

UC Davis

Recent Work

Title

"Re-Assembling California": A Dialogue with John McPhee and Eldridge Moores

Permalink

<https://escholarship.org/uc/item/0t46b8pp>

Authors

McPhee, John
Moores, Eldridge

Publication Date

2003-11-12

“RE-ASSEMBLING CALIFORNIA: A dialogue with John McPhee and Eldridge Moores”

Transcription of the Pacific Regional Humanities Center’s Noontime Seminar
of 12 November 2003 at the University of California, Davis, University Club
(transcription by A. K. DiFranco)

GEORGES VAN DEN ABBEELE: Good afternoon and thank you for coming to this event.

Before I turn over the podium to Jack Hicks, who will introduce our speakers, I would just like to welcome you to this second in a series of events. Second, I should say, doubly so, since this is not only the second in a series of events this week featuring writer John McPhee, but the second in a series of lunchtime presentations and discussions sponsored by the Pacific Regional Humanities Center here at UC-Davis.

One of nine regional humanities centers established in 2002 by National Endowment for the Humanities, the Pacific Regional Humanities Center generates, convenes, and brokers humanities research and programs for the states along the West Coast, including Alaska, Hawai’i, and the U.S. Pacific Territories. The Center builds from UC Davis’ strong commitment to place-based initiatives across the disciplines and enlists creative and comparative approaches to the study of region. To provide models for understanding how people make sense of living throughout the Pacific, the Pacific Regional Humanities Center fosters interdisciplinary, cross-cultural humanistic research of its landscapes and cultures, such as this Noontime Seminar Series, which provides a form for informal discussion with speakers on a range of issues of interest and concern for the Pacific Region.

The next event in this series, if I may announce it at this time, takes place 3 weeks from today on Wednesday, December 3 when we’ll have a presentation and discussion with Jeanne Wakatsuki Houston, author of the poignant testimonial *Farewell to Manzanar: A True Story of Japanese Internment* (1983) as well as of a new novel, just published in the last couple months, *Fire Horse Woman* (2003). A flyer detailing this event is available, and I hope to see many of you there.

I’m pleased to turn the floor over now to my good friend and dear colleague, Jack Hicks, who as many of you know is Professor of English here at UC-Davis, for many years director of the acclaimed Art of the Wild series and now, if I may say so, in light of his core function as one of the primary editors of The Literature of California series, the dean of California literature.

JACK HICKS: Thanks George. You read it exactly as I wrote it.

It is good to have John McPhee here, and I would like to say that John McPhee comes to us under the auspices of the annual Snyder/Soderquist Distinguished Visitor Series. It is a series endowed by former UC Regent and businessman Charles Soderquist in honor of our colleague Gary Snyder, who was for 15 glorious years a member of the UC Davis faculty before he retired, thanks to you the taxpayer, in 2002.

So Dr. Soderquist, I wanted to thank you for having the vision, for supporting such an occasion with John McPhee here; and Professor Snyder, I wanted to thank you for having the foresight and planning to become a great writer. It is really wonderful that that honor extends. I also wanted to thank the John Muir Institute for the Environment, the Pacific Regional Humanities Center, the Dean of the College of Letters and Science, and the Department of English for additional support for today's event and this afternoon's event and the following reception. To re-iterate for those of you who do not know, this afternoon at 4 o'clock, John McPhee, Gary Snyder and former Poet Laureate Robert Hass will engage in a panel discussion on writing nature in the 21st century at the Alumni center, which is about one-quarter of a mile down that way. There's parking outside the Mondavi Center. Tomorrow at 4 o'clock in this room, John McPhee will make his last of four appearances, reading from very recent work. There will be a book-signing and reception to follow. All of these events are free and open to the public. You can see that you will want to come early, so you can seize your seat. A lot of times it's easier to charge people exorbitant amounts of money and then deny them a seat than it is to give it away free. I am very pleased we were able to do this.

Certainly there is no doubt that John McPhee has many opportunities to speak all over, and he's reached that stage—as the author of 28 books and numerous best-sellers—where he can make appearances wherever he likes. We're really fortunate, and I think there are two very good reasons why he chose to come to Davis for a week. The first is that the offer was tendered by Gary Snyder, Pulitzer Prize-winning poet; the second was that his friend of 25 years—who is so well depicted in *Assembling California*—Eldridge Moores, asked him. Thanks to both of you for enticing him to the Paris of the Central Valley: Davis, California.

This is an opportunity for Eldridge Moores and John McPhee to talk for the first time together about the making of *Assembling California*. It is a rather unique relationship between a humanist—a writer, proof that there is life for English majors after all—and a scientist, a very heartening one. We wanted to ask them about the making of *Assembling California* and extend more broadly into the relationship between science and the humanities. For expeditious purposes, I am going to read a little bit about how they came to be friends, their back-story. Then I am going to ask them questions, excruciatingly difficult questions, and I told Eldridge I was going to start with him since John is used to this. (Eldridge retired in June and we don't want to let him off the hot-seat.) At a certain point we are going to throw it open to questions from you.

In a few weeks, John McPhee and geologist Eldridge Moores will mark 25 years of work together and friendship. McPhee received his Bachelor's degree in English from Princeton University in 1953, and Moores received his PhD in Geology from the same institution a decade later in 1963. They did not meet until 1978, when McPhee drove up to the Moore house in Davis around Thanksgiving in a rented pickup truck, but their careers have often been braided in ways beyond sharing an alma mater. More recently, for example, McPhee tells the story of teaching at Princeton and being displaced by renovation to an old building with a towering gothic turret at the top. His new office was to be in this turret itself, he found, and when he was shown the room he found it an aerie cluttered with empty paint cans and

ladders. It was finally cleaned up and he settled in, and he described the site to Moores, who recognized it at once. Remarkably, the room—chill and drafty in the winter and hot in the summer—had been Eldridge Moores’ own office as a graduate student. He offered McPhee some practical tips as to how to crack the door and adjust the windows just so, to tilt the microclimate toward the tolerable.

Eldridge Moores joined the UC Davis faculty in 1966, among the wave of plate tectonicists whose theories were revolutionizing earth science. The first theoretical papers on plate tectonics were published between 1959 and 1968, and Moores was one of those whose accounts would unlock the mysteries of how the earth was formed. Plate tectonics aroused furor among traditional geologists and their “layer cake” theories of lithic formation, just as the first narratives that described the earth as round aroused cries of heresy from the ruling flat-earthers. Moores was a young leader in his field, and he went on to an international reputation as an expert on ophiolites (chunks of degraded old ocean crust) and the calving of modern continents from Rodinia, the original moncontinent that surfaced a billion years ago, from which all of the continents on the earth have separated. By the time he retired last June, Eldridge Moores was acknowledged by his peers as a founder of modern plate tectonics, and he was a frequent telephone source whenever CNN or the *New York Times* whenever the San Andreas fault shook us up and seemed determined to make Davis oceanfront property.

Author John McPhee was a well-established national figure with more than a dozen books when he talked with his Princeton friend and colleague, geologist Ken Deffeyes about an idea for a short “Talk of the Town” piece for the *New Yorker*, a little unsigned piece about two nearby rock outcrops outside New York City. It quickly mutated into an immense undertaking. He decided to depict a transect across the entirety of North America at about the 40th parallel, to dramatize the geologic formation of the continent itself. He quickly found himself aswim in an ocean of new information. “Ken acted as if what I wanted to do was perfectly normal,” McPhee recalls. “But I was appalled at what I’d cut out for myself, naïve even to think of such a thing, and a nervous wreck for months on end.” Deffeyes agreed to be his guide and traveling companion, and they headed west on I-80 via pickup, stopping often to read roadcuts. They slowed in the riotous landscape of western Nevada, and Deffeyes—who had grown up all over the West and done his dissertation on Nevada—threw up his hands at the jumble of rocks they found as they stopped outside Truckee. As McPhee writes in *Assembling California*, “We came to a big, gravelly roadcut that looked like an ashfall, a mudflow, a glacial till, and oatmeal, imperfectly blended. ‘I don’t know what this glop is,’ Deffeyes said. ‘You need a new geologist. You need a Californian. The time has come to turn you over to Eldridge Moores.’”

McPhee wisely and quickly hunted him up. The two crisscrossed California and went around the globe for a decade, and 15 years after their first meeting, John McPhee published his classic *Assembling California* as the 4th book in this geologic series in 1992. Eldridge Moores (with his wife Judy) was at the center of it, as an authority and one of the memorable characters around whom the author has wrapped many of his best works. McPhee added a 5th book when the series was collected as *Annals of the Former World* in 1998. It won the

Pulitzer Prize for nonfiction in 1999.

Always a fastidious draftsman, McPhee stayed with the structure he had worked out, but the immense breadth of his study and the author's immersion in postmodern geology demanded he complete it in stages, starting with *Basin and Range* in 1981. Along the way, a force in the emerging field of plate tectonics proved an invaluable source and became a lifelong friend to a writer taking a major place in American literature.

Moores recalls their first trips: "In person, John McPhee is a soft-spoken, gentle, considerate, compassionate, invariably polite person, but he is the most formidable interviewer I ever encountered. The process is hard work and occasionally dangerous if you're driving California freeways. He soaks up knowledge like a sponge, and there was a lot to take in. At the end of one really long day, I blurted out, 'I'm exhausted! You've really put me through the wringer.' He responded, 'How do you think I feel? This stuff is all completely new to me.'"

"We grew old together," McPhee said in a recent telephone conversation. "No, let's say it a better way--his kids grew up with this stranger coming into their house year after year." If John McPhee made Eldridge Moores a geologist familiar to ordinary people reading on airplanes and in their beds, Eldridge Moores helped define the writer as one widely admired in the world of scientists. He nominated him for the annual Geological Society of America Public Service Award for 2002 and presented the award himself.

"John has brought geology alive to a public thirsty for knowledge about the earth and the landscapes around them," Moores remarked at the formal ceremony. "We are very lucky that such a talented writer got interested in our field."

When it came his turn, McPhee noted, "I always had a lag time, but this case was pretty extreme. When I met Eldridge Moores, he had just turned forty. His children were so young you could see the scuffmarks where they crawled on the rug. Over the years, as I made field trips with him, his children grew up, went to college, and soared on into the world, while the guy with the notebook, who first appeared in their home in 1978, had still written nothing about their father, his ophiolites, and his beloved California. I hope I made up for it."

I think we'd all agree that he did. It is a pleasure to welcome John McPhee and Eldridge Moores to talk together publicly for the first time about the making of *Assembling California*, the relationship between a prominent scientist and one of our finest literary talents, to look back on the experience of creating the bedrock narrative for the Golden State and what brought them together and how it has been sustained for twenty-five years. That's the back-story.

OK, John, I'm going to ask you the question. Your readers fall into two camps: "I think it's wonderful he writes such books about geology"; "I wish he would not write any more about geology." What I'd like to know is how is it you can spend twenty years of your life writing about geology at a time when you're already extremely well-established?

JOHM MCPHEE: Well, I've been asked that question before and I came prepared with something I'd like to read that I think may answer it. There's a little preamble to it, if you'll bear with me, because I think this paragraph would be helpful in answering that question.

The beginnings of it is: when I was in college I majored in English. In college and in high school I took various courses in physics, chemistry, biology, and geology, but only to satisfy idle curiosity or distributional requirements. So what would lead someone like that to spend twenty years traveling with geologists writing about them, about the science? Like all writing, writing about geology is mind-fracturing, masochistic, self-enslaved labor, and that description intensifies when the medium is rock. How to explain this behavior: why would someone out of one culture try to make prose out of the other? Why would someone who majored in English choose to write about rocks? Why would a person who works for something called a Humanities Council and teaches a course called Humanistic Studies 440 undertake to write about geology? I think those questions are answered by one paragraph in *Annals of the Former World*—in all that 750 pages this one paragraph—and I'd like to read that one paragraph at the moment:

I used to sit in class and listen to the terms come floating down the room like paper airplanes. Geology was called the descriptive science, and with its pitted outwash plains and drowned rivers, its hanging tributaries and starved coastline, it was nothing if not descriptive. It was a fountain of metaphor, of isostatic adjustments and degraded channels, of angular unconformities and shifting divides, of rootless mountains and bitter lakes. Streams eroded headward digging from two sides into mountain or hill, avidly struggling toward each other until the divide between them broke down and the two rivers that did the breaking now became confluent, one yielding to the other, giving up its direction of flow and going the opposite way, to become a single stream. Stream capture. In the Sierra Nevada, the Yuba had captured the Bear. The Macho member of a formation in New Mexico was derived in large part from the solution and collapse of another formation: there was fatigued rock and incompetent rock and inequigranular fabric in rock. If you bent or folded rock, the inside of the curve was in a state of compression, the outside of the curve was under great tension, and somewhere in the middle was the surface of no-strain. Thrust fault, reverse fault, normal fault—the two sides were active in every fault. The inclination of a slope on which boulders would stay put was called the angle of repose. There seemed indeed to be more than a little of the humanities in this subject. Geologists communicated in English, and they could name things in a manner that sent shivers through the bones. They had roof-pendants in their discordant batholiths, mosaic conglomerates in desert pavement. There was ultra-basic, deep-ocean mottled green-and-black rock—or serpentine. There was the slip-face of the barchan dune. In 1841 a paleontologist had decided that the big creatures of the Mesozoic were “fearfully great lizards” and had therefore named them “dinosaurs.” There were festooned crossbeds and limestone sinks, pillow lavas and petrified trees, incised meanders and defeated streams. There were dike-swarms and slickenside, explosion pits, volcanic bombs. Pulsating glaciers.

Hogbacks. Radiolarian ooze. There was almost enough resonance in some terms to stir the adolescent groin. The swelling up of mountains was described as an “orogeny.” The Antler Orogeny, the Avalonian Orogeny, the Taconic, Acadian, Alleghenian Orogenies. The Laramide Orogeny. The Center of the United States had had a dull geologic history—nothing much being accumulated, nothing much being eroded away. It was just sitting there conservatively. The East had once been radical—had been unstable, reformist, revolutionary, in the Paleozoic pulses of three or four Orogenies. Now for the last 150 million years the East had been stable and conservative. The far-out stuff was in the Far West of the country, wild, weirdsma, a leather-jacket geology in mirrored shades with its welded tuffs and Franciscan *mélange* (internally deformed, complex beyond analysis), its strike-slip faults and falling buildings, its boiling springs and fresh volcanics, its extensional disassembling of the Earth.

I always wanted to read that in Davis. (laughter)

JH: Eldridge, I don’t know how you follow something like that. That’s geology written for Meg Ryan. What was it like after fifteen years to see this book and find yourself a major subject in it? Had you seen the book all the way along, or did you finally see it when it was finished?

ELDRIDGE MOORES: Well, I saw it all along, in a sense. I think we started working on the book in 1978. We did our first trips down through here, through California, in 1978. In 1982, we went to Greece and Cypress. And then you took a break, if I remember correctly, from this book and came back to it in 1989. We actually re-did, re-visited the places we had looked at before: the 1989 Loma Prieta Earthquake occurred and you came back after that and we spent some time looking at the San Andreas fault all the way from the Carrizo Plain—which is now a national monument—all the way up past San Francisco. Then you started writing the book. Unlike most reporters who have a deadline to meet, what John did was—after he’d gone through I don’t know how many drafts—he sent the whole thing to me. And I went through it line by line. And you came out here, and you and I both went through it line-by-line, looking at what had been said and working on minor modifications and so forth. So, I really saw it, I think, in many stages of preparation and I knew that, when it came out, all of a sudden I was going to become more of a house-hold word than I—or at least further than my own house. (laughter).

JH: Had you had much experience working with writers prior to John showing up on your doorstep? Am I right, will it be 25 years this Thanksgiving?

MOORES: It is.

MCPHEE: 78 plus 25.

JH: So it was just after Thanksgiving?

MOORES: Just after Thanksgiving, yes. I had had some. I can't resist telling you about my first experience with a newspaper writer. I had just arrived at Davis in 1966, and after driving across the country, my car needed a service. It needed a lot more than that—it needed a new clutch because we pulled a U-Haul trailer across that weighed more than the car. So I left the car at a service station down on Olive Drive and I walked down through the underpass—which didn't have much traffic in those days—and walked backed toward the department which at that time was in Young Hall. During that time, as I was walking down through and up the stairs on the East Side of Young Hall, an earthquake rolled through Davis. And I didn't feel it. I got up to the third floor and people were just coming out of the doors saying "Did you feel the earthquake?" And I said, "No I didn't." But the department administrator said "There's a reporter from the Daily Democrat on the phone, and there's nobody else here and I want you to take it." I had been in Davis three days. So the reporter asked me, "What can you tell me about the faults around Davis?" Racking my brain I said, "There's the San Andreas fault" and sort-of followed along. I assumed that the reporter would find somebody—I gave her some other places to find information. But to my discomfort, that afternoon's paper had this headline on the front—the top headline on the paper: "UCD Geologist Says That Earthquake Could Be On San Andreas Fault" And I thought "Oh, my God. OK"

So over the years I have had quite a bit of experience with reporters. I did take the media course which is offered through Public Affairs Office here, and I think that's very useful for anybody who is working with reporters. There are some very fine reporters working with the local newspapers in Sacramento and have been for a number of years. Most reporters I've worked with have been extremely conscientious, extremely pleasant to work with. The problem is, they have deadlines; they can't really afford to take the kind of care and work it back and forth the way John was able to do with his writing. So that's the difference.

MCPHEE: May I say, as I journalistic principle, you just don't show your manuscript to somebody you write about. But I have always breached that rule of thumb with scientists, because, you know, I'm an English major and I want to make sure that the geology is acceptable to the geologist. That's why I'm going to come down to Davis with the manuscript. before its published and go through it all with Eldridge. He says there were minor fixes; there were some major fixes too, and I'm very grateful for that. I really couldn't proceed with a physicist or a geologist or whatever without going back to them before it was published. And more than the one person: it was read by various geologists.

MOORES: Also the *New Yorker* is very good in its system of fact-checking. They have fact checkers that actually will call and verify things, and they're extremely thorough. In fact I spent a couple of days back-and-forth with a fact-checker on one of your earlier books in which I didn't have any part, just checking one fact. Its really a different kind of writing and a different effort to get as close to the understood facts as possible.

MCPHEE: The fact checker was Sara Lippincott. Sara Lippincott loved science, worked as a fact-checker for many years at the *New Yorker*. Her idea of a really good vacation was to go to Cal-Tech and its jet propulsion lab. She'd go to Pasadena for her vacation. She lives there

now; she quit when Tina Brown came along. At the very time I was doing these things at the *New Yorker*, William Shawn, the editor, made her an editor—as opposed to a fact checker. When *In Suspect Terrain* came along she was both the fact-checker and the editor, and we made this transition together. She was with this project all the way. Then when it came time for *Annals of the Former World*—five books put together, what are you going to repeat?—it was ten months of work to weld all this, and Sara in Pasadena was the editor. She’s a freelance editor and did all that.

I’ll tell a story at Eldridge’s expense: this fact-checking—there’s hundreds and hundreds and thousands of facts. They’re all running around and you can’t keep track of them. At the very end, when the piece was about to be published in the *New Yorker*—we have ten minutes to go before it’ll be too late—Sara said to me that I had it wrong about the Adriatic plate, that I had said that the Adriatic plate was moving Northeast or something and it was actually moving Southwest. And I said, quote—and this is a frenzy, you know, it’s the last day—and I said “How do you know that?” She said, “Well, Eldridge Moores told me that.” And I said “Well then, ‘Southwest’—put it in there. The next day I called Eldridge and I said, “Eldridge, if the Adriatic Plate is moving southwest, what are the Alps doing there?” And he cried “No, No!”—he had been thinking of the Aegean plate. So fact-checking is a risky business anyway. It says Aegean plate in the book... (laughter)

JH: Have either of you computed how many trips and how many miles you did in the fifteen years toward this book? I mean would it go around the earth 27 times or so?

MCPHEE: I have no idea. But we went to Cypress and Macedonia. And we went to Winters. (laughter)

JH: Did the book change much for either of you as you were working toward it. I know you had the schema pretty well mapped out beforehand...

MCPHEE: What do you mean?

JH: I mean, over fifteen years did the concept, did the structure, did the way you approached it change? Were you doing it on the wing or were you pretty methodic about what you wanted to see and how you wanted to approach it?

MCPHEE: Well, it was following the structure that I had developed in the summer of 1979 when I was naïve enough to think I was going to do this all in one year, in one piece. However, the 1989 earthquake came along, which was four years before the book was published, and that influenced the structure. The point is made about those times when geologic time and human time crisscross, which is not every day. But when they do, it's with large effects. I had two examples in this composition—which are very long, about 10,000 words each—one near the beginning and one near the end. The one near the beginning is the gold discovery of 1848, and the one that balances it in the structure is the 1989 earthquake. Of course that altered the structure of the overall piece a bit, but it was well before I started to

write. That was four years before the book was published; it took about two years to write the book.

MOORES: I'd like to add also that the knowledge and study of the geologic features that are described there rose and changed. What you are reading, it's fair to say, is a snapshot of a moving target. If the book were to be written today, we'd be saying different things. The general structure and the general ideas are something that you can take confidence in, but I think geologists might quibble with a couple of the details. They would be quibbling with me, not with you.

MCPHEE: Sure.

MOORES: In fact I know they quibble quite a bit with me. (laughter)

JH: John, I know you for doing this book you've consulted and quoted at least 5 geologists: Karen Klein-Spain, Anita Harris Epstein, the late David Love, Eldridge, Randy Van Schmus, and Ken Deffeyes, and you have made a career of dealing with what some would call arcane scientific information, or certainly dense scientific information. Are there certain kinds of scientists with whom you've enjoyed working, and are there other kinds of scientists about whom you've simply decided that it's unlikely you're going to delve into their field?

MCPHEE: Not really, because the scientists I've written about have been primarily geologists with a 20 year project. You know, I write about so many other different things— early on a physicist having to do with the development of nuclear weapons, and I think that may be about it. I don't have a big enough base. I didn't walk away from any scientists ever because they weren't helpful or that I was put off by them at all. By the by, the geologic community has been incredible from the very start, understanding just what I was trying to do, and infinitely helpful with it all.

JH: I was curious, for example, about your father being an orthopedic specialist, an MD. He was a team doctor at Iowa State and later for Princeton. He was a doctor for the World Games and for some of the Olympic Sports. Have you written much about medical science at all? Have you gone into that territory?

MCPHEE: I did a piece of writing of some length, but not book length, called *Heirs of General Practice*. It was about young doctors in Maine who had all come out of a family practice residency in Augusta. I went around with them; they all worked in small, scattered Maine communities. It was actually published as a paperback on its own and medical schools distribute it. As I recall, that's the only thing I've done that involves doctors, MD's.

JH: Eldridge, how did the appearance of *Assembling California* change your professional life?

MOORES: It changed it fairly significantly. It was a bestseller, and if you're a person in a bestseller, a lot of people know your name. I started immediately getting calls from people who were not geologists asking me about things. And I started doing a series of field trips

and lectures and so forth for non-geologists, the first group of which was a group of retired school teachers from San Francisco who brought parts of their families from Oklahoma and other places. They chartered a bus and we spent three days essentially retracing the steps of things that we see in *Assembling California*. That began a sort-of second career, trying to get geologic information out to non-geologists. That's something I feel very strongly about. I could go on quite a bit here, but I'll try and cut myself off. I think that it's a crying shame that geology is not an integral part of everybody's secondary school education, and I have tried hard, actually, to get that into the educational system in California, with decidedly mixed success. And I think it's something everyone should know something about. There are a number of reasons for that. Which I could give you. If you want. (laughter)

JH: Did the title change at any point John? Was it always *Assembling California*?

MCPHEE: Yes.

JH: I'm sorry, I didn't want to get too personal. (laughter) Eldridge, what kinds of little things would change in the science if you were approaching it now?

MOORES: There are details of the geology of the northern Sierra which would change the story somewhat, there's been a lot of work that's been done in the Smartville Complex and in a related area. Again, the overall story, the general story, is still the same, but there are details. There's been some work in the geology of the Coast Ranges that I think could refine some of the statements that I made. And of course there's been a lot of work on the San Andreas fault and trying to understand it better—where the 1906 epicenter was, for example, and how often does it move, and what other faults might have possible earthquakes on them. There's been a lot of development of ideas about that over the last ten years.

JH: You told me right before this presentation that the epicenter for the San Francisco earthquake has been re-re-located.

MOORES: That's right.

JH: So if you've built entire careers on the lighthouse in Point Reyes, you need to hear this.

MOORES: Yes, the latest estimate of where the epicenter is would be just off-coast, sort-of, of southern San Francisco. It's right in here... (makes map representation with hands).

JH: John, how about you? If you were re-doing them, is there stuff about *Annals of the Former World*, or specifically about *Assembling California*, that you'd do radically different?

MCPHEE: Oh, no. First of all, there's a very primer-like fabric to what I'm doing here. I mean, *Basin and Range* is really kind of a primer. In other words, some of the nuances of the Feather River peridotite, which is what Eldridge was referring to a moment ago in the Sierra, are not what was at the core of this thing. Early on, there's again a 10,000 word essay on plate tectonic theory and how it came about. That's not going to change, nor the big set-piece

on the Gold Rush, nor the big set-piece on 1989—there’s 30,000 words right there that would not change. It’s because I’m not a scientist doing fresh research, I’m telling about what they’ve learned over a long period of time. So I don’t think a great deal of it would change. If I were to put out a new edition of it right now, I would first of all arrange that Sara Lippincott be hired to work with me, and we would comb through it and call up all kinds of people, in addition to Eldridge and Ken Deffeyes and so on and update it as we did for the 1998 publication of *Annals of the Former World*. I’ve tried to make it quite clear, or did make it quite clear in the introduction to *Annals of the Former World* that this was a—Eldridge mentioned this a moment ago—that this was a freeze-frame thing at the date of publication. We re-did everything we could to bring everything up-to-date to the fall of 1998, and that’s the strata: 1978 to 1998. If you were publishing something in 2005, you would go over it again because the science constantly changes in little ways as Eldridge said.

JH: I’m going to ask one final question. Then, Eldridge and John, I’m going to let you have a say about whatever you want. Then we’re going to throw it open to questions. There’s a wonderful comic point at the end of *Assembling California* that you’ve described, John, as one of the weirdest geologic trips you’ve ever been on. That was to go in the direction of Dixon looking for what is scientifically known as the Davis anticline: where Eldridge located a hill some 25 feet in height that the book describes as rising 10 times faster than the Alps. First of all, congratulations on finding a hill. (laughter) Eldridge is that still true? Is the West Davis anticline still rising 10 times faster than the Alps?

MOORES: I think its still rising, but perhaps not quite that fast. (laughs)

MCPHEE: May I say I understand that this thing is now known to grad students here as the “Moore’s Range.” (laughter)

JH: That’s wonderful, Eldridge. There are all kinds of people that have moon craters named after them, but no one has an entire mountain chain named for them.

MOORES: Made of two little lumps right?

JH: Eldridge, is there something you want to say finally, coherently, without being interrupted and asked questions about this experience?

MOORES: Of all the experiences I’ve had in my career, there are two that I’ve thought at the time were extremely precious experiences that I thought would remain with me for the rest of my life. One was working with Fred Vine, who was one of the original authors of the plate tectonic idea. I worked with him on Cypress, and while I was working with him on Cypress I just kept saying to myself, “This is a fantastic experience, this is a fantastic person, we’re looking at these tremendously interesting rocks.” That was one of them, and the other was working with John on this book. It’s just been one of the most pleasurable experiences I’ve had over my career...

MCPHEE: Thank you Eldridge. Well, ditto, backwards. (laughter) You know, Eldridge is a really big star in his field, so what a privilege it was to go around and learn from him, not just about the rocks of California but about his specialty: the ocean-crustal sequence of rocks. When you find those things emplaced on continents, far from their origins, they sign-in, sort of in advance, events in plate tectonics over time. That's what we were doing in Cypress and Macedonia, and in the Sierra and the Coast Ranges. Imagine, spending 20 years doing all that with him. It's been great.

APPLAUSE

JH: We have about 15 minutes for questions from you. We'll alternate questions for Eldridge and John. We'll start with Eldridge. I'll repeat the questions, and you can have at it. Questions for Eldridge? Yes, Bob--

The question is, by a former colleague of Eldridge's, whether the beautiful minds of geologists are eligible for Noble Prizes. Is that a category that has gone unrecognized?

MOORES: As far as Noble Prizes are concerned, yes, it is a category that goes unrecognized. There is another prize also put out by the Swedish Academy called the Crafoord Prize, and that is for fields which don't have Noble Prizes. The first two prize winners in that were both geologists, so there are geologists that get that prize.

MCPHEE: Was Jason one of them?

MOORES: Jason was a more recent one. The first two were Gerry Wasserburg at Cal-Tech and Claude Alegre at the University of Paris, who later became minister of education in the French government for awhile. Jason Morgan was the author of the principle plate tectonic theory-paper...

QUESTION

MCPHEE: The right writer, the right sash, the right chair, the wrong age right now... (laughter)

JH: The question was by a similarly pained-writer who talks about the difficulty of facing the typewriter or computer screen and wanted to know if John McPhee was indeed the writer who took his robe sash and tied it to his chair so that he could not escape.

MCPHEE: That's right. I was 23 years old and I really did that for a week or something. Yes, it's a true story.

JH: John, didn't you used to work until late, deep into the night?

MCPHEE: Yes, I mean, sometimes. Once I finally get going, when something starts to move—which is a long time before something does start to go—I wouldn't quit if it kept going. I'd just keep on working. Not all night, like it said in the Sacramento Bee, but deep

into the night. I discovered soon that that was inefficient. That is to say, over a month I would get more done if I didn't stay up until the wee hours. So I quit at 7 o'clock—boom—and go home, and I find that I get more done at the end of a week that way. I usually don't get started though until 6:45. (laughter)

QUESTION

JH: The question was that, while many people assume that the San Andreas Fault is a continuous straight line, is it true that it is a family of faults and could you elaborate on that matter?

MOORES: Yes, it is true that it's a family of faults, a family of faults that is something like a hundred kilometers wide in this part of California. It does narrow down in central California and then widens out again as you go through the great bend in the fault down in Southern California. The resistance to the movement of the fault in the South has actually thrown up the transverse ranges, the San Gabriel Mountains, so it is a system of faults. Many of these faults continue to be elaborated on and discovered. There are new faults being found all the time. One person said at one point, I think, that every earthquake since 1906 has been somewhat of an unexpected occurrence, in some cases on faults the existence of which wasn't known before.

QUESTION

JH: The question is: Mr. McPhee, you've worked with many people, human sources, during your career, and particularly with Eldridge. What has it been that has kept you in close relationship and continuing friendship with each other?

MCPHEE: Time. I mean, I turned up here in 1978 and because of the way things worked out. *Annals of the Former World* came fourth in line, published in 1993, and by that time, we'd been together and become friends and that wasn't going to come apart when the thing was published. Whereas if I'd come here for one day, interviewed Eldridge and gone and published the "Talk of the Town" piece in the *New Yorker*, the odds are we wouldn't be sitting here right now. But it's time that produced that friendship.

QUESTION

JH: Of Eldridge, would you talk about the early opposition to plate tectonic theory: did that have an effect on your willingness to work with John at that time?

MOORES: There was early opposition to plate tectonic theory. That was mostly in the 1960s, when the theory was first outlined, and by 1978...what they say is that if you wait long enough, the opponents will retire or disappear. I think that has more or less happened. By 1978, there weren't many opponents of plate tectonic theory itself. There were opponents to some of the ideas of crashing terrains, terrains crashing into the continental margin of the Sierra, which you find in the book. But I've always been kind of a person who ascribes to an idea propounded by geologists in 1926, who said that further progress in science will be made by theories or by hypotheses which when first proposed will be considered outrageous. I like to try to stir the pot and propose outrageous theories. And I have to say, some of these things

that were considered outrageous when first proposed are now part of the dogma. Not all of them, but...

QUESTION

JH: This question of John McPhee: you're interested in geology and shad; have you been able to combine these interests in fish and rock in some handy way, in another book perhaps?

MCPHEE: Another book perhaps... I've never addressed myself to that them, to describe the geology to streams and therefore the fish in them. I had a long conversation yesterday with Peter Moyle about this very thing. It's a really interesting subject and always out there for the future.

QUESTION

JH: The question was asked by a beautiful young woman about Eldridge and her past (laughter)—forgive me Judy...back in the 1940s when the two of you were 10 or 11, the teacher showed maps, mercatur projection maps I guess, showing the fit of continents. How did they know that at that point, prior to the theories of the creation of continents?

MOORES: The theory of continental drift and the fit of continents, and especially of the fit between Africa and South America, was actually first noticed by Sir Francis Bacon, apparently. But it was a theory that was propounded in the early 1900s by a German meteorologist named Alfred Wegener, and his theory was variously accepted and disavowed. It was denied in North America for many years, and for many years it was considered unscientific even to consider that Wegener may have been correct. In 1949, if your teacher was saying "These things fit together," that teacher was doing something radical at the time which later proved to be correct. One of the problems, of course, was the issue of the projection of maps: what kind of projection you use and the compromises that come in taking the spherical surface of the earth and projecting that onto a flat surface. It's a long story, and there's a book written called *The Rejection of Continental Drift* by Naomi Orestes which goes into this in considerable detail. It's a very interesting book.

QUESTION

JH: A reader of John McPhee's says that he's read many of his books but still has one burning question: why do you still live in New Jersey?

MCPHEE: I wish I had a thing with me that I wrote in answer to that question years ago, but I don't have it. I wish I could read it. It's short. The idea was that New Jersey is kind of like this majestic place in the earth that Shakespeare talks about. New Jersey has four or five physiographic provinces. From the coastal plain to the piedmont, all the way to the crystalline rocks like the Great Smokies, then on into the Great Valley of the Appalachians, and then up into the deformed Appalachians, you're still in New Jersey. And New Jersey is great. People go through New Jersey from Philadelphia to New York in a corridor, one of the most heavily traveled transportation corridors in the world with all these different vehicles going back and forth. They look out the window, and no wonder what they think. They're shot like peas through a pea shooter through New York City, and that's fine because New

Jersey is the most densely populated state in the United States. It has lots of open country: it has the largest wild deer population of anywhere, I think, and that's maybe not an advantage. In all events, I was born in New Jersey, and my daughters think it's funny that I never left also. I was born in Princeton and I'm still there. So anyway, I like to visit Davis. (laughter)

QUESTION

JH: The question is, in *Assembling California*, you address the extraction of gold and other precious minerals from the earth. It is suggested that people don't know what we're doing, and your response is that we know well what we're doing, but we just don't give a damn. Does that accurately describe the way you see things?

MCPHEE: Well, I'm the one who said we don't give a damn...I'm just saying that people will exploit the resources of the earth without adequate regard for the consequences. I think in 2003 I would say that again.

MOORES: I'd like to add that one of the problems we face as a society is that we consume proportionately many more resources than our population merits, and I think we are not aware of that fact in general. For example, our per capita consumption of energy is twice that of Japan and Western Europe, countries with the same standard of living. We could save a lot of money, a lot of money—there's this tremendous wealth transfer that's been going on between the United States and the Middle East, and if you don't think some of the problems we've been facing in that region relate to our insatiable demand for oil without any regard for conservation, then I have a bridge to sell you.

We really do need—as a society—to take a look at what we are doing and work to get our consumptive rates down. We're not doing that. There is no program in place for that in the current administration. There has been in past administrations, but elections come and elections change. If there's anything I think the geologic perspective has to offer—this is one of the four main things that the geologic perspective has to offer all people—it is that we need to look at what is happening to the earth and what we're doing to it. The new bridge across the Bay to replace the one damaged in 1989, that will be built with sand and gravel that is imported from British Columbia. They're importing sand and gravel from Baja California to build buildings in Southern California. We import 60% of our oil, even though we could get that 60% by bringing our oil consumption down to reflect Europe and Japan and still have the same standard of living. These are amazingly frustrating things.

QUESTION

JH: A question by a budding young Eldridge Moores who said that *Basin and Range* caused him to enter geology, but he wants to know if Mr. McPhee—after all this learning and twenty-some years of being seeped in geology—if you had a pop quiz, could you answer the questions on the material in your book.

MCPHEE: I'd probably get a B-.

MOORES: I'd like to add I've written a couple of books—textbooks—that I think I'd have trouble answering a pop quiz on.

QUESTION (re Geologic perspective)

MOORES: I think the reasons are: understanding our environment; our relationship with other sciences; our understanding of ourselves; our place in the world; our safety—and that's really related to hazards, especially in California, which I've listed here: earthquakes, landslides, coastal erosion, floods, volcanic eruptions, drought, etc. Our understanding of ourselves and also our future resources and energy. Most importantly, I think, is our connection with the earth, a spiritual connection with the earth, which is integral to everyone: its integral to indigenous societies and its integral to our society, but we tend to lose that. Chief Seattle says "The earth doesn't belong to us; we belong to the earth." John McPhee says, "What other planet are you going to live on? You've got to know something about your home." What's more important than the natural history in understanding the earth?

MCPHEE: There's also an intrinsic absolute interest in it. You don't have to have a practical end, that you're going to gain this or have this spiritual experience. It's an amazing world out there, and to know how it got together, what gave it its shape, what produced the aesthetic aspect of it and so on is just plain interesting. I mean, it could be a pure academic subject. As oil prices go up and down, geology majors rise and fall in number too—that's the other end of that.

QUESTION

JH: The question is, are there any other collaborative books by scientists and writers that inspired you?

MCPHEE: Any book about science is in a sense a collaboration, such as we did. Any report on science would be inspiring if you thought it was good. It's not why I went into it; I didn't read something and then decide "oh, I'd like to do that." I was interested in geology in the first place and that eventually led to writing about it.

MOORES: I can't remember any writers like that. There are some scientists who have written popular books, and some of those are really quite good and worth reading.

QUESTION

JH: The question is if there is really a built-in tension between the craft of the artist, that is, the desire to use beautiful language and be stylistically distinctive, and the desire to deliver information. Could you address that tension in your own work?

MCPHEE: Any piece of writing, any artistic production, has analogous tensions in it. You have constraints of time and space on anything—a play usually. There are notable exceptions, but a play lasts a couple of hours, so you start with that. If you write a play, you're probably writing something about two hours long, or a sonnet is 14 lines long, and so forth. Within the constraints, you do the best composition you can. What I'm interested in is composition, and it would be just all out of balance if all I did was go into some kind of

elaborate logorrhea in which I just bounced words around. Its an orchestration, and of course if you're writing about geology, the goal would be to make it as clear as you could and vary the texture of the thing so that paragraphs such as the one I read earlier would throw their own light on something. You noticed it was only a page, and there's 749 other pages.

JH: We have time for one more question for each of you, so choose wisely.

...The question of Eldridge Moores is: if you had a large pot of money to tell the people of California the story of *Assembling California*, what would you do? Build a park? A theme park? Build a museum?

MOORES: I would probably do all of those things. Plus, I would make sure every school child, all the way from K through 16 had yearly components of education in earth science—especially in California. And I would develop remedial courses or remedial kinds of sessions for the rest of us who have gone beyond school and didn't have it in school. I think there's a tremendous need for that.

JH: Not to mention an all-geology channel: all geology, all the time

MOORES: Yeah, sure. That too.

JH: You can always tell—people retire from the university and they become profoundly interested in education.

JH: John, we have time for one more question. Would you like to field one?

MCPHEE: One more, yes?

JH: The question is of Mr. McPhee what was your process in writing *Assembling California*? What did you go through before you went to the page?

MCPHEE: There was such a long period of time before writing in this unique case because of the way it all worked out, as we described, over time. There were three books before this one. During all that time material was accumulating, about California, about Eldridge and his work. Then when I turned to it ultimately there was more research and field trips, as Eldridge mentioned. But there comes a moment when you've got enough in the silo and you get ready to write. That process, I remember, took a year, probably, whatever. It was published I 1993—it was probably somewhere in 90, 91. There was a 12 month period of the composition of the first draft. At that point, everything that I had done before had become raw material, and I was now in a different zone. I was writing, and I would call Eldridge up every 10 minutes to see if I was saying something right. That was a year, and the second draft was about 4 or 5 months and the third draft was a couple months. But, you see, that's the normal writing process whether I'm writing something that takes a week or something that takes a very long time. What this project contained was rather a longer period of

assembling information, and then the writing was just about what it would be for a composition of that size in terms of time.

JH: Thank you Eldridge Moores and John McPhee. Thank you for re-assembling California, and let's do it again in ten more years. The 4 o'clock John McPhee presentation is at the Buehler Alumni Center which is right down this road, Old Davis Road, about a quarter of a mile at 4 o'clock. Thank you.