

Oral History Richard Norgaard - Summary Page

Interviewee: Richard B. Norgaard, Professor Emeritus of the Energy and Resources Group, University of California, Berkeley

Interviewer: Ann Brody Guy

Date: July 8, 2024

Location: Professor Norgaard's home in Berkeley, California

Purpose, Scope, and Content: Prof. Norgaard was interviewed as part of the 50th anniversary celebration of the Energy and Resource Group (ERG) at UC Berkeley. The interview lasts approximately 1.5 hours. It contains discussions of:

- An overall theme of shared learning and how he individually and ERG as a group pioneered its acceptance in academia.
- Academic and life experiences that led to his early interdisciplinary interests;
- The evolution of ERG seminars from physics-dominated faculty lunches to regular academic colloquia;
- Numerous challenges and benefits of being a step ahead of standard academic practice of siloed disciplines, including being the only person with your particular expertise;
- Jane Hall: Granting the first ERG PhD, and creating the process at the same time.
- The Global Stability group and its open-minded approach to systems thinking;
- Being a bad fit for Ag Econ and his evolving faculty appointment;
- Finding refuge at ERG, and from all of its challenges, including with river-rafting, carpentry (some with ERG colleagues), and photography.

Biographical Note: Professor Norgaard joined the Berkeley faculty in 1970 in agricultural economics and soon joined early cross-disciplinary lunches held by the young Energy and Resources Committee. He was a faculty affiliate of ERG at its formal start as a graduate group, and later joined its core faculty. He is a fellow of the AAAS, with numerous publications and awards. At the time of this interview, he was one of only three living original members of the group that launched ERG.

Editorial notes:

- Prof. Norgaard is the continuing speaker in paragraphs not marked "ABG" or "RBN"
- Proper names are fact-checked and linked to a reference except where queried.
- Ellipses indicate a trailing off by the speaker, NOT missing words.
- Bracketed material is interviewer notations for clarity, e.g. implied but not spoken word.

Transcript: Richard Norgaard Oral History Interview

Early inspiration from David Brower

Ann Brody Guy: I really would like to know about these trips with David Brower on the Glen Canyon on the Colorado River.

Richard B. Norgaard: So how I became a river-runner at a very early age is a separate story, but we'll just have to start with, Yes, I was a river guide in the Glen Canyon of the Colorado River, before Lake Powell. I was only 18 years old at the beginning; I was soon 19. But basically, I was a young adult 18 to 21 out on the river, and I was in charge. The story leading up to that is long, but that was the case. And so I had an identity as a river runner early on, and that's who I was.

David Brower came on the second trip — the first one in which I was actually the leader — in June 1962. It was fairly early June 1962. And on the same trip we had [Walter](#) (Topsy) Edwards, from the National Geographic Society, as a photographer on that trip. David had a very unusual history as a mountain climber, rock climber, but also got involved in canyons and was critically important for saving [Echo Park](#) — at the merger of the Green River and the Yampa River. He stopped Echo Park Dam, not single handedly, but he made some of the key points. But in that process, he also said, We don't need Echo Park Dam, we can just build Glen Canyon Dam 35 feet higher and it'll do all the same work as Echo Park Dam. And he had never been to the Glen Canyon before he said that. And so now, 1962, he's coming on a regular Sierra Club trip. It's one sponsored by the Sierra Club, with Sierra Club members attending, and they're mostly mountain climbers and backpackers and mountain people like David.

And here we are in what David would like to call inverted mountains or canyons. And he was very quiet. He was very quiet quite likely because he was realizing he had participated in making this dam 35 feet higher. And there was a lot to be saved, a lot of important territory. But it was really too late — by that time the dam was well under construction. And though very quiet through the trip, he managed to tune in with me. Not in any really overt ways I can remember, but at the end of the trip, David Brower and Topsy Edwards of the Geographic Society said: We'd like to take another trip with fewer people. So the Sierra Club trips were around 35, 40 people at a time.

Learning from world-class photographers

They wanted to do a small photography trip for a longer period of time, and how quickly could we do that? We set a date in early July. I had one more Sierra Club trip to run after that and then I started setting up to run David and Topsy Edwards. And Topsy Edwards brought his wife, David brought his whole family, and [Philip Hyde](#) and [Ardis Hyde](#) came along. And it was a photography expedition. He did the Sierra Club book on Point Reyes and did most of the photography for the Sierra Club's Grand

Canyon book. He's a student of Ansel Adams. He never got out of the shadow of Ansel Adams, which, you know, [is] difficult to do. But he was an extremely good photographer. So, I had the opportunity to learn with professional photographers on this private trip.

And that went well. It was a little hotter come July, but we were spending much more time in the side canyons — we didn't have the whole crowd of people to take care of. And with a smaller number of people, we'd go further up the canyons and take more photographs, too.

And that led to a special trip being undertaken in September, in which [Eliot Porter](#) came along. Eliot Porter was a medical doctor from the East Coast who retired early and became a photographer, became a very famous bird photographer, but also very famous because of a book called [In Wildness Is the Preservation of the World](#) that the Sierra Club published. And so by September, I was taking Philip Hyde and Eliot Porter — no longer Topsy Edwards of the Geographic.

Sierra Club connection

Just having this experience made me much more of an environmentalist than I would have been; much more of a photographer than I would have been. And knowing David was really important because he then put me to work in his office while I was an undergraduate at Berkeley. And so it was easy to be a student during the day and then by later in the afternoon, or some days, you didn't have classes and you could spend much more time at the Sierra Club office. It was a small office, and they only had 11,000 people [members]. Maybe 16,000 by '62, or something. But 11,000 when my family joined in '58.

My Sierra Club card says I've been a member since '58 because my parents joined. What's really strange is that I'm married to a woman 17 years younger than me, so she was born in 1960. And her card says she's been a member since 1958. [laughter]. They need a better accounting system.

But this was before David Brower was an important leader of the redefinition of environmentalism or the redefinition of conservation to environmentalism. During his tenure, the Sierra Club went to 600,000 members and he opposed the Diablo Canyon Nuclear Power Plan — that got him into trouble with the Board of Directors. He successfully fought — I mean, with many people helping — the dams in the Grand Canyon. And I was somewhat participating, always aware, but always being a close observer of him.

College: Crossing disciplines from the start

ABG: Your undergraduate degree at Berkeley was in...

RBN: My undergraduate degree in Berkeley started in mathematics. I very soon lost interest in math because of being a river-runner, my identity just relocated. But then it took until my final semester of my senior year before I decided whether to major in geography or major in economics. That final semester, I could take five geography courses or I could take five economics courses. I loved geography but I just kept saying, the problem is economics and just because you love geography... Get the degree in economics. Plus economists have more influence. So yes, I have an undergraduate degree in economics.

But because I was a river-runner, a conservationist, environmentalist, I graduated with a 2.23 GPA. There were times when I spent the second half of my summer not river-running, but going to summer school, making up the courses that I had not done well in. But I had several professors who admired my ability to critique economics, to ask more serious questions, and I had good letters of recommendation, even though a lousy GPA, and I got to Oregon State University for a master's degree. And from there, I got to Chicago for the PhD fairly quickly, such that I was back at Berkeley five years after I graduated.

ABG: So the environmental connection, and interest, was there all along but you majored in econ. Did you understand from the beginning the connection of economics to other fields?

RBN: It was something that I understood was important because it was the growth of the economy that everybody kept talking about. It was the magic of markets that was supposed to make government not so important as we thought it was. But I knew that government agencies did benefit-cost analyses and they didn't seem to make much sense to me. So I wanted to learn economics. But yes, economics is connected to everything else. And yet, it's totally disconnected from everything else. Economists don't really learn about soils, about water, about air. There's much more of this going on now. But then, not much at all.

Fieldwork: A multi-disciplinary team assessing the Alaskan pipeline

ABG: Well, that's a good interdisciplinary bridge to your fieldwork in Alaska, on the petroleum pipeline. You said you were collaborating with others in all aspects of the pipeline. Can you describe that project and how it impacted your thinking about shared learning?

RBN: There was an Alaskan economist, a petroleum economist named [Arlon Tussing](#) — And in December '69, or maybe it was January '70, I went to the American Economic Association meetings, because that's where graduate students were recruited to faculty positions. And there was sort of a recruiting process where you could sign up and see all the different positions. Things that are done on the internet now were done on bulletin boards at the American Economic Association meetings. The meetings are still a place for people to meet face to face, but then it was actually the discovery of what's around.

And one of the things I discovered was that Arlon Tussing had money from the Ford Foundation to assemble a team to look at what's going on in Alaska. And he was looking for other economists — not young and inexperienced like me, but I just walked in and said, Hello, I'm interested in what's going on. And somehow I was able to get myself on the team. The other economist besides Arlon was [Scott Pearson](#), who had experience in Nigeria working on petroleum and economic development, and this would be relevant to Alaska. And mine was much more of a technical knowledge of petroleum because I was studying how petroleum wells were developed, how they were drilled, and I was looking into those technologies. And yet, I'd never seen a petroleum well, except as somebody driving along the highway. But just because I had an interest, and my strange background, he took me on.

Soon after, I discovered that Berkeley was going to offer me a position, but it was a position that allowed me one year to finish my PhD. And now I was spending three months in Alaska, so now I literally had nine months to finish my PhD [laughter]. And I did it anyway. I just said, this is too interesting to pass up. Being adventurous had been reinforced by my river-running time, but also being, you know, stepping out, just doing things was reinforced by knowing David Brower.

So now I'm in Alaska. The other team members are anthropologists, political scientists, wildlife ecologists, some of whom really knew Alaska well, some of whom just were bringing in an external perspective. And we were quite fresh on the scene: Oil was discovered in '68; we're there by '70. Not a lot of people had already gone up, besides journalists, to figure out what was going on. So we were early to start doing research on Alaska.

And the interdisciplinary team was just terribly exciting to me, being on the ground with the geologists from the oil company, and the geologist from the state of Alaska. Being on the ground... We were lots of time in the air because it's such a big state, and we flew the pipeline route several times, and talked about the pipeline route — what happens here and what happens there — and just seeing a project coming together from a rather raw form. I mean, really raw form because it took quite a while before the pipeline was approved.

ABG: You said it was really interesting being with those other people. Was there something particular that you remember about a perspective that they had that had maybe never occurred to you? Or, what made you light up about that?

RBN: I think it was more just a joy of learning, of being with a wildlife ecologist out there. I mean, literally, there was one point at which we were camping; not quite camping — we had the option of being in sort of tent cabins. Well, the wildlife ecologist and I decided, no, we're gonna sleep on the ground. And when we're ready to go back to bed, of course, it's still light, but it's time to go to sleep. We come back to our sleeping bags — we hadn't laid them out, we had them in our stuff bags. But a bear had come along and popped [sound effect: phfwho!] both of our stuff bags — his much more than mine. Mine was still usable — his sleeping bag was just feathers all over the place. And, I said you

know, You may be an expert on bears, but I think I would prefer to... and he said, Yeah, let's go inside [laughter].

And just to be sharing on a very personal, equal footing the limits of what we really know. And then, what we were willing to put ourselves up against, but then also, this is what we're doing with people and nature on a bigger scale. The anthropologist was able to introduce us to Native people much better than I could have done just going alone or something like that. So it was just more of the entrees of the different disciplines to the reality we're trying to understand.

Fieldwork: Ecology and cultural insights in the Amazon

ABG: The next big trip that you say influenced you was the trip to Brazil. Can you talk about what you were doing there?

RBN: My PhD dissertation had been funded by the Ford Foundation. Some of my early pesticide economics, biological control work had been funded by the Ford Foundation. And the Ford Foundation had hired a student of mine, **Zach Willey**, to be the first resources environment, development environment person, and he was in Lebanon, which was a very difficult place to be. I was being pursued by them and simultaneously was coming out of a divorce — it happened soon after I got tenure. And the Ford Foundation just kept saying, You can go to Indonesia, you can be in India, you can be in Brazil. I went to a meeting in Malaysia and met people from all these places, and then checked out Brazil and said, OK, I'm gonna do it.

It was a little bit irresponsible given that I was early out of the divorce. We still had children to settle. We had both grandparents in the Berkeley-Oakland area, and that helped a lot. And the children were with me during the summers, and my parents came down the first time and helped the transit. But, you know, I took off. And, again: Why would I do that? How could I just say, OK, this sounds like an adventure, I'll take it.

ABG: How long did you take off?

RBN: I was off for two years; I was on leave of absence for two years. And then there were a lot of follow-up trips during the 1980s. It was '78 and '79 calendar years that I was in Brazil. And it was an incredible experience, in that really being in another culture intensely helps you see your own, much better than anything — there's just no other way to do it, quite frankly.

But the same was ecologically true. Being in the Amazon, being in other parts of Brazil, being just in the tropics and watching how things work was also very intense. But then I also got attached to the national Amazon research center [current proper name: [National Institute of Amazonian Research](#)] in Manaus, on the Amazon River. And, again, I got to learn a lot of ecology by going out with ecologists in

the field and talking about their research projects. They were hoping for Ford Foundation funding and got a little bit through me, but my job was not to be an access to funding; my job was to help the Ford Foundation understand the potential of doing environmental work in developing countries. And it was extremely exciting.

Pesticide study, the College of Agriculture's Division of Biological Control

ABG: And the President's Commission on Pesticide Use: When was that? How did the appointment come about?

RBN: That's actually very early in '72. Before I'd finished my dissertation, Ned Birdsall had heard about me, but the other people who were pounding on my desk were the biological control people. The University of California College of Agriculture used to have an incredible Division of Biological Control. Much of the work that Rachel Carson wrote about was out of their work. And now they were saying, gee, there's an economist who's interested in the environment. Maybe we can get him to work on pesticide — why we should use less pesticides; how can we do more biological techniques. So I've got [Robert van den Bosch](#) literally pounding on my desk: We need an economist! And I said, Well, give me another couple months to finish my dissertation and yeah, I think I'll try.

ABG: So you hadn't finished your dissertation at that point.

RBN: I finished as an assistant professor. I was Acting Assistant Professor. So I was not yet a proper assistant professor.

ABG: I didn't even know that that was a thing. Postdoc maybe, but...

RBN: Yeah, it's less used now, though occasionally, you'll get acting associate professors. And I guess it was a little more common then. But yes, I had this nine-month window while I was physically in Berkeley being paid as a faculty member.

ABG: So Brazil came after that.

“The only guy” working across particular disciplines

RBN: Yes, Brazil came after the pesticides experience. And so in the Biological Control... Rachel Carson had an incredible impact, at least for, you know, 30-40 years and I was able to participate in that process, serving on the President's committee to investigate the possibilities for integrated pest control, pest management. Now it's commonly talked about — everything we do is integrated pest management. It's not as integrated as we were conceiving at the time. But yeah, I did early work on just how you model. With [Darwin Hall](#) I did a paper on just how you model pesticide use and the timing and

the amount you should use. And that was the first paper in the economics — ag economics or economics — literature to formally do something like this.

ABG: So when they went looking for someone who knew about this, you were the only guy, basically. An economist, anyway...

RBN: I was, because I kept jumping ahead, because I kept going into things that I had no right going into, I was frequently the only guy. And so I was literally the only guy doing economics of pesticide use in the early '70s. Now, it soon became a significant field. But yeah, I was only guy.

And then the Brazil experience resulted in the same thing. I was the only guy that knew about environment and development, I was the only guy who could talk about the tropical rainforest as an economist. I was the only guy who could talk about biodiversity as an economist. But I was also just incredibly lucky to, you know, through John Holdren, to connect with Paul Ehrlich. And Paul Ehrlich wrote, co-authored, the original paper on the coevolution of insects and flowers, insects, and plants.

And in Brazil, I was on an Amazon planning team, and it was a 17-person... working with the planners, 17-person committee, and they were trying to plan the Amazon right. And I was thinking, gee, development really co-evolved, we co-evolved with nature all over the world. We didn't plan all that much. Sometimes we did. And sometimes it worked, sometimes it didn't, but there was a process of selection going on. And so I was arguing to the Amazon planning team: Why don't we try seven experiments and learn from the experiments. And they looked at me like I was... What? What?! You know, for 500 years, we've been trying to settle the Amazon but *this* planning team was going to get it right. And that was a very powerful experience for me and led me to further develop this idea of coevolution of social and environmental systems and eventually write the book [*Development Betrayed*](#). But you know, it took another 14 years.

Energy and resource faculty lunches: “A physicist’s concern”

ABG: So that sets up how you arrived on ERG's doorstep in some way. Can you talk about the early seminars, the faculty lunches. Were those your first interdisciplinary or shared learning experiences on campus? Because you talked about these other extra-campus things.

RBN: Well, the Division of Biological Control at least was interdisciplinary with ecologists and insect ecologists. But the Energy and Resources Group certainly took a bigger picture than that, though it too was firmly rooted in physics when it started. I mean, Ned Birdsall saw the world as a physicist. But at the same time, he was so confident of his world view, as physicists tend to be, that they're quite open to talking with other people and trying to understand what they think. And yes, so Ned Birdsall...

At about the same time as [Robert van den Bosch](#) [pounds on table]: We needed an economist. You're an economist, you studied petroleum, you've been to Alaska... And I said, um, OK — the campus expertise on petroleum was quite thin. Stanford had a lot of petroleum geologists. It had a connection with Aramco and the Middle East, that... Berkeley just had one engineer who did some engineering, but he was kind of a lone and retiring professor. So I filled a pretty big void in being a go-to person. But of course, I didn't know everything. So their questions would lead me to think more broadly. But yes, Ned Birdsall brought Bill Lidicker from Ecology into the Energy and Resources Group. He brought [Todd LaPorte](#) from Political Science into the Energy and Resources Group. We got [Richard Buxbaum](#) from the law school into the group; he was very open to broad thinking. And yet any meeting you go to was two-thirds physicists.

ABG: And when you say "the group," you mean this early Energy and Resources Committee?

RBN: It was a committee. I mean, when it needed a formal name, I think [Mark Christensen](#) called it a committee. We ourselves were a group. We didn't think of ourselves as a teaching group as groups were formed. But we were a group of people.

ABG: What year did you come into it?

RBN: I was certainly meeting by '71. Definitely '72. Yeah, I was pretty early. The meetings were held up in Cory Hall. Of course, eventually we moved to LeConte Hall, room one or two, and a big lecture hall — an intimidating lecture hall with steep.... Good for throwing tomatoes at the lecturer.

ABG: Is that because there were speakers? Tell me if this is correct: Originally, it just started as a group going around the table, and then eventually it led to speakers. Is that the evolution?

RBN: Yeah. So there were already Wednesday afternoon seminars by the time I joined. And they had been going on, as I understood it, since '69. And there had already been lunches, but definitely as I was being brought in, other interdisciplinary people were brought in. So originally, it's a physicists' concern that we're running out of petroleum; physicists' concern that, Gee, fusion is not going to be around for 25 years; gee, we've got all these problems with fission power. And then there's nuclear war. I mean, the physicists had a *big* world view of the world that they had created and were trying to work through. So it's not that they were just involved in little lab problems, they were very aware of where the world was at from a nuclear point of view. But then they're also concerned about how much solar can you actually use, how important is solar, and they could think about, through their physics, think about wind. But it was dominated by a physics perspective that the rest of us were just soaking in and trying to learn and understand.

A home for interdisciplinary thinkers in a discipline-segregated culture

ABG: You mentioned the career-long challenge of your work being judged by economists, when you're really doing work across disciplines, in the social sciences. I want to know what kind of opportunities ERG provided... for collaboration, for the understanding of the value of what you were doing.

RBN: It gave me a sense of place on the campus. Giannini Hall is a beautiful, beautiful, beautiful building and I loved Giannini Hall. I loved it as an undergrad when I took courses there. This was a really nice place to be. And yet it was dominated by my experience with the economists in Agricultural Economics, several of whom were particularly difficult and many of whom were just sort of go along and not stir trouble, or, you know, their identity was just so close to economics that they didn't understand me. I was an oddball.

Ann: When you say go along, you mean go along with conventional thinking in the field?

RBN: Conventional thinking but also go along with how the university worked as a disciplinarily organized educational research unit. Whereas I was just loving the interdisciplinary opportunities I was having, the ability to learn across disciplines, to be transdisciplinary myself. And yeah, that was not related to at the time. So that was a difficulty. And then, obviously I was given tenure. I was told that I needed to concentrate, that I couldn't... I had papers on Alaska; I had papers on outer continental petroleum leasing; I had papers on petroleum technology; I had papers on water and New Melones dam; and I had a theoretical paper on property rights and the law. And they just said: That's too dispersed, you just can't do that. And I was in shock that they said that. I just didn't appreciate that they said that. I really did not appreciate that. It was so clear that the signal coming from my tenure was not a signal of, Gee, this is cool that you can do these things. It was a signal that you better get your act together. And, you know, shortly after that, I decided to go to Brazil with very much a finger in the air. I hope you can put that in [laughter].

ABG: It all goes in, Dick [laughter].

RBN: Yeah, so I was defiant, too; openly defiant and not sufficiently respectful of the system. But also just, you know, *fiat lux* [laughter] — I just felt deeply that the economists had their head[s] in the sand. You could see that in some of the other disciplines. But you could also see that entomology was very split between the entomologists who took industry money and testified to the effectiveness of pesticides, and entomologists who fought the pesticide industry openly. And that division was just, oh, there's something going on here. That's pretty clear.

ABG: The '70s environmental movement, defined within academia, I guess...

RBN: Things were very blatant in the '70s [laughter]. It's not that they're not going on now. It's just that everything had opened up like, Oh, this is the way they ruled? Really, it is? How amazing. And yeah, and I benefited and was hurt by that.

ERG's first PhD student: Jane Hall

ABG: You mentioned in the pre-interview, one of your first students was [Jane Hall](#), who came sort of through a side door entry to ERG. Do you want to talk about her? I'm trying to get a few stories on the record about the early students and ERG, and why them, and how'd they do in the world?

RBN: OK, so Darwin Hall came to me — he'd picked up a master's degree, I believe in University of Washington and had worked with [Gardner Brown](#), who did his PhD in the Ag Econ department at Berkeley and Gardner told Darwin Hey, you ought to go back to Ag Econ and get a solid degree and Norgaard is the person who you want to study with. So Darwin Hall came to me and he was married to Jane. And Jane wasn't going to graduate school and Darwin was and I looked at the two of them and, wait a minute, Jane is just as smart as Darwin is — maybe not as good at mathematics as Darwin but obviously, we were having intelligent conversations and she was bright. So I said, Jane, you've got to come to school.

[Break for dog commotion]

I was working with Darwin Hall, and his wife, Jane, was seemingly just as intelligent as he was. And I encouraged her to apply for the PhD program in Agricultural Economics. She took all the exams and got in. While she was officially getting a PhD in agricultural economics, except she kept wandering into questions that are much more like the Energy and Resources Group. She ended up doing a PhD dissertation on power plants up in Pittsburgh that had been originally coal fired power plants, as I remember. And they're switching to oil — or maybe they were oil but they're switching to gas — and investigating the effects of the transition, and the reduction of the pollution and the transition. And the best air pollution expert on the campus was [Robert Sawyer](#), who was in Mechanical Engineering, I think. And he also was involved in the Energy and Resources Group. So she connected with him.

He began to think of her as an Energy and Resources student. But we didn't have any students. We didn't have a program. And yet, to him, this was the model that ERG ought to have — somebody with a background in social sciences and economics moving into a new area and asking a lot of good questions that the engineers weren't asking. So he was learning with her and she was learning with him. And as we made a program — created the Energy Resources Group as a graduate program and set up its rules and didn't really have its rules entirely set up — Rob Sawyer, Bob Sawyer says, Well, Jane really ought to be our first PhD. And she was a little bit shocked herself and said, Boy, that'd be great. And we had to complete what the requirements were — get them all written down, get them approved. And she was

kind of taking oral exams in the Energy and Resources Group simultaneously as we were creating the rules [laughter].

ABG: That's what you call building the runway as the airplane takes off, right?

RBN: Yeah, what's the... On-demand supply? [laughter] Yeah, she was officially our first PhD. And none of the other students would accept that as the truth because she didn't take courses from **John Holdren** and **John Harte** and, you know, suffer all this stuff they had to suffer through [laughter]. But, yeah, Jane was our first PhD. She became a professor at Fullerton State. Her husband was in Long Beach or vice versa – economists, both doing environmental economics, but she with an ERG degree.

ABG: Are there any other students early on that stand out to you as the first PhDs that ERG produced as this unique unit on campus?

RBN: ERG is now famous as a PhD program. When we created ERG we wanted it to be a master's program, and just a few would go on to get the PhD. And this was going to be a professional master's program for people who would work at the policy-science interface, who would have enough science and enough social science to be effective and to ask the right questions of the experts — not become the experts themselves. So yeah, it was a professional master's program with the option of PhD. So Jane was an exception from the beginning. And we didn't really admit PhDs in the initial [classes]; we admitted master's students, and one in eight, one in 10, would go on and get a PhD. I'm not now remembering precisely who those were. But [Peter Gleick](#) would be among the earlier ones.

Global Stability group: A model of shared learning

[Note: There's some slightly disruptive background noise in this section.]

ABG: One of the things that I really want to dig into is Globstab, if I said that right. What is it? What was it? When and how did it form? Who was part of it? Where'd it get its weird name?

RBN: Globstab starts up in the mid '80s. It's a group of faculty who get together around the question of: How do we come up with global stability? Or, how do we use theory to think about global stability, and there was new mathematics being done on the ecological theory of stability, of ecosystems — to think about international stability and security. And John Harte is central to it, because he has studied stability theory. [Gene Rochlin's](#) important because he's studying political science and nuclear-waste safety and dispersion of nuclear power, avoiding that. **John Holdren** is critical because he's part of [Pugwash](#), or leading Pugwash at the time, and very much involved with nuclear security. [Ernie Haas](#) [Ernst] in political science was involved. [Mel Webber](#) [Melvin M.] is in City and Regional Planning. He'd written an article on, co-authored an article on "wicked problems." And when things become sufficiently complex, they become wicked. And that term of "wicked problems," is still used today, in

various places around the world you run into people talking about “wicked problems.” I know the origins of that. [laughter] So Mel Webber was part of it. And I come in mostly because I'm learning ecology at the time with John Harte, or from John Harte. He was transitioning from a particular perspective to other perspectives, and then also going into climate change in the '80s. And I'm sort of the least qualified, except I'm the economist and there's always a need for an economist — at least that could fake being an economist.

ABG: And that's because of the particular perspective an economist brings? That sort of standing back view, or...?

RBN: The idea of trade, and trade and peace — that trade will bring world peace. The whole Bretton Woods structure is premised on the idea that if we can just get a global economy interconnected economically, then we won't have war.

ABG: I think we know how that turned out. [laughter]

RBN: Well, it was a stupid idea in the first place. I mean, wars are fought between adjacent countries. Trade is most intense between adjacent countries. And so it's just this dream of, Growth and trade are good for everything. And [John Maynard Keynes](#) is partly responsible for this. But a lot of other economists [were] kind of trying to insist, Yeah, trade is going to be our path to peace.

ABG: So what did Globstab do? Was it just an idea exchange? Or were there papers written, or events, or...?

RBN: You can say it did nothing except that we had wonderful conversations over lunch, at first bag lunches, and then over dinner at the faculty club. And we got to be known by the faculty club staff, oh, this is the Globstab group. We were interested in global stability. We got named "Globstab" because I set up the first campus-wide computer account — that's the only way you could easily share files at the time. And so we would all tune into the same... a computer file had eight digits at the time. And global stability: globstab. Well, “Globstab” was a characteristic of what we felt we're doing. We felt like we had this jellyish glob that we're trying to stab — something that wasn't precise with something that is, and so the name stuck.

ABG: Just to be clear, when you're talking about stability, you're talking about nuclear, financial, economic trade, all of it — not just nuclear?

RBN: Nuclear was the primary issue. But also what was contributing to that, which was thought to be trade... Buxbaum and Ernie Haas were international relations specialists. Sort of, what was contributing to it? And then what was distracting? Because certainly the diffusion of nuclear power and the problems of nuclear waste being a possible source for nuclear materials.... But yeah, the group was

speaking to global security, global stability. But, we had long conversations about nuclear winter. And what would actually happen if a nuclear bomb, nuclear war happened. And at times I'm sure John Holdren was saying some things, he was just on the edge, and he shouldn't be saying. And we all could think further down the road as to what that meant.

ABG: I'm not sure what you mean by that. Voicing concerns that were too scary, or...?

RBN: Yeah, that were very scary, but also some things which were not official and still aren't official. But we could voice them. And when knowledge is not official, we didn't know...

ABG: It was a safe place to do those thought experiments?

RBN: It was a safe place to do these thought experiments.

A complex conversation to understand complex systems

The group kept trying to write. And what was interesting in the group was the way we would sort of sequentially speak, that, Oh, if this, then this, this, this, and so each one of us could follow trails in different directions from any point. And yet as you go out in these different trails, these octopus arms, they linked at other nodes, and you can go other places. And then we get to spaces where, oh, we've been here before — we got here last time this way now, we're getting here this way. So it was a very multi-dimensional, nodal conversation. And we kept joking that we need to write it in some sort of a multi-dimensional space, that it shouldn't be just word after word, to an end, because all conversations were loops.

ABG: Nonlinear.

RBN: Yeah, different ways of getting to the same space and the same node. "Dungeons and Dragons" space was what was popular in the '80s, where you would in the Dungeon and Dragon game, which I never played, either. And when people did it, it was a multi-dimensional space in which you could find yourself back to where you were before. Yeah, so when we talked about Dungeons and Dragons space. I tried writing and summarizing the group. Ernie Haas did the best and wrote what would be a 300-page manuscript. And we all loved it. But we didn't see it as a possible book. And neither did Ernie Haas. So someplace there may still be on the university computers this document that did get written.

All of us thought more deeply because of it. I was writing *Development Betrayed* at the time, was thinking of coevolution of social and ecological systems and was entertaining comparable questions, so that I was able to contribute from, and think from where my own mind was going, and they were helping me think differently.

ABG: That's hugely valuable.

RBN: Yeah, it was hugely valuable. But it was also: Whenever we described this to another faculty person, they'd just say, That's unimaginable. That sounds like just what faculty should be doing. That's, wow, I wish I'd experienced something like that in my career. And so, Yes. We will do it also with graduate students joining in so that they can hear it. But they would also participate. But mostly we just wanted people to see what was going on, because we ourselves knew something unusual was happening. For me, it really firmed up my idea of collectively understanding complex systems, that we cannot individually understand, but together we can understand much better. And that would have been a group that we each would have trusted each other to be involved in our group, to make really difficult decisions, to make judgments based on what we had thought through.

ABG: The answer to this question might be, "Naah." But if there is a longer answer: Do you think that the culture at ERG, because you and Holdren and Harte were there, did the culture of ERG suffuse that group in some way or influence its existence or influence the ease with which people interacted in this way?

RBN: Yeah, this is happening 15 years after Birdsall begins to start the process; 10 years after Holdren joins us. And by then we're pretty good at conversing over lunches. But then we picked a group within that to follow this conversation. It was a group that didn't have any leader. I mean, yes, we could each be domineering at different points in time, but we were not leading. We were good listeners. Everybody there was a good listener.

ERG's model of shared learning: Started with lunches

ABG: Anything else related to ERG's model of shared learning? Influences on your own work? Influences on society? And kind of the same question I asked about Globstab, except writ large — getting academia to value experts coming out of their silos?

RBN: As we were conceiving of the program, it was over lunch. And, you know, I don't know if anyone ever explicitly said it. But I felt like we need a program that's like our lunches, that had a conversation between the disciplines; that is a shared learning process between the disciplines, that we want to bring people from different, students from different perspectives together, to learn from each other.

And ERG has pretty much followed that model, except that it has gone into the lab group model, which selects students to your lab group, which may be very consistent with the lab group rather than contributory to the larger group. And yet, for years, students talking to students was where a lot of the learning took place where, you know, one student would be doing some research and say, Hey, I came upon something that really might be of interest to some totally different students. And they converse in the hallways and pass material on.

And the same was going on with the faculty all the time, which was, Oh, have you read that article in *Science* magazine — we all took *Science* magazine; we didn't religiously read it every morning; we took cues from each other as to what was really interesting to read. And that was true of other journals as well. As each of us came upon things we would say, You need to read this and then we talk about it. So you have sharedness. Having other inputs beyond your discipline into your learning circle, is, I think, the model of ERG, at least a model that ERG has been. It'd be lovely if it's maintaining; it ought to be augmented instead of let loose.

Evolution of Wednesday seminars

ABG: Do you think that eventually all these colorfully documented objections to ERG being independent — that they should be in Engineering and all of these things that went across so many years — do you think eventually that died down because people got it, people got what was the value of interdisciplinary thought?

RBN: There were multiple things going on. Certainly in the first 20 years, the affiliated faculty were just very involved, coming to the colloquia and listening to people from different disciplines and learning and asking questions from their disciplines, and a substantial group coming to lunch. And gradually, I mean, I think there was, through ERG, a lot of interdisciplinary education campus-wide and the objections were partly from the disciplines that didn't get it.

But there's also just this administrative: We need a clean, logical structure; we can't have something that doesn't have a dean set off there by itself. And, just structurally it did not fit. And yet, "it did not fit" was a lesson to everything else that was going on that people were getting, and then they weren't. But as ERG grew and changed, the affiliate faculty became interested in our students but not interested in the colloquia. And there was just not as much learning going on in the Wednesday afternoon seminars. They became practice periods for graduate students and assistant professors rather than I mean, they became more like colloquia in other disciplines.

ABG: So did they die out of their own accord or...?

RBN: I think they're still going on. I know they're still going on. The Wednesday colloquium is still going on, but it's much more internal, with visitors coming in but not attracting as many affiliates. Originally, we would have visitors coming in and the affiliates would always show up. And that is less true now. And it's partly because with the internet, we all have access to everybody all around the globe. And so the excitement of somebody coming from another university to Berkeley is not half of what it used to be.

ABG: And that's what you mean by visitors, is people outside the university?

RBN: Right, people outside of the university.

ABG: Outside even the state? There was Stanford right there and Cal Tech. Did they come from other places?

RBN: It would be from all over the world as well, because Berkeley was such a wonderful place to visit. And then people would discover us and make connections. The times have changed and so that kind of learning across disciplines is just so much easier because of all the internet activity, but at the same time the administrative structure is tightened and the funding pressures have made it much more important for each individual faculty do their thing and get their funding and get their.... So it's not as collegial or as universal as it was in the '70s and '80s. And even in the '90s.

Faculty swap, controversy, and a unique appointment

ABG: Is there anything else you might have on your mind — that I might not know to ask you about or that you think is important to ERG?

RBN: Yeah, there was an interesting transition of how I was appointed in agricultural economics and eventually transitioned into ERG. I was always spending time at ERG, which was literally in the temporary building T-4, first T-9 and then T-4. But when ERG needed an economist, we hired Tony Fisher, [Anthony C. Fisher](#), and he did excellent work on the irreversibility of natural phenomena. Of course, that's also true of social phenomena. But the idea that things are reversible is strange. But still, in a lot of systems thinking, there's stability — you can push a system up to a limit, and then it'll go back to its original state. And then if you push it too far, it goes to another state, and it's irreversible back to its old state. And Tony Fisher — economics just assumes everything's reversible — Tony Fisher did a dissertation on irreversibility and then wrote a paper with [Kenneth Arrow](#), a Nobel Laureate at Stanford. And, you know, it was instant fame. And we hired him.

Tony was not appreciated by the grad students because, though he'd done incredible work, he didn't open up to the questions from people from other disciplines. As they'd ask questions about economics, he said, Well, that may be a problem but if you can think of a better thing, tell me about it, but for now, this is it. And that didn't go over well with the grad students. Meanwhile, they would come to my courses and find my teaching more open to questioning and more suggesting the questions, indeed, that need to be asked.

So there came a point in the early, mid '80s — maybe mid '80s, I can't remember, but where Tony wanted to switch into Ag Econ, and would I switch into ERG. And so, we did that switch, except that I had a 50% Agricultural Experiment Station appointment, which I took to ERG, though officially it had to be in an AG department, so it was still officially in Ag Econ. And that meant economists were still on my

case as for tenure — well, I'd gotten tenure, but a promotion to full professor. And yet, physically, I'd become quite, completely separated. I'd only occasionally show up for faculty meetings in Ag Econ just because my thinking is just so different now and so much more exciting.

ABG: And was your physical office in the ERG building?

RBN: With the transfer of my teaching FTE I had a physical office in ERG, in T-4, though it was so crowded that when we hired [Rachel Schurman](#) in sociology, I shared an office with Gene Rochlin but I was basically holding office hours out on a wall [laughter]. A monument to concrete. Yeah, things were, I mean, you'll find my office hours are out here [laughter]. For quite a while, I retained an office in Giannini. But it was clear that I wasn't using it, so I left it.

So eventually, I want my entire appointment to be shifted. And the university gradually accommodates that after a trip to the committee on privilege and tenure and a controversy that, you know, I just wasn't being treated fairly. So the university agrees to provide a full teaching FTE for me in ERG. But I had given half of an 11-month appointment to Tony Fisher. And I had half of an 11-month appointment in the Experiment Station, and now I'm offered a nine-month appointment, a teaching appointment, and, Wait a minute, Now I'm down to nine months when I started 11 months and I've been contributing to my retirement as if I was 11 months. So that took some negotiating [laughter]. But eventually, the university made a special appointment for me and I was the only person who had a 10-month appointment [laughter] — a 10-month teaching appointment.

ERG and other refuges: River-running, carpentry, photography

ABG: It sounds a little bit like that there were some prices to pay for giving birth to something that just didn't exist before. Are there any other... not necessarily a negative price to pay but consequences of giving birth like that?

RBN: It definitely gave me refuge. River-running gave me refuge. I was running rivers until 2017. My wife and I went on a trip in 2018 but that was fully provided. I still have rafts up in the carport. The other thing I would do is carpentry. A lot of this home is my carpentry. My father grew up on a farm, learned how to use tools. He was an engineer interested in construction. My first father-in-law was a building contractor and taught me a lot of things. And I had a graduate student — Andrew Cohen, an ERG PhD student, renting a room who had been a professional cabinet maker before returning to school. And he taught me a lot. So what you're seeing here in the dining room is mostly done commercially, because we had it all done at once. Except for the back door — I did that and the strange handrails going up and down, those are mine.

But as you get further out there, much of that's my work with a faculty member who didn't get tenure in Ag Econ, Phillip LeVeen who also was desperate to do something constructive and became a building

contractor, and was very much learning as he was doing it. And so he and I did a lot of the work on the house. Then my son with Nancy had a friend whose father was a carpenter and he then became our, and is still our person with whom I did the carpentry. The cabinets on each side of the front door are mine; all the picture frames in the living room are mine.

ABG: Where was your workshop? Did you have a workshop here, as an outbuilding or a basement?

RBN: I have a basement that is just a slot of a basement. It's just a part of the basement, just part of the floor plan of the house. It's only 6 feet wide and it's long and narrow and has the furnace and the hot water heater in there combined [laughter]. But I have a deck right under there, right next to the basement, that I can bring tools out on and eventually just left tools out. I have a table saw that I just keep under a tarp, and a planer to make stuff smooth.

ABG: Do you still do it?

RBN: I still do it. The project that you'll see up by the front door is still underway. It's a refuge. So many things in academia take so long. I mean, graduate students take a long time to become professors and you're just involved with them for quite a while. It can be years from a research project to a publication. You know, by the time it's published it's like, Ho, hum. But yeah, there's some excitement to being able to do things with your own hands and I still have 10 fingers.

ABG: You must be doing something right. Well, anything else to add?

RBN: I think we're good.

ABG: I think we covered a lot.

[Formal interview concluded but iPhone recorder restarted when Prof. Norgaard started talking about his photography experience with David Brower:]

Photography: Passion and publication

ABG: Tell me about your photography publications.

RBN: So I was extremely interested in photography and I bought a twin lens reflex where you can change the lens, a [Mamiya](#) flex. And Brower noticed, obviously. [Commotion] And so, I was in the Glen Canyon, this incredibly beautiful place, wonderful place to do photography, and was taking photographs of my own and Brower began to appreciate them, and we began to talk about photography and do it sort of side by side. But then, you know, at the end of every trip, I'd be up at his

house on Stevenson Avenue, just four blocks up from here and we would just be talking about photography.

And eventually, he was publishing... Well, he had an editor of *The Sierra Club Bulletin*, which is now just called *Sierra*, but I have photographs published in *The Bulletin*. And then he wanted to have some Glen Canyon photographs at the end of the Grand Canyon book to talk about what was lost that we did not want to lose in the Grand Canyon. And most of those photographs are mine. Though they were taken in a particular place called [Cathedral in the Desert](#).

ABG: Well, that's satisfying.

RBN: Yeah, I was a published photographer way before I was a published author.

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