Yes, the Sierra Club Legal Defense Fund had been established. Jim Moorman was the executive director, and when I came up with this concept for the suit, I called Jim. He said it appeared to have merit, but he wanted me to discuss it with Bruce Terris, who had a lot more experience litigating things like this. I had several discussions with Bruce, he also agreed it had merit and was worth a try.
- Lage: How did you come up with the idea?
- Moss: Reading about the environmental laws and regulations. Being sensitive the importance of relatively clean air in the West and many other undeveloped areas of the United States. And just putting it all together.
- Lage: And you were aware of the plan to—for the hundred plants?
- Moss: Reading the regulation. The regulation would do nothing to prevent emissions that would result in having concentrations up to and including the national ideal standards, which would represent in some parts of the

West a four, five, or even ten-fold increase in pollutant concentrations. That, plus plans for many coal burning power plants in the West.

Lage: Did you take a role in the suit?

Moss: Yes, I provided technical support for the suit.

Lage: Did you testify, or was this technical support behind the scene?

Moss: There was no testimony.

Lage: There is no testimony in this kind of thing.

Moss: No. The case first went before the district court in Washington DC, federal district court. The judge came down with a good decision.

Lage: Is it based just on briefs?

Moss: Yes. He announced, before any written decision was produced, that he was going to rule in favor of the Sierra Club, and that wanted the Sierra Club people and EPA people to confer with each other on the form of the order. We did that. Purposed the form of an order that EPA agreed to, knowing that it had lost the case but still wanted to make the best they could of what they considered to be an undesirable situation. The judge wrote his opinion, and pretty much endorsed the court order as we had put together with EPA.

EPA then appealed to the district court of appeals in Washington DC. They supported the lower court's decision, and as a matter of fact I think they decided not to review the lower court's decision, if I remember correctly. I don't know if they actually had a vote. What I remember for sure is they didn't publish a second opinion, but they supported the lower court, so that was good.

Then it went to the Supreme Court. I almost didn't get a seat for that argument. [laughter] By that time there was a crowd of people interesting in hearing. Hardly anyone was interested at the lower court level; very few people realized the significance of it. The Supreme Court decided by a five to four vote not to overturn the lower court decision, and they also did not write a separate opinion. Separate opinions would have been nice, because they might have given further guidance on how to implement the new [doctrine], but they were not necessary.

The point I wanted to get back to was, that during this period, and even after the Supreme Court in effect affirmed the lower court, we were trying

to get EPA to implement conditions of the court order that they had agreed to with us. That is when I found out that government agencies don't have to obey the law. [laughter]

Lage: Even after the court decision?

Moss: The first thing is they don't have to obey the law in terms of meeting deadlines. EPA missed deadlines, not only by months, but by years. In effect they are not held to account for that, as a private party would have been. A private party probably would have been contempt of court, put in jail or threatened to be put in jail. The second thing they did was to propose draft regulations which were consistent with their earlier position that had been overturned by the court, but using different language to disguise it.

Lage: So you have to be a watchdog.

Moss: Very much so. Winning the court decision was only the first step in a long process.

Lage: So what did you do to remedy that situation?

Moss: I helped point out the problems with the EPA approach and that had to be changed.

Lage: Did you go back to the court?

Moss: Sometimes you go back to the courts, and the courts are generally reluctant to interfere in too much detail with the prerogatives of a federal agency. They give the administrative agency the benefit of the doubt, but if it is an egregious exception, then they will intervene.

Ultimately you go to the legislature again, the Congress, which was done in the middle 1970s, a few years after we had won the court case, and had written into law very detailed regulations about how this doctrine should be implemented. Then the administrative agency starts complaining and they say that's not what Congress should be doing. Congress is legislative, it should lay down the broad framework and then administrative agencies, the executive branch, should study and publish the detail regulations that will use to implement the law.

Lage: Ideally, that is probably true.

Moss: That is a nice theory, I'd like to see that happen. But when they, with great calculation, do everything they can to circumvent the requirements of law,

you've got to go beyond that and tell them in detail what to do, even if they complain. Maybe they will learn a lesson.

Lage: That was a good project, and these grew out of the SST. I had a question about becoming disheartened. I said earlier that some people who were against the SST felt they could not defeat it.

Moss: Right. I'm glad we could [get back here]. I don't take no for an answer very easily, but I think that if the arguments are sound, and if I think important values will be lost if one course is taken rather than another, I tend to stick to try to overturn that first course and to bring about the second one. I think that part of the training of engineers is to figure out how to do things, how to overcome obstacles in order to achieve an objective. I guess that is one part of it, another part of it is I've been taught since an early age to do what you think is right. So we found ways to overcome those obstacles even though people thought they were insurmountable. We had problems, after our successes—

[Tape 3, Side B]

Moss: Some people look back on those early days of the SST fight and say, "Oh, it really wasn't so hard, because you had the media on your side." That reminded me of our typical experience with the media in those early days. A typical response we would get when we told the media that we had formed a coalition of environment and other groups to oppose the SST was a yawn. Nothing appeared in print. Even though some of the people involved had considerable legislative successes, for example on the Grand Canyon fight. I remember one or two of them saying, "Oh, yes, the SST, I remember we did a story on that last year. So we've done it. We are not interested in that issue any more."

It wasn't until, through grassroots lobbying work, grassroots support, that we got two or three influential senators to change their position on the SST, Senator Robert P. Griffin of Michigan was one, that we began to get some news coverage. Reporters slowly began to realize that something might be happening out there that was newsworthy. And one thing led to another, and the coverage snowballed. But it wasn't easy in the beginning, I think for the first three months we had pretty close to zero coverage.
[laughter]

Lage: How was it funded, the coalition?

Moss: There is a nice story about that, in an old issue of the *Saturday Review*, describing what had happened. To review quickly, a young man in Baltimore, who was a teacher in a private school, was asked by someone

in his class one day, whether the individual could really be influential in influencing the course of events. This guy was a thoughtful person, who happened to have substantial assets, I think from his parents' business or grandparents, and he decided that he was going to pick an issue that he felt was going the wrong way, and try to influence it.

The only way he knew to influence was to donate some money to the cause. So he contacted a few people—I think on Capitol Hill, probably a staff aide of either Congressman Sidney Yates or maybe Congressman Royce [?], or Senator William Proxmire, because those were the three who had raised the objections to the SST most in the debates—and said, "Look, I've a little money, I think the SST is a bad program, how can I use this to try to help the fight against the SST?" Somehow, I'm not sure why, he was directed to me. By the way, it wasn't the fellow who I'm talking about who made these approaches, it was his attorney. The principal's name was Ken Greif.

Lage: He was the teacher.

Moss: Yes, the teacher, and the attorney was Ron Liebman. Ken was, and is—I haven't seen him in years—a extremely retiring person. I did not actually meet with him until after we had won the SST battle.

Lage: I hope he had you to come speak his class.

Moss: [laughter] No, he didn't. Ron was kind of like a stereotype of a proud attorney, holding things in confidence, holding his cards close to his chest, and so on. He said he had heard about me from these people on the Hill, I guess because with my involvement with the Sierra Club and the fact that I had worked at the Department of Transportation and knew a lot about the SST, they thought. He wondered if I would suggest a way to make a financial effective contribution in opposing the SST.

So I thought about that for a bit, and I consulted with George Alderson, who I guess at the time was a Washington representative of Friends of the Earth.—I knew that more than one organization would have to be involved in this.—George and I felt it was probably a worthwhile thing to do, although it would obviously take a fair amount effort on our part and the parts of a lot of other people. Ron Liebman and Ken agreed to contribute a sum, I think ten thousand dollars, to get the organization off of its feet initially. That was the initial contribution, I think Ken probably contributed another five to ten to fifteen thousand dollars or the course of the fight. Pretty small sums in terms of influencing legislation, in the long run.

I started asking around about people we might hire to serve as staff director of an organization like that, which we called the Coalition against the SST. I heard through a mutual friend about a young attorney at the Department of Health, Education, and Welfare, a woman by the name of Joyce Teitz—she is now Joyce Teitz-Woods, having married since those years—who was bright and ambitious and able to put things together.

We asked Joyce to have dinner with us at a Chinese Restaurant in Washington to talk about this and see if she was interested. We had a good meal and a good conversation, and she had sort of been thinking about leaving HEW, and she seemed to be inclined towards accepting the job. We then got our fortune cookies, and Joyce opened hers and it said, "Wait for another opportunity." [laughter] Joyce is not a superstitious person, none of us are, so it didn't really dissuade her. But she thought about it for another three weeks or so, and consulted with a number people on the Hill, and asked within her community of friends and acquaintances, and decided it was worth doing. Took the job, and did very well. She always made it known that she was the inside person, and that she was not the person who was going to testify before congressional committees or make statements before the press. Which was okay and worked quite well.

Lage: She was going to organize.

Moss: Richard Garwin, who was a member of the President's Scientific Advisory Committee, was a real star in the technical aspects of the SST program. He opposed the SST even before the formation of the coalition. Bill Shurcliff, who wrote the first anti-SST document, a paperback called, I think, *The SST Handbook [SST and Sonic Boom Handbook, 1968]*, was also of help, but he was inexperienced in the world of lobbying or legislation, and probably not as far along on some of the economic issues, especially, as a small group of us became as the fight unfolded. We used all the usual techniques of involving particular environmental and other groups in the campaign.

Lage: What was unusual about that? I've heard a couple of people say this was kind of a new effort.

Moss: It was similar to what we had done in the Grand Canyon, but it went beyond a strictly environmental issue. One of the main arguments that we used on the SST was that it was an unwise allocation of the country's resources. To spend scarce resources developing an environmentally damaging plane, which would use three times the fuel per passenger mile of an efficient subsonic jet, it would raise more problems that it would solve, and we shouldn't be subsidizing it. That appealed to a lot of economic conservatives, as well as to environmentalists. So that might

have been an added dimension that we tried to bring as allies, a broader spectrum of individuals and organizations than perhaps had been done on other environmental battles.

Lage: Do you think that this kind of testifying and lobbying was the key thing, or was there a public movement part of it?

Moss: It wouldn't have worked without grassroots support.

Lage: You had that also.

Moss: Oh, yes. That is why I mentioned the changing of votes of some of these key senators and congressmen. Many people began to realize that the government support for the SST was not a foregone conclusion, that it could be challenged. We prepared various analysis which made certain points. For example, one thing we did was to calculate state-by-state what the tax revenues for the SST programs would be, compared with SST program expenditures in that state, to show that very few states would come out ahead. The argument given by the SST proponents was that this program was good for the economy; that would be true in two or three states but not the other forty-seven or forty-eight. So we would counter arguments like that as best we could with the information we had available.

Lage: What were you doing in the world of work during this period?

Moss: That's a good point. All of my environmental work for the Sierra Club and other groups has been on a volunteer basis. I've never been paid for my time, including the time I was president of the Sierra Club. I had a regular job during these years. After the year as a White House fellow, I became executive secretary, which is like the director of the staff, for the National Academy of Engineering Committee on Public Engineering Policy, which was doing the kind of studies that I was increasingly interested in. Of course my SST work and air pollution litigation work was not done on behalf of the academy. I made it very clear, as I done early on Grand Canyon testimony, that I was doing this as an individual.

Lage: Did you ever run into trouble from employers?

Moss: It is sort of like a reflex reaction. When I first went back to testify before the House Interior Committee on the Grand Canyon dams, I think it was on Thursday or Friday and I got back to work the following Monday, and there was a message on my desk that the president of my company wanted to talk to me about something. Sure enough, he had gotten a communication from a prospective customer of our companies, saying that

they were intensely displeased by my testimony and wondering if my company knew about this, and whether it would take appropriate action.

So, I explained to the president of my company that I had done this as an individual, just exercising my rights as a citizen. He accepted that and nothing more was said about it. But at least at the time—and I assume it still happens today, although I imagine there is a bit more sensitivity today—there is a normal instinct for people who are on the other side of an issue to try to get at you in whatever way they can.

Lage: And it is kind of chilling to go in and see the president.

Moss: It didn't bother me. That was why I was so amused before when you said some people perceived me to be a unthinking ally of Dave Brower.

Lage: It was disciple, but you said ally.

Moss: [laughter] Very few people have accused me of being a follower.

Lage: Interesting. We've gotten a couple of good environmental issues covered: SST and Ruckelshaus. Should we go back to the Sierra Club, and then we will come back the environmental. Not that they are totally separate, but we've sometimes [doubled] these issues up before your presidency, as sort of a backdrop to the presidency because I spend some time on that. So, what kind of things were going on in the club during your presidency?

Moss: Well, one governance issue was the respective roles of the staff, and the board, and the volunteers. During this period, in part as a result of the unpleasantness of the Brower years, the board and some of the volunteers seemed to take the position that there is the staff and there are the volunteers, including the board, and they are on opposite sides of a lot of issues, or at least on a lot of questions about how things should be done.

My view of that was somewhat different. There were people making good judgments and bad judgments on both sides, on both the staff side and the volunteer side. Basically both groups were motivated by the same values and objectives: to protect and enhance the environment. The fact of accepting some money to allow you to do this, spend more time than you otherwise would be, was not the decisive factor in distinguishing between staff and volunteers, so I considered us to be all in one big group. As a board member I tried to play down these differences, that is to argue with people that there were very few differences and many similarities, and we just had to cooperate and figure out ways of working together more effectively, and you shouldn't regard the other group as "they", and ourselves as "us."

Lage: There seemed to be sort of a thrust, I don't know if you'd call it participatory democracy yet, but a lot of work by committee. More than I see now.

Moss: Very much. A lot of work by committee, mostly good work, some not so good work. I felt the staff was doing a reasonable job of implementing the policies laid down by the board, other than these administrative things we talked about with regard to Dave. I would expect a competent, self-respecting staff to come up with initiatives for the consideration of their board of directors to help forward the objectives of the organization, whatever your organization is, Sierra Club or any other.

Lage: Was that resented by some of the board members?

Moss: Well, I think it was. I think that some felt that they should be the ones making the decisions and establishing the strategy. Which was true, the board should make policy decisions. But they took it down to a greater level of detail on tactics and on details of implementation, which a board should not have to do, and probably is not usually competent to do.

It can be especially destructive when one or two board members develop an interest in particular administrative or policy questions and are given quasi-executive responsibility by the board to do what normally the staff in carrying out board policy. There can be confused lines of responsibility and authority. So that has to be handled with a lot of wisdom and discretion, and it was not always done that way during those years with the Sierra Club. The fault was as much a part of the board members as the office staff. On the whole, I thought we should figure out ways of working together more effectively, and that was what I tried to do when I was president. I would, in many cases, consult the board or with Mike and the key staff people, Washington reps and regional reps, on certain issues, decide how I thought they should be done, and then turn it over to Mike to do it. For one reason, because I didn't have time as a volunteer to implement all these things, and for a second reason, because I didn't think it was my responsibility. I thought that was the responsibility of the staff.

Lage: Now was that new? Had the two previous presidents not done that?

Moss: I think the previous presidents would have been more hesitant than I was to make a decision and then turn it over to the staff to implement without watching their every motion, without following them every step of the way.

Lage: Not a complete trust in them.

Moss: I had trust in the staff, but that doesn't mean that I felt that each staff member was equally able or equally competent. I had great admiration for Mike McCloskey's abilities, not necessarily so much in an administrative sense—I think that he was not a superlative administrator—but in a political sense. I mean political in the good sense of the word; in knowing where people would come out on various sides of issues, and who would be interested in that issue and keeping them informed and in low-key enlisting their cooperation. That what one of the qualities, or several of the qualities, that a good implementer has to have. His qualities in those areas were probably a lot better than mine.

I think that as president, I was a lot more willing to make decisions, and to say, "Let's go ahead and do it," than my predecessors were.

Lage: Can you give me an example? I am wondering what kind of decisions the president make himself or herself, without involving the board.

Moss: For example, in preparing the budget for consideration by the board, what you can include in it and what should be left out and why,—and this gets back to what we were talking about before, being much more conscious of how to deploy your limited resources in a way that will be most effective.

Lage: So you were willing to say, "Let's cut this program." But then it would come before the board.

Moss: Yes, well, probably, not in every case but where some of the volunteers were adversely affected, maybe where one of the people affected was a board member, it would probably come before the board. I would explain I thought it was important to do what I had proposed. As I remember, the board pretty much went along with it.

Lage: Do you remember particular programs?

Moss: There were a few volunteers involved in—I forgot the issue. Oh yes—We had a group of people with a budget, I think organizing on college campuses, and I had questions about its effectiveness. I just wasn't seeing evidence that it was accomplishing its stated purpose, and that the expenditure of the national club's resources was really contributing effectively to that effort. So I proposed deleting it from the budget, and it was. There was several other things like that, but Mike probably remembers this better than I do.

Lage: He might not. [laughter]

- Moss: Also positions on issues. One thing the president has to do is to propose litigation to the board, and I reviewed with Jim Moorman and Mike, and indicated the ones I thought we should litigate and the ones should pass on. I would often take care of recommendations, but sometimes not, and then we would propose it to the board and the board would usually go along with it.
- Lage: Did your being a non-Californian, the first president from outside of California, did that make you have a more hands-off position in terms of day-to-day?
- Moss: That is an interesting question. I don't know if I would have come into the office every day if I had lived in the Bay Area, I kind of doubt. My view at time was that the decision-making process in the club had been protracted beyond the point of reason in years previous to my presidency, and that we, on many of these issues and decisions about tactics and about administration, had gone beyond the point of diminishing returns.
- Sure, we didn't have all the information, and we hadn't touched all the bases, but as I learned from Warren K. Lewis back when I was a sophomore in chemical engineering, at some point you have to decide that you have enough information to make a decision, and you have to go on to something else and be productive in that other area. So I tended to say on many occasions, that we know enough to know what to do here, and let's propose this and try to get some support for, and let's implement it if people agree it's time to move ahead. You ought to discuss this with Mike. I get the impression that Mike was surprised by a lot of the discussions we had, at how quickly we decided to do things.
- Lage: When you were president.
- Moss: When I was president. He was used to discussing these issues for weeks months and years, [laughter] with former presidents and boards. I just wasn't interested in doing that. We had a lot of important issues to worry about, and they were not all of equal importance and they didn't merit equal time, and we get the ones we could get out of the way.
- Lage: I want to go on to the presidency, but I have a little note here to remind myself, I think it is Brower himself who brings up your role in getting him appointed as honorary vice president. Do you recall that?
- Moss: I not sure who proposed it. Oh yes, I remember that, that was interesting. We were in the habit of reviewing candidates from time to time, for appointment to honorary vice presidencies. This was pretty much based

upon their lifetime contributions to the Sierra Club.—Does the flashing light mean you have to change it?

Lage: No. It means that it is coming up but not quite yet.

Moss: I had gone along with the people who had been nominated for this honor, for two, three, four years; all distinguished people, all people who had done good things for the Sierra Club. Finally it occurred to me, why don't we do this for Dave Brower? [laughter] He has helped out the Sierra Club as much as anyone else has, so we should. Not everything he did was important to the success of the Sierra Club, and maybe he did a few things that produced difficult times for the club, but on balance he made a major contribution that should be acknowledged, even though he was not playing a role in the Sierra Club at the time since leaving as executive director.

So I started asking the directors, "Why don't we do this?" Some of the directors thought it was a good idea, and some of them didn't answer, just shook their heads, [laughter] and some said, "Well, he is doing his own thing," and I said, "Sure he is doing his own thing, we are all doing our own things, but he has done good things for the Sierra Club and should be recognized." Finally I said to the other directors, "Look, I've suggested this now for a year or two, and we keep on appointing other people to this honor, I think it is time to elect Dave Brower and if you don't want to that, I will veto anyone else who is proposed. [laughter]"

Lage: It had to be unanimous, I take it.

Moss: I think it had to be unanimous. Some of them didn't like that at all, but I don't know, a couple of meetings later someone proposed Dave along with one or two people as honorary vice presidents, and we all approved it.

Lage: Interesting. As I remembered, I think they proposed Ansel Adams at the same time, and he turned it down because he was mad at Brower's being named.

Moss: I think that is right.

Lage: Anyway, that is kind of amusing. Do you remember what someone refers to as a lot of delay and controversy in 1972 with the selection of club president? That would have been Sherwin's second term and you were also proposed.

Moss: Yes. The vote was close. As a matter of fact, I think it was tied on the early ballots. I'm not sure why it was tied, I guess one of the directors was absent. I don't know really what to say about it-

[Tape 4, Side A]

- Lage: Tell more about how officers were chosen and whether there was a lot of controversy, and trade offs.
- Moss: To state the obvious, they were chosen by the board of directors, needing a majority vote. In 1972, as I recall, the vote was very close, and I think in the early ballots Ray Sherwin and I got the same number of votes for president. There were some people who felt quite strongly that he should be president, and some who thought it was time to bring in some new blood and more vigorous leadership, and they settled on me as their candidate. I would have been delighted to be it in 1972. As it finally transpired, I am not sure of the details, I just don't remember, Ray was elected president, and I was elected vice president. That, of course, put me in a good position to be president in 1973.
- Lage: And who was your vice president?
- Moss: I believe it was Kent Gill.
- Lage: Did you work well with him?
- Moss: Oh yes. Somewhat different personalities, Kent much more attuned to the volunteer structure and the importance of keeping everyone on board. I more inclined to analyze a problem, evaluate the alternative, decide what was reasonable to do, and want to go ahead.
- Lage: So he would made decisions with more thought to the politics or personalities?
- Moss: Yes, he was more politically attuned to the organization than was I. Which was a good quality to have. I think we complemented each other. We had no significant disagreements about the club in that year that I remember, and I appointed him to the chairman of the publications committee, or of a least a task force to evaluate the publications program. This was a time when the publications program had been running a deficit, and some people had very serious questions about whether the club should continue to subsidize it. Kent was not thought of as an ally of mine on the board. I thought it would be good to appoint a fair minded person like Kent, who was not identified with me, to lead a study like that, so that the chances of its recommendations being implemented would be enhanced, whatever those recommendations were.
- But I hadn't discussed it with him before the study, and you ought to know that to me the publications program had a lot of merit. It was probably

worth subsidizing if we had to, because it was important in getting our message out, and produced a lot of subsidiary coverage in the media for the cause, which it could not otherwise obtain. It enhanced the stature of the club. This was the way that Ansel Adam's book—

Lage: Right, I was thinking about that.

Moss: *This is the American Earth*—attracted me to the club. So it was worth spending some money on, but I wasn't convinced we had to lose money on it if it was better managed and promoted. And in fact I think that turned out to be the case. After the committee made its report, we pretty much implemented the recommendations, made some management changes, and the publications programs became, if anything, a source of revenues in future years.

Lage: That was something that came up in the board minutes, I guess, that Kent was appointed head of the publications committee, and the editor resigned because he felt there should be a publication professional, which Paul Brooks had been.

Moss: That's right. I obviously did not agree with the head of the publication program on that point and was willing to accept his resignation if he chose to resign, if he felt that strongly about it. I think an able person, informed about the issues, can play a role like that and, in fact, may have some insights into the broader purposes of the publications program that a publications professional might not have come to as a first step. So I saw both advantages and disadvantages of going that way, but I was certainly not about to give up my prerogative to appoint a person I felt was qualified as chairman of the publications committee because of the objection of a staff person.

Lage: Here is the case where maybe you saw a staff person overstepping his bounds.

Moss: Yes, that's right.

Lage: Then under your leadership anyway, I believe Jon Beckman was hired, who is still with the club. Now, would you have taken a role in hiring him?

Moss: Oh yes. I interviewed him.

Lage: So that wasn't left to the executive director, those kinds of hiring decisions.

Moss: No. Mike interviewed him first, and we had other people, some other directors, I think. But I think that among the most important decisions a president makes are the selection of the key people who report to him, who in some case report to the people who report to him. The publications program was a major club program then, and we had some problems with it. I felt the president would not have been doing his job if he didn't involve himself in reviewing the leading candidates, in talking to the directors and staff members who were interviewing the leading candidates, and in participating in the final selection. That is appropriate for a president to do.

Lage: Seems that way. Another thing that came up that bore, I don't know if we would call it fruit, later, was that you seem to be the first one to raise the question about the relationship of the club and the foundation. Am I right to say you were the first?

Moss: Yes, probably one or two directors had raised that question in the past, but before I get to that let me quickly talk about the relationship between the Sierra Club Legal Defense Fund and the Sierra Club.

Lage: Okay, that's pertinent.

Moss: Jim Moorman and I were good friends.

Lage: Before this?

Moss: We met through the Sierra Club, and we had always gotten along. We lived close to each other in Washington DC, in Georgetown, so I would occasionally drop over to their place and say hello and talk. We cooperated on issues like the air pollution litigation.

But when we were setting up the Sierra Club Legal Defense fund, it occurred to me that we were giving them a blank check. We and the Sierra Club would have nothing to do with the governance of this organization, and they would be called the Sierra Club Legal Defense Fund, and we didn't know what they could do five, or ten, or fifteen years from now. So when it came before the board for approval of doing this, I said, "Everything you propose is great and I am all in favor it but one thing bothers me. It's giving you use of the Sierra Club name in perpetuity when you are independently governed and not subject to the kind of electoral processes we have to elect the directors of the Sierra Club. So I want you to put in this agreement that at any time the Sierra Club board can withdraw the use of the Sierra Club name from the Legal Defense Fund." [laughter] Jim agreed to it, because he knew that the argument was on my side. [laughter] He told me later that he was really annoyed.

- Lage: Did the other directors see the seriousness of the situation?
- Moss: Well, they agreed with me, this was done in an open session.
- Lage: Was that under your presidency, or before? I can't remember exactly when it all happened.
- Moss: I don't know if I was president or vice president.
- Lage: You know that has all come to a head this year. They had a, what should I say,—I don't know exactly what was going on, but differences between the two organizations and the question of relationship and use of the name, and what control the club had. There was a big mediation process which I think is just winding up now.
- Moss: I heard some reports of that, but not in any detail so I don't know what is going on.
- Lage: I don't either.
- Moss: I'd like to find out more about it, but the fact that the Sierra Club is able now to withdraw the use of the name is my idea.
- Lage: I believe that was a key component of whatever is going on.
- Moss: The board would have agreed to what they proposed at the time, but I didn't think it was right, not on that point. Anyway, getting back to the foundation, I had questions about the effectiveness of the foundation in raising money. If I saw just one guy on his own, Denny Wilcher—
- Lage: Who worked for the club.
- Moss: Who worked for the club, not for the foundation, doing great things, and then I saw a staff of several other people, at the foundation, with pretty high overhead, collecting somewhat more than they were spending but not by the kind of margin that I would like to see. So I asked myself why is this happening, and can we do better. There was also a question at the time as to whether the foundation could unduly influence Sierra Club policies by directing foundation funds to those activities it thought were good keeping it from other activities—
- Lage: [Influencing] the choices about what would be funded.
- Moss: Choices that might be against what the Sierra Club board itself might felt were the important priorities. That was the second issue. Well on the first

issue, we got into the darker question of the abilities of the certain staff people, and the effectiveness of the methods that were being used. I couldn't be effective in influencing this at a distance, because I was not overseeing the Sierra Club Foundation.

- Lage: And the club didn't have an oversight committee, is that right? The only connection was the use of the name and some overlapping board members—
- Moss: But I not even sure we could have withdrawn the Sierra Club name from them, because that happened before I was on the board. [laughter]
- Lage: Was there anything in the Sierra Club Foundation's guidelines that they had to use the major portion of their money to support the Sierra Club?
- Moss: I don't recall, I don't know. But even if there was, the second question would have remained, about directing the money into those Sierra Club activities of which they approved and keeping it from others that the Sierra Club board might have wanted to emphasize. That is a tough one because the foundation cannot give up control of its assets and gifts to any great degree without running the risk of being accused of being controlled by a non-tax deductible organization, and therefore losing its tax deductibility. My memory is a little hazy on this, I don't think I was proposing at the time that we change this in any formal way, but some of the board felt the foundation board should be more aware of and appreciative of the expanded discussions the Sierra Club board was having over allocating resources and trying to support it, rather than in some cases act against it.
- Lage: It sounds like it is also sort of a new guard-old guard conflict since the trustees were often—
- Moss: —past presidents of the Sierra Club, that's right.
- Lage: Was that a difficult situation politically for you, being a relative newcomer and out-of-stater?
- Moss: To me it was an important issue conceptually, and at the margin it was important for certain programs. But in the whole scheme of things—because the Sierra Club Foundation's contribution in those years was relatively small compared with income from other sources: membership, book sales, trips, etc.—that it wasn't something that I felt I should devote a lot of time of personal time to in the expectation that it would yield results; again picking targets, use of resources. I did that with regard to my own time, as well as with regard to the club's money. So I was aware of this unhappiness, and I was somewhat unhappy myself, but felt at the time that

there wasn't a lot that I could do in the short run to influence the situation. In the long run, I think new trustees came into the Sierra Club Foundation, and it became more effective at fund raising, and they probably improved the effectiveness of their staff, and as far as I know the situation improved.

Lage: Did you then just mainly raise the issue here or was there an actual—

Moss: I don't remember the details of it. I'm sure I raised the issue. I may at certain times have supported Sierra Club applications to the foundation for grants to particular activities that I felt were important and which the Sierra Club board felt were important and urged the foundation to give money to.

Lage: I think Ed Wayburn in his interview says that you discussed with him the foundation, the need for better fund raising.

Moss: Yes, I did do that. I recall that. I didn't have any problems with Ed. I've always found Ed to be a reasonable person. He is not one of those that I had difficulty in working with.

Lage: Who did you have difficulty in working with?

Moss: Well, I didn't feel as though I had difficulty in working with anyone, but I think some of them probably felt they had difficulty working with me. [laughter] I've heard from others that Ray Sherwin didn't like working with me on some of these things, and I think Will Siri. Will and I both have scientific engineering background education, so in many ways we tend to approach problems in the same way, but we differed on specific things. For example the decision on Diablo Canyon, or weighing the pros and cons of Dave Brower's contribution to the club. I regarded those as honest differences of opinion, which did not impair my ability to work with him or with others.

Lage: I could see your thought processes as being similar. Let's go have a cup of tea. [interruption]

Lage: We've gone on to your presidency, but I never gave you kind of a general question which would elicit an overview. When you were selected as president in 1973, you just had the one year because you were retiring from the board.

Moss: That's right. I was completing my second three-year term, and we had changed the by-laws a few years before that time to require a director to step down from the board at the end of the second three-year term.

- Lage: For at least a year.
- Moss: For at least a year, and of course you had to be on the board to be elected president.
- Lage: So you had the one year. Did you have in your mind a particular set of goals for the year?
- Moss: Pretty much. For one thing, I wanted to restore the financial viability of the Sierra Club. In the previous year we had run of a deficit of over \$500,000, which was a lot of money for the club, still is. As I mentioned before, it was ironic that some of the people who had gone along with the dismissal of Dave Brower, or at least acquiescing to his resignation, had then produced a result that was worse in an economic sense than Dave had been. I felt that the club was not effectively managed, so I took immediate steps to implement fairly up-to-date management information and control systems in order to keep the president and the directors better informed.
- Lage: Was this information about income?
- Moss: Yes. About revenues, about expenditures, about specific programs and how they were doing financially and what their positions were.
- Lage: Where did your knowledge of all of this come about?
- Moss: I had run engineering-type programs where I was responsible for the dispersment of money to support R & D and testing activities.
- Lage: And you were accustomed to having this kind of information in making decisions?
- Moss: Well, at the time, and even now, I don't put myself forward as the expert on management. That's not my formal education, but knowledge I have obtained about it has been largely through observation and experience of a few things, fairly limited things. I knew that the Sierra Club was not doing a lot of things that well managed organizations were doing. So one of the first actions I took was to appoint a new chairman of the club's administration committee, Ann Carol Brown, who had not only a master's degree in management but also a Ph.D. Very capable, and as it turned out, very talented in engaging the members of her committee and club staff and volunteers in a discussion of what we wanted to accomplish through management systems, and then spelling out how that could be accomplished, what techniques we could use to do it, and then getting their cooperation to implement those techniques.

That action, the good work of the committee which we implemented in large part—and the second thing I wanted to do, which Phil had mentioned, was establishing priorities so we made conscious decisions about the most important things. For example, strengthen the Washington office for what I perceived to be a very critical and difficult time in the years ahead, while cutting out some other activities that were not likely to yield as important a result. Those two actions improved the financial situation of the club enough that in my year we ran a surplus of over \$250,000.

Lage: That is quite a turnaround.

Moss: Yes, a big change. Not only that, I don't think that non-profit organizations should seek to make money, but I think it is important for them to remain financially viable and to protect the institution over the long run as long as the institution is continuing to do good things, which I believe the Sierra Club was and did. So we had to recover from this hole we had dug ourselves into. Running the surplus was the first step in doing that, and in fact, going beyond that, it is important to build up an endowment fund, which I was not able to do. I was simply doing the best in the short time I had.

Lage: Did part of this effort involve greater fund raising or more success in fund raising, or was it all cutting costs?

Moss: It was partly fund raising, but a lot of it was cutting out marginal programs while strengthening others. But it also proved important knowing what our condition was from month to month, so that we could respond to unforeseen circumstances more quickly than we could in the past. We could take actions to cut a budget here or there, when revenue projects were not being realized.

Lage: They needed you this past year. [laughter] You've followed the—

Moss: I haven't followed it. I've heard some comments from people that they've run into some financial difficulties.

Lage: And they've had to deal with revenue not being as great as anticipated.

Moss: You've got to be careful [inaudible].

Lage: There was mention in the minutes about a Stanford graduate school, business school, study. Do you recall that? I think this was an information system.

- Moss: Richard Pascale was another person we called upon, and Ann Carol Brown called upon, to assist where appropriate in this administration committee effort.
- Lage: And he was at Stanford.
- Moss: Yes. He was and, I believe still is, a lecturer at Stanford in the business school. He has written some books on business and customer policy. I believe he used the Sierra Club as a case study, getting information from Ann Carol Brown and from me to present to the class, to discuss alternative ways of resolve some of the club's problems and making it more effective, including its management systems. So that was part of the things that were going on at the time.
- Lage: How did Mike McCloskey accept this kind of managerial change?
- Moss: As far as I know he accepted it very well. You should ask him [laughter], he didn't voice any serious objection to me. I guess that gets back to the question of trust you were talking about, important between volunteers and staff. Mike knew I was not trying to undercut him for I regarded this as a cooperative enterprise and I needed him and the other staff people, as well as the volunteers. We were all acting in good faith. So certainly the motives were all open, and he saw the caliber of the people I was bringing in to do these studies, and I think he was impressed by that.
- Lage: I think it is difficult to come in as an outsider, to study an organization without threatening the existing people. She must have been skilled at it.
- Moss: Very skilled at it. Go and talk to some of the administrative people who were there, I didn't attend a lot of their meetings—
- Lage: Did you come up with big changes in those sessions?
- Moss: I think they were significant.
- Lage: There was some recommendations of hiring an administrative officer.
- Moss: Yes, I believe that was one of them, but also identifying the data we need to collect and when, and what form it should be presented in, to who it should be presented, what kinds of comparisons should be made between projections and actual revenue and expenses. The kinds of things that are done in many organizations, but were not done before me in the Sierra Club.
- Lage: Sort of bringing it into the modern management world.

- Moss: That's right. So try to identify the people who are best qualified to do that. Not only in the technical sense, but in the sense of being very attuned to individuals and organizational relationships, the background of both Ann Carol Brown and Richard Pascale.
- Lage: Because I think the Sierra Club would be a hard institution to come in to and understand, it's very complex.
- Moss: Sure.
- Lage: Had they been involved in it at all?
- Moss: No. Not that I know of, they had both been members but had not been involved in an active way. We were White House Fellows, Richard Pascale was a White House Fellow.
- Lage: Did you have a role as president in visiting a chapters? I see this as a time of the club expanding nationwide, and at the same time still being San Francisco dominated.
- Moss: I did a fair amount of that, especially outside of California. I remember some trips to New England, and Oklahoma, other places. I didn't put it at the top of my priorities. I felt that the high priority issues for me to address were to do what I could to get everyone working together as a unit, to bring in these good management systems so that we could improve the financial ability of the club to do what it wanted to do, and then to target specific conservation issues to which I could contribute and also support those other people doing good work, to provide leadership on other kinds of conservation issues.
- Lage: And what about setting priorities in conservation, was that something that came up during your time? How to decide which issue should get primary funding.
- Moss: Sure it came up. How much we should allocate to each of the major conservation campaigns. We would have discussions of those, and had to decide what to propose in the budget, and even after the budget was approved what shifts to make as things changed during the year.
- Lage: Were these things controversial? Do you remember specifics, if there were a lot of fireworks?
- Moss: Each issue had its proponents. There weren't a lot of issues where there were detractors. To one extent or another it must have been felt that all the issues were worthy of support, but there were difference of opinion as to

whether they were the top three or four on the list. So we had some debates on that question. Couldn't please everyone, but we didn't expect to.

Lage: Was this an area where the chapters would get involved, or the regional conservation committees?

Moss: To some extent. Let me give you an example of something at the time I was uneasy about, though I agreed to do it. In late 1973, during the time of the Arab oil embargo—

[Tape 4, Side B]

Moss: The chairwoman of the Florida chapter, or maybe it was the conservation chairperson I'm not sure, proposed a suit against the federal government for violating the National Environmental Policy Act in granting permits for off-shore exploration and drilling for oil; it was either the off-shore Atlantic or eastern Gulf of Mexico or both. I thought the chances of us prevailing on that suit were low and I wasn't sure that the environmental impact if it was properly managed, and if the location was far off-shore, would be as great as some of the other people who were proposing this suit were claiming. But I had reservations about endorsing that lawsuit, I agreed to it largely because of the very strong conviction of the part of the local chapter.

Lage: Do you remember who the chapter chair was? It wasn't Ellen Winchester, was it?

Moss: It might have been. Ask Mike, he would know. It might have been Ellen. So I agreed to it, and we did it and we lost. We got a fair amount of bad publicity from it, because this was not the best time to propose putting up obstacles to domestic exploration. At the time, and maybe even in hindsight, I would have preferred not to go ahead with that, but I felt that the people that I was seeing were the maybe the best ones to form an opinion about that, and that we should base our opinion on what they say. Of course, you couldn't do that with everyone, because we don't have enough resources to do that with everyone who obviously has an important issue.

Lage: Was that something the Legal Defense Fund felt you could win? That must have come into consideration.

Moss: I think they thought the probability was fairly low, too.

Lage: Sort of political pressure within the club.

- Moss: Yes that's right.
- Lage: One other kind of housekeeping thing. It sounded like you got involved in planning for the move [of club headquarters] from—
- Moss: Mills Tower, yes.
- Lage: There was a decision about whether to buy or lease, I remember. Anything you can remember about that which is particularly significant?
- Moss: I don't remember a lot about it, except that we wanted the space to be in keeping with the image of the Sierra Club; we felt that was important. It should provide some room for growth. On the buy-versus-lease decision, I probably thought at the time that leasing was better because of our limited capital resources; we had a very small fund to invest in a project like this. In retrospect, it probably would have been a good investment. Even without foreknowledge of real estate prices, but with the additional knowledge I have now of similar decisions of lease versus buy, I might have at the time, if I was doing it today, propose purchase instead. It was not something I felt very strongly about, except perhaps that our resources were stretched very thin and a purchase decision would have tied up some of our capital during a critical time.
- Lage: Are there other internal issues that you think we should talk about during your presidency?
- Moss: Do you have any based upon interviews with other people?
- Lage: The ones that I have thought of, we have pretty well covered.
- Moss: You mentioned that I was the first Sierra Club president to not be a resident of California, although I had lived in California in previous years, and that in fact was one of the objections raised by the directors who voted against me in this contest to be president.
- Lage: In 1972?
- Moss: In 1972, and even again in 1973. I obviously had a vested interest in that opinionated decision, but within the broader context I felt that was very shortsighted, the thought that someone had to be close to the club offices to be an effective president. I felt it was symptomatic of a problem that the club had in not properly defining roles for the board and president vis-à-vis the executive director and the staff. In fact, it turned out, I thought, very well and I think that I had an effective administration of the club,

perhaps in part because of my willingness to make decisions and not delay things a lot.

I remember one staff meeting when I commented upon this perception of a non-Californian not being able to be sufficiently involved in club affairs, and commenting that it really didn't make much difference where you live, you still had access to a telephone. That was before the days of computers and modems and faxes, [laughter] which would have been very helpful. The president has to know what he or she should be doing, and have an idea of how that should be accomplished. With that, and a staff they have confidence in, you can accomplish a great deal.

Lage: It seems like trust in the staff is a big part of it. Do you think some of the lack trust that your predecessors showed was a holdover from the Brower years?

Moss: Yes, part of it. Sure, I think that is true. In some ways, as we talked about before, I was probably as tough on the staff as anyone. I think that some of my predecessors for example, would perhaps not have appointed as chairman of the committee someone who would have been so unacceptable to the head of a major program that they didn't want their job. Not so much because they didn't agree with that concept, but because they were afraid of making that decision, and of bearing the consequences of the decision. But it didn't bother me at all.

Lage: [laughter] That is a nice quality. At one point, this may have been before you were president, I saw something that you objected to, a proposal that chairmen of issue committees would kind of join the staff line, would have authority over staff members in their field.

Moss: I saw that as an administrative nightmare. Here we had a small staff of people stretched very thin, with all kinds of demands placed on them, and now we are going to give them each three or four or five different bosses, or [laughter] people to whom they report in one fashion or another. I didn't see that as administratively tenable. I saw that as having to be coordinated through the staff director.

Lage: It does seem like sort of a transition time, defining the proper role of a staff and volunteer. Okay, let's turn to some of the environmental policies. What would you see during your presidency as the major concern in the environmental world, rather than the internal Sierra Club world.

Moss: Well, of course, that was during the time of the energy crisis, 1973-1974. The United States was faced with a cut-off of Middle Eastern oil supplies, prices on oil and other fuels soared, and environmentalists were being

blamed by some people for this course of events through such actions as opposing the trans-Alaskan pipeline. As a matter of fact, one of my experiences testifying for either the House or Senate committee, one of the other legislators specifically asked me whether I would accept responsibility for the energy crisis. [laughter] Forget about the Arabs, forget about whatever the oil companies might be doing or not doing, he wanted me to accept responsibility.

Lage: How did you respond to that?

Moss: No. I think that I answered by explaining what we had done and not done, what we had felt was important and not important, and so on. It's all very hazy to me. But it was a time when a lot of people were critical about environmental organizations and individuals who felt environmental values. We had to keep the club's objectives in mind in a sometimes hostile environment, and get support for those objectives in the wider community. I think we pretty much accomplished that, despite comments like the one that I got at that hearing.

Lage: You had to fight on specific proposals as I remember, the Emergency Energy Act, which was going to sort of rollback—

Moss: —of environmental regulations. A whole bunch of things. People were grasping at straws. Of course, one of the problems was that the government was trying to do too much. The [robbery?] prices of natural gas was just such an issue, regulated by the government at less than market-clearing levels, which created a shortage of natural gas for certain uses. Similarly, the oil price controls—which kept the price of U.S. oil selling at service stations below the world market at a time when U.S. supplies, either domestic or imported, were diminishing—produced the long lines at gasoline stations. The government—

Lage: Why was the price of natural gas regulated?

Moss: Historically, it was regulated because natural gas was regarded as a by-product of oil exploration and development. It wasn't simply that any oil company went out and tried to find natural gas, just that they drilled some holes and they found some, either in association with the oil or separate from the oil. When this first happened they were faced with the problem of doing something with it. Well, the first thing they did with it was flare it, waste it. Obviously people didn't think that was very good over the long term.

So companies built more and more gathering facilities and pipelines to bring it to the places where people could use it as an energy source. But

produced in those ways it was pretty much a monopoly situation, whereby one field would feed into one pipeline, which would then serve one geographical area, not effective competition. So the perception was that this had to be regulated by government to avoid monopoly profits accruing to the businesses involved and industry. Price controls on well-head prices were put into effect, but they continued long beyond their period of economic actability even into situations where there was competition, if not with gas then with alternative forms of energy, sometimes also with gas because multiple pipelines serve the same area these days.

People, including so-called consumer advocates, said, "We have to keep these prices as low as possible." Well, when you keep prices as low as possible, much lower than replacement costs for the price of obtaining equivalent supplies of energy on the world market, you give people the wrong signals as to what the value of, or the cost of, obtaining that resource is, and they tend to use more than they otherwise would. So we could use more natural gas in those years than we should have on an economic basis, and we used some of it for applications in which the value added by the use of the gas was actually less than the real cost of providing the gas, but we really don't see the real cost.

- Lage: So your solution overall was to have pricing reflecting the true cost.
- Moss: Yes, that's right. Pricing reflect true costs, including external costs like environmental costs, the cost of air and water pollution. Which somehow have to be approximated in analysis, or in some other procedure—We can get at that later if you want to because it's a little bit far afield—and then that cost included in the present price. This was pretty new stuff twenty years ago, but now it's generally much more accepted.
- Lage: But is it done or just accepted?
- Moss: Well, some important steps have been taken to bring it to fruition in certain sectors. Trading of pollution permits is one such area. The new Clear Air Act amendments will set up a pollution permit trading system, whereby companies will get permits to emit so many tons per year. Actually, that permit is for one ton per year of SO₂ to the atmosphere, depending upon what their emissions were in a base year, and I figure the base year is 1985. However, they don't get all of the permits that would equal the emissions in the base year, they get only a percentage of that. Which means that in order to continue emitting the same as the base year, and most of them are emitting much more than the base year because they put in new facilities since then, they will be in violation of the permits they obtained from the government. They would either have to buy on the market similar permits from other people would have been issued permits.

Lage: And who want to go out of business instead?

Moss: They are going to go out of business, or maybe can control their emissions fairly economically by installing new technology, and therefore have surplus permits to sell on the market. They can use the dollars they get from selling the permits to pay in part for the new technology they put in to control the technology. The permits ratchet down after a period of time, so the value of them should go up and up, holding technology constant, which is another assumption which will probably prove to be not the case.

The people who are improving technology are finding even better and cheaper ways of controlling emissions, but all that is for the good since it will first of all demonstrate that the pollution problem can be solved to a large degree, since people will have an economic incentive to do it rather than buy expensive permits. After a period of time when this new technology is developed or it is needed, you've got to keep the value of the permits within reason so no one will have a valid reason to object to the whole permit trading system.

I founded the Coalition to Tax Pollution along with George Alderson—this was in the early 1970s after the SST fight. We made some progress in talking to people about these issues, but were not able to get substantial support for legislation at the time. In part because that same organization that I mentioned before, the Natural Resources Defense Council, which as you recall was taking the leading role on the environmental side of air pollution, was a command and control organization. They were lawyers, not economists, and they believed you should pass a law to tell a person what to do and what not to do. You wrote regulations into the law, and you watched them pass them, and that was the way you solved the problem.

Lage: So this is kind of two competing modes of going about making change.

Moss: They are not competing at all in terms of setting goals, and that was an error that many people, particularly environmentalists, were making twenty or thirty years ago. They thought that having a tradable permit or an emissions tax would give an organization a right to pollute and you would not know what the end result would be, you wouldn't know what emissions you'll end up with. The right way to do this, and the way I have advocated right from the beginning, is to say, you have to define what the problem is, what levels of emissions you will tolerate, debating this in an informed political process, then you rely to a great extent upon these economic incentives, these pollution taxes or trading in emission rights, as the means to accomplish that goal. You issue only enough rights that will commit that level of emissions. Everyone else—

- Lage: So it doesn't leave it up in the air.
- Moss: It doesn't leave it in the air. You don't know what the market price of those rights will be. Depends on the evolving technology, what people do, and what their alternatives are. But if you monitor it closely, and make sure that no one is outside the system, you should achieve your goal. It may require the cost of these permits to go way, way up, and that's okay. It impressing upon people the value society is putting on clean air, and it is worth paying that. It gives you a lot of additional information that you don't have now, by the way, about what value we are placing on that. So the whole system becomes better informed, and the whole system is lubricated because it encourages decentralized decision making on the part of the people who know the technology, and that is the owners and operators of these plants. Rather than relying upon government regulators to become experts in each of these areas, which they really can't do, and then fight with the people who know more than them about what is possible and what is not possible.
- Lage: Are there any secondary effects, does it favor large business versus small businesses, for instance?
- Moss: No, not necessarily.
- Lage: I could just see that if the permits became so expensive it may be beyond the league of a small business, perhaps.
- Moss: Well, larger businesses are not necessarily more efficient than small businesses, not necessarily more technically competent. I can think of a number of small companies that have great technical abilities, and a number of big companies that don't, and small companies that make good decisions and big companies who don't. It puts a premium on ability, which is fine. We do that in the marketplace every day, the companies that are able to succeed, and those that are not, and make dumb mistakes and put their money in the wrong places, fail.
- Lage: Does it control where those permits are taken? Or do the standards for air pollution in the various areas still—
- Moss: Well, I think the system as it is in place now is very broadly based geographically. It is possible to break it down into smaller regions, but then you threaten the viability of the marketplace in that the number of trades becomes fairly thin, fairly low—
- Lage: —when you trade within a geographical area.

- Moss: One problem or issue that has to be watched fairly closely, is that you don't want one highly concentrated emitter or group of emitters in one location to decide to buy permits, and to continue to emit to the level where the national air quality standard is locally violated, so that we can have an unhealthy situation locally, even though regionally and nationally you are making big improvements. That is not allowed by law, but it has to be monitored to make sure the law is upheld. In this case the economic incentives supplement the regulations; you are not allowed to violate the national air quality standards.
- Lage: So two different laws have come into effect.
- Moss: Yes.
- Lage: Have these regulations, laws been passed?
- Moss: Yes, they are in effect [Clean Air Act amendments of 1990]. The people are now proceeding with these plans based upon the emission permits, and tradable rights. It is at a very early stage now, and actually I think that 1995 was the first year that the full trading system will be in effect.
- Lage: Were you involved in getting this legislation passed?
- Moss: Only on the sidelines, as a supporter. I encouraged Fred Krupp and the people at EDF [Environmental Defense Fund] to do all the good things they were planning to anyway. [laughter] The foundation we laid twenty years ago was helpful in this, when I testified on behalf of the Sierra Club before the House Ways and Means Committee, which in itself was something of an event—when did environment groups testify before the House Ways and Means Committee, the tax writing committee of the Congress?
- Lage: When did you do this?
- Moss: Early 1970s, 1973 or 1974, something like that, shortly after we had put together the Coalition to Tax Pollution. Some of the leading environmental groups in the country were there with their representatives at the same table with me: the president of the National Audubon Society, the executive director of the National Wildlife Federation, the president of the Environmental Defense Fund. Natural Resources Defense Council was not there. [laughter]
- Lage: NRDC is turning into the bad guy in this discussion. Is that again because you think they are too close to the regulators?

- Moss: Well, it is for the other reason that I gave. It is that their background, their individual education has been through the law.
- Lage: Oh yes, they favor the control and command approach.
- Moss: They have a group of very able and very talented law school graduates, from Yale University Law School; that was the core that they started in. They are not quantitative thinkers, and they did not think in terms of running a business, of what motivates business decision makers to do one thing rather than another thing. So they tended to take the law and regulation approach exclusively, rather than it be a supplement, as I was advocating, with an economic incentive and disincentive approach.
- Lage: It seems to fit the times, your approach. We talked a little about this Emergency Energy Act. You don't seem to have a lot of vivid recollections of testifying in Washington then.
- Moss: No, not a lot. I just remember that one rather unpleasant experience.
- Lage: Brock Evans describes it as being a very hostile climate in Washington.
- Moss: Yes, that's quite true. I remember it as hostile as well. What we tried to do was explain how economic objectives could be compatible with environmental objectives. Producing environmental quality, in most cases, was not something that would prevent economic growth. But you had to be careful about what you did, what projects you supported, what technologies you went ahead with, so that you could get economic growth with minimum adverse environmental impact, or in some cases even enhancing the environment. That was our message. Some people listened and some people didn't. I was chairman of the Federal Energy Office's Environmental Advisory Committee, and then when they became the Federal Energy Administration, I chaired their environmental advisory committee.
- Lage: Now what did that amount to?
- Moss: We had group of very capable people, that were on that committee. I think Bill Reilly was one of them. I remember George Hatsopoulos, the chairman and CEO of Thermo Electron Engineering Corporation, a high tech company in the Boston area, developing some of the technology for energy efficiency improvements; Jerry Decker, energy manager for Dow Chemical; and a bunch of people from environmental organizations. We talked about the policy issues before the Federal Energy Office and the Federal Energy Administration, kind of laying out before them what has

since become conventional wisdom about paying some attention to the demand side of the energy equation.

[Tape 5, Side A]

Lage: You were talking about energy office.

Moss: The environmental advisory committee. We would advise the administrator and the assistant administrator on energy and environmental policies. We talked about some of the things which have since become conventional wisdom, looking at the demand side of the energy equation, with the enormous potential for saving energy with more efficient lighting systems, cogeneration. Today there are a lot of other things that I could mention, like pinch technology analysis—

Lage: [chuckle] I've never heard of this.

Moss: Which nobody even knew about in the 1970s because it wasn't invented yet.

Lage: Were the people from industry as interested in this as your environmental people?

Moss: Yes.

Lage: And were they in the kinds of businesses that would use this technology, or manufacture them.

Moss: Well, in the case of George Hatsopoulos, his company was in the business of developing technologies like this and marketing them, and making a profit. He has been an extremely successful entrepreneur, not only in his basic company, Thermo Electron Engineering, but also in off-shoots of the company which he has spun off, selling some of the ownership in public markets, for example, a cogeneration company.

In the case of Jerry Decker, Dow has been a leader in cogeneration for decades. They did that in Michigan, started in Michigan because energy was more expensive in Michigan than it was down in Texas, and they had to do it to be competitive. Jerry was involved in a lot of those developments, big cogeneration plants, almost as big as central state utilities in some cases. That has since, in recent years, has led to an off-shoot of Dow, which is now also publicly controlled, a company called Destec, which probably has the most advanced coal utilization technology to produce electric power. Coal gasification combines cycle power plant, high efficiency, very, very low emissions of most of the conventional

pollutants, the exception of course is carbon dioxide. There's not anything we can do with that. At least nothing we know of now that wouldn't take up as much energy as you gain on the whole.

Fred Kahn, a professor at Cornell University who became chairman of the CAB [Civil Aeronautics Board]; I think Bob Carr [?] was on the committee for a while too, but I'm not sure about that, for instance, during some of those years he was a member of the president's Council on Environmental Quality. So we had very strong group, anticipating a lot of later developments in energy policy in our letters to the administrator.

Lage: Did you have an impact on policy?

Moss: [laughter] Funny you should ask that. I'd say we had a small impact at the time, a large impact after that decade. I remember one comment that especially aggravated me. One of the people I dealt with frequently on the FEA [Federal Energy Administration] was Roger Sant, who was assistant administrator for environment and efficiency or whatever, I'm not sure of the exact title. We had talked to Roger on several occasions about these sorts of things, looking at the demand side and internalizing environmental costs, doing the things that would set the right prices so that people would make intelligent decisions and so on.

Very little of this seemed to be implemented further during our years as the environmental advisory committee, but when Roger left the FEA I had another discussion with him and he had the nerve to say, "Larry, I want you to know you were right in everything you were saying and I agree with you 100 per cent, and I'm just sorry that I didn't do more on those things." [laughter] That is not the appropriate time to tell the chairman of the committee that. It's better than nothing, but it makes you wonder about lost opportunities. As it turned out, Roger became the president and CEO of a company called Applied Energy Systems, which has played a leading role in cogeneration power, which in many cases is a more efficient way of using energy; it uses more of it. His company has come up with some interesting initiatives on environmental protection. One of which, involving CO₂, is to buy enough tropical forests to convert the carbon dioxide that their plants put out back into fixed carbon.

Lage: So this is an international arena.

Moss: Yes. International.

Lage: To get a permit allowing polluting up here [in the U.S.], you'd have to protect the rain forests elsewhere.

- Moss: Well, the amount of carbon dioxide didn't violate regulations, but they did it voluntarily as a policy issue for them and as well as a way of showing their support for environmental measures. I suspect they are working with John Sawhill at the Nature Conservancy on this. John, who is now president of the Nature Conservancy, was for a time the administrator of the Federal Energy Administration, so he was one of the administrators I dealt with during this period.
- Lage: This sounds so fascinating.
- Moss: [laughter] Before we started recording, you were talking about smoking at Sierra Club meetings. The first FEO administrator I started with was Bill Simon or John Love, the former governor of Colorado—
- Lage: I think it was Bill Simon from what I read in the minutes.
- Moss: I know my committee served with both of them, but I'm not sure which one was first. Anyway, at one of these meetings of the committee, Bill Simon came in and sat down next to me and started pulling out a big, fat cigar. I took one look at that, and I turned to him and said in a low voice, "I hope you're not going to light that; I don't like breathing tobacco smoke." And he very nicely put it away, and didn't comment about it. But I heard from his staff that when he got back to the office he was ragging and raving about crazy environmentalists. [laughter]
- Lage: He probably wasn't going to make a scene while he sat there during a meeting.
- Moss: This issue came up during my tenure on the Sierra Club board, because I didn't think that Sierra Club board members or others should pollute the air that other people in the room had to breathe.
- Lage: And did you get it banned during your presidency? I know it has been for a long time.
- Moss: I think so, but I am not positive about that. You could ask some of the other people. Let's say I discouraged it enough that not very many people did it, and those who did it were either beyond redemption, like Martin Litton, or secretive about it, like Claire Dedrick, who would, I would notice, not be present for the meeting. I would ask people around the table, "Where's Claire, she was here just a few minutes ago," and Claire would answer from the hall where she was sitting on the floor smoking, "I'm out here, I'm listening to everything." [laughter]
- Lage: Oh dear, well times have changed in that regard.

Moss: Thankfully. Now hardly anyone lights up at a meetings; it's considered to be anti-social. Which it is.

Lage: Except in other countries.

Moss: That's right.

Lage: The Japanese, and I guess Europe too. Shows you how much social control can do.

Moss: Quite right. I think smokers first of all are not real aware that other people object to have to breathe the pollution, but a lot of them are probably becoming aware that this is not an intelligent thing to do and may reflect on people's perception of them.

Lage: I think so too. And there is a sense now that secondary smoke really is damaging. I think in the 1970s it was more that you just had a dislike, sort of a frivolous dislike it was considered.

Let's see, I wanted to move back into Sierra Club energy things if we can. Mike McCloskey says you wrote a lot on energy legislation and testifying for the Sierra Club in 1975 and 1976. This would be, I guess, after you left the board. Do you recall those?

Moss: Not in any detail. But when an issue came up on energy policy or environmental impact, I was available to represent the Sierra Club.

Lage: Because you were living in Washington?

Moss: Yes, I was in Washington at the time.

Lage: Did you work with the Washington office closely, lobbying, or do you have any comments about that program in anyway?

Moss: I worked with them very closely on these coalitions I put together. They played very important roles in this. Lloyd Tupling, for example, and Brock Evans, when he came to Washington to head up that office. By the way, that was a staff change that I encouraged, to bring Brock to Washington, and to make Doug Scott the Pacific Northwest representative. As president I perceived one of my roles was to try to identify the strengths and weaknesses of each of the staff people, and try to put them in situations where they would be most effective and contribute the most to club efforts. Of course, I didn't do this in isolation. I would discuss this with the people they were working with, with Mike and others, but in most cases we could agree on what should be done and we put it into effect.

Lage: I forget who Brock replaced, did he take over when Lloyd Tupling retired, is that it?

Moss: Yes, I think so. Well, Lloyd didn't want the administrative responsibilities, and I think when Lloyd gave that up Brock stepped in, but again I'm not 100 per cent sure of that. Of course no one called him Lloyd, we all called him Tup.

Lage: I keep bringing up things that I've read in oral histories, like I'm tattling on you or something. [laughter]

Moss: That's all right.

Lage: Brock Evans mentioned that the pricing issues in the energy policies were very difficult for him, the kinds of things you were interested in, were difficult for him working in coalition with other groups, consumers groups in particular.

Moss: Yes. Probably the Consumer Federation of America. As a matter of fact, the chairman of the Consumer Federation of America was a former chairman of the Federal Power Commission, an individual who had a populist streak to his background and who felt that low prices were better than high prices. Even if the low prices didn't reflect the true cost.

What I tried to tell people was that you could be for low prices, much lower than true costs, and you could be for environmental protection, but you couldn't be for both and be consistent. That in, at least, that respect the objectives of the consumer groups, some of the consumer groups, not all, and the environmental groups were at odds. That we ought to do our best to educate the leaders of the consumer groups about why this was an important issue for us, why you couldn't allocate resources efficiently, including environmental resources, when you suppressed the price below market-clearing or true-cost levels, and why in the long run not suppressing the price would be of benefit to the consumer, because all of the component costs would be considered by the consumer in making intelligent decisions among alternatives.

Lage: But if you're somebody who has to get to work [with limited financial resources] . . .

Moss: That's a hard argument to sell to a lot of people who think in the short-term, and who think of what appeals to their constituency. Up until that moment, they had been making a very major pitch to the effect that they were in this alliance to keep the consumer from being gouged by powerful economic interests who wanted to raise their prices above what they

deserved to retain. So that was a hard one for Brock and for a lot of other people. But again I was trying to be consistent.

Lage: Did you work with any of these consumer groups, or did you want to try to explain—

Moss: Oh yeah, with all I mentioned. For example, Lee White, the former chairman of the Federal Power Commission, I had a number of discussions with him on this and made no visible progress at all. Incidentally, he was another cigar smoker. [laughter]

Lage: So you do remember these people. This is too long for you to read now [referring to background research paper], but these are energy policies and air pollution policies that were passed during your time on the Sierra Club board.

Moss: Sierra Club policies?

Lage: Yes, Sierra Club policies. This definitely puts forward pricing as the main way of control, but it also says here, "Until our society devises an effective program to address the economic needs of the poor, special provision must be brought into the energy rate structure to assure all domestic users a minimum quantity of energy to meet basic needs at rates that will not adversely impact them." Is that something you went along with, or was that a compromise—

Moss: Yes, it was a compromise. I had reservations about that on a number of levels. One level was that the potential complexity of administering a provision like that. I could see by the way giving very poor people money to help compensate for higher energy costs, but building into the rate structure itself ran the risk of subsidizing a lot of people who weren't poor to one extent or another.

Lage: And also make it very complex.

Moss: And make it very complex. But there were people, both within, in fact, the Sierra Club, who felt that we had to make a specific proposal along these lines. I would feel it violated the spirit, or even the practicality, of going ahead with the main thrust. This, in the public utilities industry, is sometimes referred to as an inverse rate structure. We have a low kilowatt per hour for the first small block of power, and then higher rates for subsequent blocks. Which was the reverse of the way it was at the time, at the time the first little bit was high priced and the last large amounts were low priced. As long, and practically speaking from the stand point of economic theory, as long as the marginal energy purchased and not

purchased by each consumer is properly priced, they attempt to make the right decisions. The first little bits of energy don't have to be properly price.

Lage: Because they are going to purchase them regardless.

Moss: Regardless. Whatever the price of that first little bit is, it doesn't affect the benefit or the cost to them of the last bit purchased at the correct cost. So this was an acceptable compromise to me.

Lage: But were there ever people interested in this pricing approach in the club, or was this something you more or less stood alone on?

Moss: Some of the other directors were supportive of this. Maybe not as far out front as I was on it.

Lage: The club Energy Committee seemed to have recommended that statement.

Moss: Sure. They appreciated its value and its importance. I don't think there was a lot of opposition to the main thrust, and I think the Sierra Club was very important in leading the way among the environmental community in describing the importance of this, and others eventually followed.

Lage: It looks like a very thorough statement of policy.

Moss: I see this is when I was vice president.

Lage: Yes, that was just before you came in as president. But you and Will Siri had proposed—had made the motion and seconded it.

Moss: That is another example of how willingly I agreed on substantive environmental and conservation issues, because it was something that made sense to us.

Lage: Then there was a policy on air pollution, I believe. [shuffling of papers] A proposed policy on air pollution, which was at the end of your term. Does that ring a bell? That was in response to the Emergency Energy Act.

Moss: Yes, the Clean Air Act was under attack by the industry during the so-called energy crisis. A lot of people were blaming energy shortages on the people who were trying to protect the environment and combat air pollution. We emphasized our support for the primary public health standards as adopted by the Clean Air Act, and said that it was reasonable to pay additional money to achieve them, pay additional money for energy in order to protect our own bodies. Part of this concept has been

internalized in the role of costs, including the environmental costs, and the government paid to do that.

I see we've affirmed again our support for phasing lead out of gasoline.

Lage: Just recently done. Here anyway.

Moss: That's had, I think, both immediate and long term health benefits, that probably go beyond, well beyond, most of the health benefits of a lot of other things that we are spending considerable sums on.

Lage: I've heard a lot of complaints recently that some of the changes we make now, new rules being put in for air pollution and the like, are requiring vast sums of money for very small improvements. That the basic—

Moss: This is—are we talking about the Bush Administration then, [laughter]

Lage: Yes.

Moss: —and Vice President Quayle. That argument has been made on several levels, but I guess the more sophisticated critics allege that the costs of moving the primary standards, the health standards, is probably justified, and going well beyond it in certain areas, as we may indeed do, especially if the acid rain legislation, which was recently adopted, and the tradable emissions permit system is perhaps not economically justified. I suspect that they are wrong, and the analyses that I've have seen by the economists who have looked at that question have omitted some important factors.

The amount that we should be spending as a society to achieve air quality goals is, or should be, a function of the willingness of people to pay to achieve different goals. There is a way in economics of quantifying that willingness to pay, it's called the contingent valuation method or CV method, and it involves in a very systematic manner and a very structured manner using surveys of people to value public goods. You can't value public goods in the marketplace because there isn't any marketplace.

Lage: Like breathing air.

Moss: Right. I can't go out and buy clean air to follow me wherever I go, or even to be around me if I stay in one place. I've got to work through a political decision-making process to have laws and regulations, and tradable permits, and whatever put in place to achieve those goals. The actions have to be taken collectively, not individual decisions in a marketplace, where there is a market price.

So we have to come up with ways of estimating what the market price would be if there was a market, and one way is through surveys carefully done, using a theory which has gotten a lot of study and development over the last ten to fifteen years, called the CV method. It achieves pretty reproducible results in different circumstances, although you have to be careful about how you structure it and go to go about doing it.

I suspect that if a group CV study were done, some of the things that are not properly considered by the economists who made those objections that you first raised, economists who I would say are in some respects looking under the lamp post for their keys, not because that is where they thought they lost them but because that is where the light is. [laughter] In this case they are quantifying some of the impacts of air pollution that are easy to quantify, but not quantifying others that may be much more important quantitatively, but which are harder to quantify.

For example, the question is what is the willingness to pay of people to prevent X number of cases of, let's say, chronic respiratory disease, and Y number of cases of another respiratory condition. An economist can look at the money people spent in doctors' bills and going to hospitals, and say that will be a proxy to what people are willing to spend to avoid that exposure and that condition. But we know that is not true. People might be willing to spend less, or probable more, if they didn't have to see the doctor or go to the hospital, and didn't have to suffer.

Lage: You can take off lost work time, but that doesn't factor in sense of well being.

Moss: Some economists think it is not rigorous to use data that is not obtained in market transactions. That is, it's a market transaction to go to your doctor and have him examine you and treat you, and pay the doctor for the service, and pay the pharmacy for medicine. That's a market transaction, but it is not a market transaction to just sit there and suffer, or to go to the doctor to be treated and still sit there and suffer. That is where you have to broaden the approach to things like the CV method, to ask people more directly what they would be willing to pay to avoid these things.

Lage: Now, how do you get a sense of what they would be willing to pay? It is awfully hard for people to say exactly how much money it would be worth.

Moss: What you do is, and I can only explain this in a very superficial way and if you want to pursue this there is an excellent book on this subject by Robert Cameron Mitchell and another published by Resources for the Future about two years ago in 1990. Obviously, you ask the questions in

the most neutral way possible, but you also put the question within a context, within a framework.

For example, one framework you can provide is what people on average spend for different things in our society, how much they spend on health care overall, or how much they spend on recreation. The fact is people are a yardstick of sorts up against which to say what they would be willing spend for the various things that are proposed to them. Then you have to be very careful and as scientifically exact as you can to explain to them what the consequences of spending the money and not spending the money will be. So they had a clear idea then, and they did not all make it people who were engineers and scientists, so you have to explain it simply and effectively, and that is a big step to prepare a survey instrument.

Then there are the different types of questions you can ask. In some surveys the person is asked, would you rather do this or would you rather do that? Well it turns out that research into this method has shown that not as good a survey technique, doesn't produce as consistent results, as a direct question asking willingness to pay. I wrote a paper on this about a year ago, and listed the attributes of the CV study for a particular application, and I came up with about fifteen or twenty ways in which the study should be structured to make it the most reliable and objective for each of these fifteen different characteristics. So you have to get down to that level of detail. But once you do that, you can start asking people what they would be willing to pay to see X miles instead of Y miles two hundred days of the year.

Lage: Not even a health threat but just a regular amenity.

Moss: That is right.

Lage: Hold on.

[Tape 5, Side B]

Lage: Okay we should probably wind up the CV, as interesting as it is.

Moss: Just to get back to answer your question, I think that if is properly known, we will find that the willingness to pay—certainly for things not considered serious by the economists who make these criticisms—the willingness to pay is much, much greater than even they would have thought and a lot of people would have thought, and that tips the balance in favor of these larger expenditures on emissions control, in many cases. Maybe not in every single one, but in most of them.

Lage: That's comforting.

Moss: Let mention another thing, both in the Sierra Club context and the non-Sierra Club context. That is the whole question of risk/benefit analysis, which I was involved in at the National Academy of Engineering, publishing some reports on the subject. Having to make intelligent decisions about, for example a new technology which might have some risk to the public: health, safety, whatever, but also has benefits. In what context do you put that set of information and how do you make the decision? I would argue for some consistency.

Again getting back to this question of scarce resources, you don't want to, for qualitative or ideological reasons, to spend a hundred million dollars to save one life in area A and spend only a hundred thousand dollars to save one life in area B, because if you spend somewhat less money in area A and somewhat more money in area B the society as a whole will probably be safer and happier.

So I've been involved in studies to see what in fact we do regard as tolerable as a society, in terms of risk of what technologies, what actions, and hence on whether the risk is perceived as being a voluntary one or an involuntary one. Smoking is one example of a voluntary risk; I'm not into the secondhand smoke now, I'm into the primary smoke effect on the smoker. But riding in an automobile in this day and age is probably an involuntary risk, because a lot of people feel they need them to get around. The public is willing to accept different levels of risk for voluntary versus involuntary. I was aware of all of this within the context of discussions we were having in the Sierra Club on allocating Sierra Club resources for various things, and also in the context of setting Sierra Club policy on things like nuclear power.

Lage: That was one thing I wanted to talk to you about.

Moss: My position was that we had to view nuclear power within the larger context of energy supply, and look at the cost and benefits and risks of the various technologies. I would broaden that to include demand-side technologies, as well as supply-side technologies. Only then could we make an intelligent decision on nuclear power vis-à-vis alternatives.

Lage: Is the information at hand to do all that, to make that kind of judgment?

Moss: It was in different places. It really required some research, some pulling together. Finding out what other people had said about that after studying it. But there was a lot information available. A lot Sierra Club people, including a majority of the board of directors at the time, were not

sympathetic to that approach. They felt that there was something different about nuclear power. This is an acceptance of the argument that Dave Brower was making, nuclear power is something new; it is not something man has lived with and adapted to, and therefore it was too risky to take on.

When I was president, the board voted—it wasn't unanimous, but it was a good majority of the board—to change the club's nuclear policy, to pretty much oppose nuclear power until and unless solutions to certain problems were clearly established, one of which being the disposal of radioactive waste. Well, the disposal of radioactive waste was certainly a problem, although it is not perceived in the scientific and engineering community to be a great technical problem. It is perceived as more of a political problem.³

Lage: To find a place to put it, where the people will accept it?

Moss: A politically acceptable place. But the argument is somewhere you can find a place and an engineered facility where there is less risk than a lot of non-engineered, natural radioactive material that is all over place. Not to say that the nuclear power waste won't be more concentrated, but it will have all kinds of barriers and be isolated. So therefore, overall, it should represent a lower risk. At least, I think that is the majority sentiment within the scientific and engineering communities, which, I think, I pretty much agree with, although obviously steps have to be taken to implement it, and each step is resisted by environmentalists and others very determinedly.

But I felt we ought to consider all these energy technologies within a context in which the risk and benefits could be compared, and then set Sierra Club policy. The club decided not to do that, and that's probably the one policy issue that I was most unhappy about, because it, in my opinion, risked the credibility of the club in the scientific and engineering communities, and even within its own membership.

Lage: There are a lot of strong opinions on that, pro and con, it sounds like. Not just on the board, but coming up from the grassroots.

³ On January 12-13, 1974, the Sierra Club Board of Directors voted to oppose new nuclear fission reactors pending resolution of safety factors and adequate policies to curb energy over-use, after a several-hour debate and strong support for a moratorium from club grassroots leaders. See minutes of board or *Sierra Club Bulletin*, February 1974, p. 15, for full text of nuclear power policy.

- Moss: Well, the people against it, at least as I remember the debate, the people against it were more strong in their opinion. I started out—
- Lage: The people against nuclear power.
- Moss: Yes. They didn't regard it as a debatable issue, and they certainly didn't accept the idea of weighing risks and benefits of alternative technologies.
- Lage: I could see that if somebody was really emotionally involved in an issue they might almost not even be willing to listen to that argument. Did you have that experience?
- Moss: That's right. Let me say that I heard that word, emotion, used very often in debates on environmental issues, and when I hear it I usually point out to people that, if they are talking about the values that people have, those are important to consider in the debate and in the decision. Obviously you can't satisfy everyone's preferences and values, but values are worth something and to the extent that people's values can be adhered to they and perhaps others are willing to pay something to achieve that. So when environmentalists are criticized for being emotional about an issue like the SST, I say "That's interesting, I find that business people are very emotional about dollars and making money." [laughter]
- But the real point is that different people can have different values, and attach different weights to different attributes, and therefore come up with a different conclusion, and that is perfectly legitimate. If we have a supposedly open and accessible critical process in which to resolve differences of opinion like that and reach a decision, or agree not to decide, whatever the case might be. So I won't object to people having values that make them oppose nuclear power. To the extent that I have an objection, it's that they—that's really not their primary value, their primary value is to protect the environment, or to protect people's health, or to achieve certain other things. I mean, nuclear power is a means to an ends, not an end in itself. It's just a way of providing energy.
- Lage: So whether—
- Moss: So that's not a value. But they confuse the means with the ends, and with the values that they hold, and think that it is one of their values to get rid of nuclear power when that may or may not be consistent with their primary value, protecting the environment or helping save it. They have to think first of their primary values and then evaluate nuclear power and other technologies within that context.

- Lage: But don't you think in some sense it was all a disagreement over how sure technology can be to make nuclear power safe? Maybe we should just suspect the engineers, let's say, and their abilities to engineer good solutions for these potentially dangerous—
- Moss: The element of uncertainty and risk is important in any of these analysis, more so for some than for others, and that's legitimate to include in the analysis, and there are ways of including it. A whole science has developed around this, called decision theory, in which uncertainty is treated in a mathematically rigorous and quantitative way. You ask people, the experts usually, what probability they place on certain things happening, and they don't have all the information and they are not sure about things like how well people will manage a complicated system. Then you construct probability codes and use those to estimate the probability of different outcomes occurring and the consequences of those outcomes.
- It is a systematic way of providing information for the decision maker to be much better informed than he or she would otherwise be, to make a decision. I would have been delighted to have had that kind of exercise take place during this period, but there was no tolerance for that, obviously. There was just a feeling, that I, so-and-so, had decided that this is too risky.
- Lage: So it wasn't a rational process, you are saying.
- Moss: I think it was not entirely rational. Or let's say it was not a well-informed decision-making process. The information that would have been useful to the decision makers, in seeing the extent to which different alternatives would conform to or conflict with their primary values, was not available to them. I'm all in favor of informed processes and electorates.
- Lage: I guess, but from what I've seen of people and how they work, I question how often this kind of informed decision making ever does take place. How many times do people really consider all these alternatives in such a thorough way?
- Moss: I've been accused from time to time of putting too much reliance upon logic and being rational. [laughter]
- Lage: I would think it would frustrate you terribly.
- Moss: Being accused of it?

- Lage: No, no. Having your expectation, that this is the way things should be done when, I would guess, in most cases they are not done this way.
- Moss: Well, of course, my idea of a logical process is much broader than is the idea of some other people. I subsume all of these values that we are talking about, and other people might say that is not logical or rational. I differ with them on that.
- Lage: You might even subsume fear, the quality of fear of having a nuclear reactor; how much could fear, even if it were irrational, be brought into your system?
- Moss: I could see doing a CV study where people would be willing to pay to keep a nuclear plant away from them, and use that in the analysis. [laughter] That would be interesting.
- Lage: It sounds like it should be included, because if it made you anxious that certainly would affect your quality of life. Is there anything else you want to discuss about that decision on nuclear power policy, about particular people and their involvement?
- Moss: Well I haven't talk about a number of people who were very important to the Sierra Club during that period.
- Lage: Let's do that a little bit now then.
- Moss: Paul Swatek, for example, who was a very logical person, so he and I got along just fine. [laughter] Had similar values. He was usually a supporter of the things I was trying to do, and he had good ideas that I supported. Claire Dedrick, similar in effectiveness and in support. Martin Litton; Martin's personality and values and inclinations were more in tune with Dave Brower's than with those of us who had a different educational—
- Lage: The qualitative side would have been stressed. [laughter]
- Moss: But Martin was important in educating me about certain things. For example, the ecology of places like the Grand Canyon, or on a couple of river trips. Learned a lot, and we agreed on a number of the important issues facing the club. I'm sure there are a lot of others.
- Lage: Any of the newer people coming in, I think of people who were presidents after you, Kent Gill, we talked about.
- Moss: Yes, Kent Gill was there.

- Lage: And then Bill Futrell and Ted Snyder. Ted Snyder wasn't on the board yet, I don't believe, or was he?
- Moss: I think he was elected the year after I left, but I am not positive about that. Well, Ted was a very valuable volunteer at the time. He was, I guess chapter chairman, RCC [Regional Conservation Committee] chairman in the Southeast. We dealt together on a number of issues and had a very good relationship. I had a good relationship with Bill Futrell. Bill was temperamentally quite different from a lot of the other Sierra Club directors, but in some ways temperamentally inclined to do some of the things I wanted to do. That is, to not procrastinate, not spend a lot of time examining the decision beyond the usefulness of that. So I liked that, and I think we were—
- Lage: He was ready to make decisions?
- Moss: Ready to make decisions and move on. I appreciated that. Very smart person, and quite capable.
- Lage: When you said temperamentally different—
- Moss: Different from some of the slower pace directors.
- Lage: Oh, I see.
- Moss: Who didn't want to be pushed into a decision, and who thought perhaps that Bill or I were pushing too much on certain things.
- Lage: As president were you able to kind of set the pace of the meeting at different levels, is that one of the powers of the presidency, to move things along.
- Moss: Yes, but in retrospect I would have liked to have done more to have the board decide in advance what was important for it to do and what was not important for it to do. We spent a lot of time reviewing specific conservation issues and deciding whether to go ahead in certain areas or not, and a lot of that could have been delegated to probably the RCCs. At least, delegated if there was no substantial opposition to a proposed course of action. We should have spent more time on the strategic planning, which was one of the real functions of the board.
- Lage: Looking ahead.
- Moss: Looking ahead. Strategic planning, what they wanted the organization to be like in two, five, or ten years in the future, and how to change itself to

accomplish that. Strategic planning, allocation of scarce resources through the budgeting process, and picking the key staff people, were probably the three most important things the board can do, that plus making sure the revenue is there by fund raising and business revenues from things like publications, outings, memberships, which in a way is the Sierra Club's business.

Lage: Ted Synder refers to feeling blue after being club president. I don't know exactly what he was referring to, actually. Did you have any of that sense, kind of, "Oh God, it's over, don't do that again"?

Moss: I was glad that it was over, because my first-born child was born right around the end of my term, and I wanted to devote more time to him and the family. The Sierra Club was an experience which would have taken as much time as you were willing to give to it, and you felt as though you had to give a lot of it to be productive and effective.

So I was not unhappy about that, but on the other side I felt we had made a good start in a number of areas and it would have been useful to, perhaps, continue for another year or two if it would have been possible, but it was not, to bring more of those things to fruition and to make additional initiatives in some areas, like the strategic planning area and the Sierra Club Foundation. But one person can only do so much, and there are a lot of able leaders in the wing to take over, so I was not unhappy about stepping down.

Lage: Were you ever tempted to make a comeback, to run for the board again after the year off?

Moss: No, I wasn't.

Lage: But you still maintain some ties through lobbying—

Moss: Yes, more so in the 1970s, than in the 1980s or 1990s.

Lage: Let's see if we've covered, I think we've covered most—oh, the national coal policy project. Would you mind talking a little about that?

Moss: No, that's kind of interesting. Can we take a quick break?

Lage: Yes, that sounds—

[Interruption]

Lage: Okay.

Moss: I mentioned that Jerry Decker, the energy manager of Dow Chemical was on the FEA environmental advisory committee. Sometime around 1975, after a couple of years on that committee, Jerry approached me with the idea that it might be of some benefit to bring together a group of environmental group leaders with industry leaders, to talk about how coal could be mined and transported and used in an environmental responsible manner.

Lage: Tell me again what Jerry's position was.

Moss: Energy manager of Dow Chemical. Towards the end of this project, he left Dow and became vice president for energy at Kaiser Aluminum and Chemical Company, and then even later he founded his own company, Decker Energy International. But at the time he was with Dow, and had been with Dow all of his working life, probably at the time thirty-five or forty years. It involved him mainly in cogeneration projects, including the efficiency of energy use and so on, helping develop technology.

But he had talked to a number of people in the coal industry, utility companies, big energy users like steel companies, asking them what they felt the obstacles were to more use of coal. Jerry felt that was important to do, because coal was a domestic resource. Most of them responded that the obstacle that they saw as most important was environmental opposition. Jerry felt that coal could be mined in an acceptable way and wanted to engage the environmentalists in a discussion of how that might be done—to reach a consensus on what those ways would be, and publish the consensus, and get wide support for it.

So he approached me with this proposition and I said "Sounds interesting. Let's bring together a group of at least a few environmental leaders to talk about your idea." We did that, we had a meeting one afternoon, I believe, probably after one of our environmental advisory committee meetings, and I think we had it at the FEA, I don't think there was a Department of Energy in those days.

I invited some key environmental people on this issue to talk about it. Most of them were kind of skeptical that anything very productive could be achieved and that it would be worth the effort that they and others in the environment groups would put in on it. But we talked about it and questioned Jerry Decker and two of the people he had brought along pretty closely about how this sort of process worked and what they thought could be accomplished.

Then after the meeting, I talked with a number of the environmental people about what we could accomplish out of the process and how certain

issues, which were important to us and that were not being properly handled or even people being properly aware of them, could be brought to the floor and would, perhaps, be listened to with more interest if a group of industry leaders agreed on the importance and the position of those issues. Almost all of them felt that it was worth, at least, convening a first meeting of the prospective group, picking a couple of issues for discussion that we could talk about, and then we could decide whether the process itself had merit, whether there was any chance of agreeing.

So we decided to go ahead, I'm not sure where we had that first meeting. I think it might have been Aerie House, outside of Washington DC, not sure about that. By the way, Aerie House was the place where the White House Fellows Commission selected the White House Fellows in the year that I was picked. The two issues selected were air pollution and energy pricing, especially electricity pricing. Most coal is used to generate electricity.

Lage: Two of your favorites. [laughter]

Moss: That's right. The industry side picked air pollution, and the environmental side picked energy pricing, which surprises most people. That the environmental side was beginning to try to make a point, that until the prices were right, people would not be making intelligent decisions about which kinds of energy and how much energy to use. They would tend to use too much, because the prices were being held below their full cost levels, and therefore more coal would have to be burned and more polluting power plants would have to be built, than would be economically optimal.

The industry people picked air pollution because they saw a ten-year pollution [permit] as a real obstacle, especially with environmental opposition. So we discussed those issues, and the people at the meeting felt pretty good. At the end of the meeting we asked whether they thought the process was worth continuing, to discuss those issues in more detail, and also to broaden it to include mining and transportation and a bunch of other things, cogeneration.

So we constituted the National Coal Policy Project. We brought it under the auspices of a neutral third party, Georgetown University's Center for Strategic and International Studies, CSIS, and they provided some administrative support and a neutral meeting ground. But they, by agreement of the parties, did not participate in the substantive discussions; they would provide the setting. It wasn't a matter of the project hiring experts who were not part of the environmental or industry communities, to—

Lage: It wasn't a research project.

Moss: No, it wasn't a research project. It was a project of obtaining consensus, but in going down that path it was important to develop facts about mining, and reclamation, and energy pricing, and a whole bunch of other things, air pollution. So we did constitute task forces, but each of the task forces was made up of an equal number of industry people and environmental people.

Lage: So at this point, you were bringing in a lot more people.

Moss: Oh, yes. We involved at least sixty on each side, a total of a hundred twenty, not counting people out in the different regions which we visited and heard presentations from. Either environmental, regional environmental, local environmental groups or local companies, touring their facilities, their mines, their plants.

Lage: Did Georgetown fund this also?

Moss: It was funded largely through foundation grants, Ford Foundation, Rockefeller Foundation. Some of the companies put up smaller amounts of money individually; collectively, they were significant. The government was involved too; I don't know if it was the FEA, put in a small amount of money. Incidentally, we discussed the question of whether government agency people should be full participants in the project, and largely on their advice, we decided against it. They reason they gave, which we agreed with, was that—Do you want to change tape?

Lage: I was hoping we could finish this sentence.

[Tape 6, Side A]

Moss: —whether government agency officials should be full participants. We had decided early in the project that each person, although having leading roles in their organizations on these issues, should be regarded as speaking for themselves only. They were representing themselves and not necessarily their organizations. We felt this was important to expedite the process and to bring out the freest views possible from the participants.

The government people said that institutionally they really couldn't do that, they couldn't make any policy pronouncements without clearing it with their agencies. So they and we felt that this would impede the process that we were trying to achieve, and they agree that they should be there as observers to see what was going on, and obviously as customers of the

products, the reports and presentations that we had, the agreements, but not as full participants. I think that worked out well.

We tried to involve all the leading people in environmental groups that were playing important roles on this issue and were successful with a couple of major exceptions. On the national level the major exception was the Environmental Policy Center, based in Washington DC, which up to that time had played not only the coordinating role but the leadership role in setting the policy of environmental organizations towards strict strip mining regulation.

The regional group exception was the Paddle River Resources and Conservation Council, I think it was, although I probably got their name wrong, but they had been working very closely with the Environmental Policy Center on strip mining issues in the West, and they, I think, felt that they had to go along with the EPC lead on whether to participate or not.

Lage: Did the EPC give you a reason for not wanting to get involved?

Moss: The reason they gave was that they felt it was an unproductive use of their time. They were busy on what they believed would be more productive things, lobbying and coordinating the environmental organizations, and they didn't want to have their people spend a lot of time on this.

I think there was another reason, which they didn't give, and that's that up until that time they had pretty much set the policy of all these different environmental organizations on this issue by virtue of being the organization doing the most in that field, and they may have felt that we were infringing on their turf by involving the principals directly, the leading people from the environmental organizations in direct conversation with leading industry people. That would short-circuit their, up to then, role as intermediary and perhaps lessen their power.

EPC is, or was, a Washington based organization that didn't have grassroots membership and grew up in the Washington culture, and probably felt very insecure about sharing this kind of power with another upstart organization. Of course we didn't think of ourselves as an organization as much as a process, a way of pulling together, to connect the leaders of EPC and environmental groups with the principals on the other side. But they didn't see it that way, and they chose not to participate. We did our best to keep them informed, circulating draft of studies and reports to them and asking for their comments, and inviting them to one of our meetings and so on.

- Lage: It sounds like a very big project. But was this also on the side, a volunteer project [for you]?
- Moss: Well, by this time I had left the National Academy of Engineering and was an independent consultant doing policy studies. Also, after a few years, doing energy efficiency projects like better [lighting] systems, or cogeneration, or whatever, for commercial and industrial plants. But on the policy side this fitted in very well with it, and I did receive some income from Georgetown University's CSIS for the time I spent on the project. As did all the participants, we had honorarium for attendance at meeting and also to prepare for the meetings. At least all participants on the environmental side, not on the industry side.
- Lage: Mike McCloskey was involved in some way.
- Moss: Yes, played an important role. It was probably the source of some embarrassment for him, because EPC told everyone it could that this was a wrongheaded effort, and it was particularly regrettable that Mike McCloskey was participating in it. So they mounted a grassroots campaign against Mike being involved in the project. Mike was very good about it, he stuck it out and made important contributions, and supported the process. But I suspect he felt at the end that he had received a lot of grief for being involved, and wasn't sure that it was a good thing for him to have done. You can ask him about that.
- Lage: Was part of the objection a fear or concern about dealing with the enemy, not feeling easy with having these discussions with industry.
- Moss: Well, I can't imagine that was the EPC objection, even though they may have said so, because EPC met with the enemy all the time debating with them these issues, and appearing before agency people, or legislative bodies. Why not talk to that group, if you are confronting each other all the time anyway. It was worth a try, that was my opinion. EPC may have felt it was not worth the effort, and that's possibly a legitimate objection, but I don't think that could be a moral objection to discussing this issue with the enemy or with anyone else. In fact, we were able to reach some surprising agreement on a lot of issues, which we published and testified on before different committees, and had some articles written about. There was a cover story in *Fortune* magazine about the project and some of its recommendations.
- Lage: Were there things you'd come to some agreement on, or were the result of compromise, or seeing one another's point of view?

Moss: Well, some of both, but I don't think in any case, either side compromised its core values. They may have compromised a bit on language, but each side felt the agreements were consistent with its own values. The environmental side felt that we had spelled out in considerable detail how and under what circumstances we felt reclamation of surface strip mines could be done, and where it probably could not be done. We spelled out in considerable detail how we felt electricity should be priced, full-cost approach.

Lage: These weren't things where you had to get their agreement, then.

Moss: Oh, yes. We agreed on all these things. We spelled out in some detail an approach using economic incentives and disincentives to abate pollution, and it bears similarity to the kind of pollution trading system that is now in effect, or about to go into effect. We spelled out how we need oil-independent power, and cogeneration-produced power should be implemented, the regulation should cover certain important issues, and most of that was implemented into regulation by the Federal Power Commission, by the Federal Energy Regulatory Commission. So I think we had a lot positive things result.

I think it would have been even more positive if EPC had participated in the process and not tried to frustrate it. One of the things they did, by the way, was when we presented our final report to the media and had representatives from both sides of the table talking about the process and the agreement and so on; EPC after the meeting had its own press conference at the back of the room explaining why the process was no good, and beyond that, why the agreements were bad. But unfortunately for them, they were using a draft of the report we had sent them for comment, which had things in it which the final report did not have.
[laughter]

Lage: They didn't do their homework.

Moss: So they were making objections that were no longer objections.

Lage: They felt very strongly about it, it sounds like. Does this create animosity when you have to work with EPC, or do these things blow over?

Moss: Well, there may have been some previous animosity, in that when we expanded the Washington Office, I looked around for some office space for the Sierra Club and found a floor of a building, or maybe two floors of a building, that I thought would be adequate but was more space than the Sierra Club needed at the immediate time, so I proposed that EPC share the space with the Sierra Club, take the top floor, which I thought would

be a way of benefitting the environmental movement as a whole by having a closer working relationship between EPC people and the Sierra Club Washington people. They agreed to that, and that was fine. I even said as a gesture of good will and showing that we supported what they were doing on strip mining—this was before the Coal Policy Project—we would pay the rent for you for the first two years or three years.

They then at the end of the two or three year period came back to us and said, "We assume that you are going to keep on paying the rent."
[laughter] And I said, "No, don't make that assumption. We have other important priorities for our money, and we think you should start paying the rent." I remember that Joe Browder, the director of EPC was just furious, and he started his own grassroots lobbying campaign trying to overturn that decision. But it was not overturned. [laughter]

- Lage: The ins and outs of all of this.
- Moss: So that may have been the source of some animosity for the Coal Policy Project years later. I don't hold a grudge as long as some people.
- Lage: As some appear to. [laughter] Here's a question about your career. Now, we have got you up into your consulting career, I'd sort of like to bring things up to date; in fact it would be good to include a vita in this or something.
- Moss: Well, I just happen to have one, which I will leave with you. [sounds of shuffling papers]
- Lage: Oh, wonderful.
- Moss: From 1975 to 1987 I worked as an independent consultant on both energy and environmental policy studies and on specific projects for using energy more efficiently in buildings, commercial and industrial buildings, a few residences. One of the residences, incidentally, was featured in the PBS network program "A House for All Seasons," on energy efficient construction, and it is one of the most energy efficient houses in the United States or in the world.
- Lage: And you worked as a consultant to the architect.
- Moss: Well, actually I designed the house.
- Lage: Oh, how was that?

- Moss: And I paid for it; it's my own house. [laughter] I hired a contractor to build it to my plans and specifications. I did hire an architect to prepare the working drawings from my sketches.
- Lage: How interesting, that must be gratifying.
- Moss: Yes. The contractor was bemused by all this. Fortunately, he was a very easy going guy, who was willing to do these things he thought were crazy. I remember one time when he looked at the appliances, saw we were using only a ten-gallon-storage water heater for the whole house, used to working with forty gallons minimum even in a small apartment, wondering how this would ever supply us with hot water. Indeed it did, because we were using such things pressurized [aerator] showers which gave you a good shower using only a half gallon a minute, and other things to conserve energy and water.
- Lage: So you haven't regretted the ten-gallon solution?
- Moss: Oh, not at all; it has been perfect. As a matter of fact, for our Connecticut house, we are now buying a new Swedish dishwasher. It uses half the amount of hot water per dishwashing cycle as a conventional dishwasher does. When we put that in our [Colorado] house, which we will if we are satisfied with it in Connecticut, we will be able to simultaneously take several showers and wash the dishes. [laughter]
- Lage: On ten gallons.
- Moss: On ten gallons. Up to now, it's been best to not wash the dishes and then have several people jump in bathrooms and start taking showers. You should wait about forty-five minutes after the dishes are finished. But with the Swedish dishwasher, we can even do that.
- Lage: Sounds great.
- Moss: I did the energy design for the Resource and Conservation Center in Washington DC, a quarter of a million square-foot office building complex on Sixteenth Street between O and P Streets, which has the headquarters of the National Wildlife Federation, Resources for the Future, Environmental Law Institute, and several other environmental and other kinds of organizations. Using such things as making ice at night, when demand for power is low, and storing the ice for air conditioning during the day. Using high technology materials to give us a low shading coefficient, that is low solar gain in the spring, summer, and fall, when you don't want solar heat, to avoid the need for using that much additional energy for air conditioning, and efficient lighting systems.

Now in 1987 I founded a company, New Nature, demand-shaped technologies to design, manufacture, and market and service equipment to shift electrical loads from on-peak, to off-peak hours. Since the early years that company has also gotten involved in energy efficiency projects.

[Tape interruption]

- Moss: So that company is doing fairly well. I don't participate in it day to day. I brought in a new president to do that because in 1990, I took a job with a group of companies under the parent company, W.R. Grace and Company. The group is called Grace Specialty Businesses, and it's involved in a number of service and industrial businesses. Our group had about twenty thousand employees and annual revenues of about two billion dollars, and I was responsible for all the environmental, health, and safety activities of the group, as well as technical and engineering services. On the technical services side I focused on using energy more efficiently through cogeneration, process integration, efficient lighting systems, and so on.
- Lage: Now, these things are cost effective, I assume.
- Moss: Yes, very cost effective. Usually they provide better rates of return than the normal investments the company makes in its mainline businesses.
- Lage: It's nice when you can show that to be true.
- Moss: Yes. I like to be able to put together different technologies and systems and the talents of people, to create projects that add value and get good rates of return on investment, and to save resources and protect the environment. In one cogeneration project in Massachusetts, we are going well beyond what predecessors have done for similar cogeneration plants with more advanced emissions control system, thereby helping to protect the environment more than is required by regulation and get the cooperation of the state and other regulators to help expedite the approval of the project, and establish a new baseline that companies that follow us will now have to meet because we have shown that it is technically and economically feasible to do it that way.
- Lage: Do you see these things getting picked up during the next few years by other businesses?
- Moss: I guess, I do, and some of it is well under way in certain companies, but other companies are lagging. I think there is a big opportunity for them to do more than they are doing, and to improve their profitability and their competitiveness in the world market by saving energy and protecting the environment.

Lage: Should we end on that note, or is there something else you what to add?

Moss: No. We'll end on that positive note.

[End of Interview]