

ORAL HISTORY INTERVIEW

BRUCE BABBITT

Tempe, AZ

21 September 2018

Interview conducted by:

Dr. Paul Hirt, Arizona State University

and

Jennifer Sweeney, Four East Historical Research, LLC

Glen Canyon Dam Adaptive Management Program Administrative History Project

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Table of Contents

Table of Contents	iii
Interview summary and annotations by minute	iv-xii
Interview transcript	1-16

Subject Bruce Babbitt
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Interviewer Paul Hirt
Annotator Jennifer Sweeney
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Bio Bruce Babbitt grew up in northern Arizona and has been an environmental advocate for most of his life. He holds degrees in geology, earth sciences, and law. Babbitt served as Arizona Attorney General from 1975-1978 and as Arizona Governor from 1978-1987. He was instrumental in the formulation and passage of the state's 1980 Groundwater Management Act. Babbitt served as U.S. Secretary of the Interior (SOI) from 1993-2001. During his tenure, he was responsible for implementing the Glen Canyon Adaptive Management Program (GCDAMP). Babbitt has contributed time, expertise and political capital to numerous ecosystem management programs and environmental protection efforts.

Minutes Summaries of transcript contents during each minute of the interview

- 0 **Q:** I want to start with a big question. Your family has a long legacy here in Arizona. Can you talk about your connections with the Colorado River and the Grand Canyon? **A:** Babbitt grew up in Flagstaff and the Grand Canyon was nearby. He was always interested in the outdoors. Hiking and other outdoor activities stimulated his interest in geology. Babbitt earned an undergraduate degree in geology and a graduate degree in earth sciences.
- 1 River running gained momentum with the public in the 1960s. Martin Litton was one of the "legendary outfitters" who contributed to its higher profile. Babbitt spent a lot of time on the river. **Q:** How many river trips do you think you took over the years? **A:** "I have no idea--it would certainly be more than ten and less than fifty. A lot." The early river trips blended elements that Babbitt used later in his life: outdoor interest, science training, "and an interest in fluvial geomorphology."
- 2 **Q:** Did you notice, when you were taking those trips down the river, did you talk about the impact of Glen Canyon Dam on the river ecosystem? **A:** Babbitt "started awakening" to changes along the river by the 1970s. "From trip to trip, you could see the way the sand was being totally stripped away." On one trip, Martin Litton said they would not be able to do Hance Rapid and had to make an unexpected stop.

- 3 The water level in the river went down so rapidly that if they had continued, they would have been stranded until the Glen Canyon Dam operators let water through again. "That was kind of the point at which I really, sort of viscerally started to make the connection between these incredibly up-and-down, river being manipulated, hydro demand, and what it's doing in terms of all the downstream ecology." **Q:** When you became Arizona Governor, you must have had an opportunity to think about how to solve those problems. During your tenure as Governor, how did you approach issues in the Grand Canyon? **A:** Babbitt's time as Arizona Governor was intensely focused on groundwater issues.
- 4 Babbitt concentrated on bringing factions together to pass Arizona's 1980 Groundwater Management Act. He calls himself an "absentee" from the Colorado River at that time. "There weren't many voters living on those rocky banks of the Colorado River." **Q:** That would change in the 1990s when you became Secretary of the Interior (SOI) under the Clinton administration. Can you talk about the origins of the effort under your guidance to establish the Glen Canyon Dam Adaptive Management Program (GCDAMP)? **A:** Babbitt first wishes to explain why the SOI is so significant in Colorado River management.
- 5 In most river management schemes, the federal government is not a major presence. Historically, control of water on public lands was directed to the states as a consequence of the 1877 Desert Land Act. "The Colorado River is a remarkable exception to that." Years of contention over its water resulted in a series of lawsuits between Arizona and California between 1931 and 2000.
- 6 The 1963 Supreme Court opinion confirmed that the federal government, in the person of the SOI, had authority over the management of Colorado River water. The decision was controversial at the time, but, Babbitt feels, "resulted in a quite interesting, precarious and, kind of, really productive balance between state and national interests in the river."
- 7 "So I arrive in Washington, and all of a sudden I'm suited up as water manager of the Colorado River. That was like a sardine to a cat, and I grabbed at that and said, 'This is really gonna be interesting.'" Glen Canyon Dam was becoming a larger factor in the management of the Colorado River. Babbitt began his SOI tenure at a time of water surplus. The impact of hydropower became more important as damage to the river became apparent. "The bottom line of that is, it's complex, it's not clear what the answers are, there are a lot of serious contending interests at stake, and the only conclusion you could draw from that was, 'It's time to get the scientists involved, and to get really serious about the water management.'"

- 8 To do that, all of the contending parties needed to be brought together. **Q:** You mentioned a lot of contending interests. Some of those are within the Department of the Interior (DOI) itself. The U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Reclamation (USBR), dam, irrigation and hydropower mandates--how did you orchestrate and integrate all of these contending interests even under your wing in the federal government?
- 9 **A:** Babbitt acknowledges divisions within DOI and says that USBR had a great deal of autonomy that other agencies did not. "The great years of Floyd Dominy as the manager of the Bureau who spoke only to the President and the Congress, who didn't even bother to talk to the Secretary of the Interior. He ran an empire all of his own." That legacy remains part of the fabric of USBR. Two things gave Babbitt the leverage to bring parties together and discourage unilateral decision-making.
- 10 "One, of course, was the Grand Canyon, a national icon." The constituency of people who care about the canyon is huge. The second leverage factor was endangered species. The 1973 Endangered Species Act (ESA) is strongly drafted and incredibly powerful. Dam-created conditions put native fish at risk, and USBR found that the ESA made USFWS a more powerful player in Grand Canyon.
- 11 **Q:** It was the Record of Decision (ROD) in 1996, during your time as SOI, that mandated the creation of GCDAMP and implemented the 1992 Grand Canyon Protection Act (GCPA). Can you talk about the GCPA and the ROD that led to the creation of the adaptive management program? **A:** Babbitt says his memory of those processes is not particularly detailed.
- 12 There was a problem that required scientific research; those involved in Grand Canyon management were "awakening" to the adaptive management concept; there was a need to get people moving in the same direction, whether they were in DOI or members of academic institutions. "That's basically my role. I said, 'Do it,' signed the document, and went on to other things. I don't claim paternity for all of the detail that went into all of that. I really watched it from afar." Babbitt fondly remembers watching water cascade through the dam and into the river during the first High Flow Experiment (HFE), a strategy he calls a keystone of the adaptive approach.
- 13 The HFE was meant to move sediment into the river and build beaches along its banks. "Interestingly enough, we're still doing that twenty-five years later. We still haven't learned everything." **Q:** One of the tenets of adaptive management is that you're always learning, adapting what you learn by monitoring the effects of your actions. **A:** Babbitt achieved his "rather limited" understanding of adaptive management through forest management. In summer 1993 at Northern Arizona University (NAU), Babbitt spent a morning with Wally Covington in his "forest lab."

- 14 Covington took Babbitt to the Mount Trumbull Wilderness. It was not administered by the U.S. Forest Service (USFS) but by the Bureau of Land Management (BLM), which is part of DOI and was under Babbitt's purview. He gave Covington grants to support adaptive management of Mount Trumbull. Forest management had historically emphasized fire suppression. Covington advocated using fire as a management tool.
- 15 Similar things had been done in the longleaf pine forests of the southern U.S., inspiring Babbitt to think along adaptive management lines. He brought this understanding to plans for managing the environment affected by Glen Canyon Dam only a couple of years later. **Q:** You've mentioned the importance of science in land management decision-making a couple of times. You made a strong effort to strengthen scientific research in DOI; at one point, you proposed establishing a National Biological Survey (NBS) to coordinate scientific research across federal agencies. Can you talk about that effort? **A:** It was simple.
- 16 Looking at forest management, river geomorphology, endangered species, it became clear that the biological science that existed for this area "was embedded in, kind of, silos in each agency, and was very much oriented to 'What am I gonna do tomorrow, for a particular issue, in my agency, in my region, in my jurisdiction?'" Babbitt thought that, instead, science had to be "first, comprehensive, and second, at a remove from day-to-day decision-making."
- 17 Managers have individualized knowledge and needs that need to be integrated into a larger ecological management concept. Babbitt wanted to create a structure for the biological sciences similar to what was in place for the earth sciences: the U.S. Geological Survey (USGS), created in 1879 and operated as "an independent agency with data and results available to everyone." **Q:** How far did you make it with that?
- 18 **A:** It was typical of how things work in Washington politics. Babbitt invoked the spirit of John Wesley Powell, put together a budget, and promoted the NBS as a needed counterpart to the USGS. Congress "blasted it to pieces." Babbitt then proposed that what he had budgeted be integrated with USGS, which turned out to be a good solution: the complete integration of natural sciences. "It's clearly the correct model."
- 19 **Q:** At a very specific level, you were able to establish a new science organization for Grand Canyon and the Glen Canyon Dam Adaptive Management Program (GCDAMP): the Grand Canyon Monitoring and Research Center (GCMRC). Was it your efforts that led to the creation of GCMRC? **A:** Babbitt makes it clear that he is often responsible for the idea of a concept, but not necessarily for the work it takes to make it a reality. Getting political support requires integrating science and scientists "around nodes on the landscape of mutual interests and mutual problems."

- 20 Babbitt thought specifically on how to "activate" universities not just for their scientific resources, but "for their political clout." University constituencies can be turned into a lobbying power on behalf of federally-sponsored science. **Q:** There is no designated university representative on GCDAMP. Then-GCMRC Chief Dave Garrett mentioned [in his oral history interview] that you and the SOI's designee felt that Garrett, as a university dean, could function in that capacity. Was there any discussion about whether there should be a designated representative for academic interests?
- 21 **A:** Not specifically. What is important is that Garrett was a university leader. **Q:** You insisted that GCDAMP report directly to the SOI, which was an important innovation, and that the SOI would always designate a representative. Why was that important, and how do you think it worked out during the years in which you were involved with the program?
- 22 **A:** "Look, that's just Politics 101. You want to get something done, you'd better not delegate it out through all of the existing bureaucratic channels." Babbitt needed to be clear about what he wanted done, and then have people report to him. "That simply sends a message. It kind of awakens people to the fact that this is a priority, and you'd better get with it." This is nothing new, but is an effective political tactic.
- 23 The downside is that the next SOI or person in charge may not be so committed or so clear. Over time, the usual bureaucracy tends to assert itself. **Q:** One of the people we interviewed was Anne Castle, Assistant Secretary for Water and Science under President Obama. She mentioned that when she started, there was no unified voice among the DOI agencies, a situation she had to actively change. How did you attempt to coordinate or integrate the interests and voices of the different agencies?
- 24 **A:** The bureaucratic answer is, that is why at one level there are agency heads; the next level up is assistant secretaries, who are responsible for two or three agencies; the assistant secretaries report to a deputy secretary. This pyramid structure is supposed to encourage coordination. Babbitt did not care for that structure, and instead talked directly with agency heads when coordination was lacking. "I'm not sure that, in the long run, that was the right way to do it. What I'm confessing is that I really ran sort of wild across all the bureaucratic coordination and said, 'I don't have time for that, I'm just going to deal with people and tell them what to do and tell them to talk to each other.'"
- 25 "That's, if you will, a personal admission. I'm not sure if that's good government." [laughter] **Q:** Do you remember what you were trying to accomplish when you were calling up these individual agencies? **A:** Babbitt remembers an early conversation he had with the President. A third person who was present asked Babbitt what legacy he wanted to leave for Bill Clinton. Babbitt thought about the question over and over again.

- 26 He decided the answer hinged on what needed "redirection in the most intense way." Babbitt spent a disproportionate amount of time working with the USFWS getting the ESA underway. "It was a huge task, and I spent enormous amounts of time out in the field, all over the country, with people, kind of saying, 'We've got to make this Act work. It's powerful, it hasn't been deployed, it's the ultimate ecological management tool.'" Babbitt felt "bonded" with USFWS. The other agency with which he worked extensively was BLM.
- 27 The National Park Service (NPS) needed some attention but was a "mature" organization, with its own "spirit, cadre, support." BLM, Babbitt thought, had an inferiority complex, and was misunderstood by most people as a "dumping ground" for public lands that were not significant enough to be managed by NPS. Babbitt wanted to reframe BLM as a conservation agency. There were no national monuments in the BLM system, a situation Babbitt wanted to change.
- 28 While Babbitt was overseeing the bureaucratic work of setting aside Grand Staircase-Escalante National Monument, "the Park Service is looking over my shoulder, licking their chops at the newest unit in the national parks system." Babbitt conferred with President Clinton about doing something different: keeping Grand Staircase-Escalante under BLM management. BLM also had a large role in the Northwest Forest Plan (NWFP).
- 29 This illustrates the 80/20 management rule: spend at least 80 percent of your time on no more than 20 percent of the institution's agencies. **Q:** So that you could not spread yourself too thin but concentrate on getting something big done? **A:** Yes. Concentrate on where the opportunities are and where there can be some real gain realized. **Q:** One of the other legacies of your time in the Clinton administration is getting adaptive management science more integrated into land management decision-making by agencies. Do you feel like you were successful in ushering in a new management paradigm to replace the old, more linear one?
- 30 **A:** Babbitt cannot claim credit for a complete victory. "Everything is a process in motion. What you need to do is think of it across time." In 1990, the adaptive management contingent consisted of a handful of academics.
- 31 Adaptive management was "really out there on the fringe." Now it is mainstream, but it is not always practiced conscientiously. There is a tendency for the process to degenerate: "people do what they want to do, and say 'This is adaptive management. Nobody will ever know the difference.'" The process must be monitored incessantly to avoid this. **Q:** There is a difference between an academic theory or model, and how it plays out in the real world when you try to implement it. Can you talk about your feelings about how the idea of adaptive management played out?

- 32 **A:** Babbitt would like to veer off a bit and talk about what he is doing in California, where adaptive management is being implemented in a strong way. It centers on water management in the Bay-Delta system in Northern California. The issues are reclamation projects for water coming out of the Sierra, decline of salmon runs due to lack of water, and endangered species issues.
- 33 Nine or ten regulatory agencies have direct power in the system, three or four of them federal agencies. California has a large scientific establishment and a world-class university system. "There's a scientist sitting on every stream in the whole state." It is hard to balance water demands against environmental degradation, and the situation demands scientific integration and experimentation.
- 34 In a complex system like the San Francisco delta, "no one really knows what's going on." There is such a long history of environmental exploitation that "Anyone who says 'Here's a lot of science, let's do X' is doomed from the start."
- 35 All possible variables must be identified before a good hypothesis can be arrived at, and even then the process is "iffy." When an intervention is used and results measured, scientists must be "honest enough to admit failure." The null hypothesis is important in science, but does not play well with politicians. **Q:** You're underscoring the importance of recognizing uncertainty in the natural world and in decision-making, funding, and doing science. Yet we assume that, over time, we can know nature and how it will respond to management actions. Can you talk more about how uncertainty challenges decision-making at an administrative level?
- 36 **A:** When Babbitt came to the DOI in 2001, the Colorado River system was full to overflowing.
- 37 The Glen Canyon Dam spillways were running at 100 percent. It was not yet an emergency, but an emergency plan was being discussed. The decisions being made then were based on the assumption that the system had the capacity to deal with all of the demands on it, and managers were talking about how to apportion water surpluses.
- 38 It was at exactly this point of abundance that a drought began, which continues to the present. All of the management decisions had been made on the basis of a short time period's worth of evidence. It is appropriate to now base planning on an extended drought, climate change-driven scenario, but managers still cannot be certain that their models are entirely accurate.
- 39 Managers must always be thinking in terms of "what if." **Q:** You talked about the importance of better communication and coordination between DOI agencies. Another aspect of adaptive management and GCDAMP is getting stakeholders who do not represent federal agencies to collaborate. Why did you think that was important for the program, and what are its unique challenges?

- 40 **A:** The need to get people together is self-evident. The question is, how do you get it done? Feel-good activities are useful tools, but human nature eventually has its way. Enforcement tools are needed: "A predictably better outcome that you can have a piece of, or more money, or a stick."
- 41 When the court set the SOI up as watermaster of the Colorado River system with "unilateral, unprecedented, overriding powers, there was a lot of fear that this was some sort of giant federal takeover." What actually happened was that, through successive administrations, a pattern evolved in which collaboration was encouraged. "There's been no big-time litigation on the Colorado River for fifty years, since the decision."
- 42 The Upper and Lower Basin states have slowly but consistently worked to resolve their differences. This is not out of goodwill, but because otherwise the SOI will intervene and demand resolution on his or her own terms. Babbitt has spent the last two years in California, advising Governor Jerry Brown on how to bring parties together for a statewide management plan.
- 43 Babbitt wishes he could do something similar in Arizona. The reason the 1980 Groundwater Management Act was passed is because Babbitt was Governor, and had the power to wield "sticks." **Q:** You're not the first interviewee to mention the importance of funding in the success of adaptive management programs. The funding mechanism for GCDAMP is unique, derived from hydropower revenues. Do you remember how that was arranged?
- 44 **A:** Not in detail. Glen Canyon Dam was an obvious source of funding for adaptive management of the Grand Canyon ecosystem. "The source of the problem and the source of the revenue are one and the same."
- 45 The amount required to fund GCDAMP was like "a few pennies" compared to the massive revenues generated by the dam. Offering a baseline of support tends to generate more support--the initial outlays are modest.
- 46 GCDAMP has been "tremendously successful" in terms of understanding the system. What has been learned is directly applicable to adaptive management situations like that in California, where Shasta Dam has affected the ecosystem in a way analagous to Glen Canyon Dam's impact on the Colorado River.
- 47 **Q:** So it's a model that can be applied to other regions in the country? **A:** Absolutely. **Q:** A few minutes ago, you seemed to obliquely refer to the fact that the Trump administration has swept the funds that used to support GCDAMP. Do you have knowledge of that ever happening before to a dedicated funding stream? **A:** It is probably not the first time. The Congressional budget process is not tidy.
- 48 Funding cannot be taken for granted. Constituencies must be actively engaged at all times. **Q:** Some people may wonder if every funded adaptive management program should be continued indefinitely. Has GCDAMP reached its useful lifespan, or should it be continued?

- 49 **A:** Babbitt is no longer close enough to the program to make that assessment. In any program, it is important to think periodically about the direction of the program, costs and benefits, and results. **Q:** Is there anything we didn't cover that you would like to say about adaptive management, science and the federal government, or GCDAMP specifically?
- 50 **A:** "I have a feeling I've said too much already!" Babbitt is reluctant to engage in nostalgic thinking, but acknowledges that the past informs the future. What has happened in GCDAMP can be applied to other programs and issues, and can help determine what still needs to be done.

Full Interview Transcript

Studio Technician: 00:00 Record, and we're rolling, so whenever you're ready to start.

Paul Hirt: 00:03 Alright. So this is Paul Hirt and Jennifer Sweeney of Arizona State University interviewing Bruce Babbitt on September 21, 2018, at nine o'clock in the morning at ASU. Bruce, thank you so much for agreeing to meet and speak with us.

Bruce Babbitt: 00:20 Good morning. It's great to be back.

Paul Hirt: 00:22 Great. So, I want to start with a big question. Your family has a long legacy here in Arizona and I just would like to ask you to talk a little bit about your early life experiences and connections to the Colorado River and the Grand Canyon.

Bruce Babbitt: 00:38 I think it was pretty obvious and natural growing up in Flagstaff, you know, kind of that *is* the Grand Canyon. I'm always interested in the out-of-doors of course, and it was an incredible place to be outdoors, hiking and doing all those related things. It stimulated an interest in geology of course, and I went on to do a Geology major in college and do graduate work in Earth Sciences. So the Grand Canyon kind of drew me in that way. The other piece of it, of course, was the river, because the river running really started to come into its own in the 1960s when, particularly with Martin Litton and the other legendary outfitters, and I was drawn to that. Got acquainted with them, particularly with Martin Litton, and spent a lot of time on the river. It was really a terrific part of being up there.

Paul Hirt: 01:32 How many river trips do you think you took over the years?

Bruce Babbitt: 01:35 Oh, I've--

Paul Hirt: 01:35 Through the Grand Canyon?

Bruce Babbitt: 01:35 I have no idea. It would certainly be more than ten and less than fifty, but a lot.

Paul Hirt: 01:41 That must be an extraordinary experience.

Bruce Babbitt: 01:46 Well, it blended a lot of things that have really served me very well later on. The outdoor interest, of course, the science

training, which I took all the way through graduate school, and the interest in, uh, fluvial geomorphology, if you will.

Paul Hirt: 02:05 So, did you notice, when you were taking those trips down the river, or did you talk about, the impacts of Glen Canyon Dam on the river ecosystem? Because that's what led to the establishment of the Glen Canyon Dam Adaptive Management Program.

Bruce Babbitt: 02:19 Yeah, I really started awakening to the changes along the river probably, you know, not right away, but certainly by the 1970s. So, from trip to trip you could see the way the sand was being totally stripped away, and where a lot of sandy beaches that are now a lot of piles of boulders and rocks. And it came home to me in a really interesting way. I was on a trip with Martin Litton, probably late summer. And Martin said, "We can't do Hance Rapid. We're pulling in and making an unscheduled stop." And I said, "Well what's that about?" And he said, "Well you wait and see, the river is going to go down so fast, and so quick, that once we get to Hance it will be impassable, and we'll have to camp and wait until the guys up in Glen Canyon Dam turn the faucet on again, and bring the river back up." That was kind of the point at which I really sort of viscerally started to make the connection between this incredibly up-and-down river being manipulated for hydro demand. Well, yeah. What it was doing in terms of all the downstream ecology.

Paul Hirt: 03:37 You, um, when you became governor in the 1980s, you must have had an opportunity to maybe try to think about how we might solve some of those problems. During that tenure as governor, how did you approach the issues in the Grand Canyon?

Bruce Babbitt: 03:52 Not a lot, obviously spent time out on the river, but my tenure as governor was really intensely focused on the groundwater issues, and trying to bring together the parties, a lot of contentious parties in Arizona, to get what subsequently became the Groundwater Management Act of 1980. So, during the governor years I was kind of an absentee on the river that I had spent so much time on before it happened. There weren't many voters living on those rocky banks of the Colorado River.

Paul Hirt: 04:29 Well, that would change then in the 1990s when you became Secretary of the Interior under the Clinton administration. Can you talk about the origins of the effort under your guidance to try to establish the Glen Canyon Dam Adaptive Management Program?

Bruce Babbitt: 04:46 Sure. I think it's important to take a step back and to understand why it is that the Secretary of the Interior is such a significant player on the Colorado River because in most of American history, in most of the river management regimes that you see everywhere else, the federal government is really—an Interior secretary is really not a major player because the control of water on public lands really was fluffed off to the states with the Desert Land Act, clear back in 1880, and there was this kind of sense that water management is not the business of the federal government. It's a states' rights kind of function. The Colorado River is a remarkable exception to that, that came about as a result of a really unusual history of litigation and contention which resulted in the decision in *Arizona versus California*, the great lawsuit, that brought it all to a culmination. And the Supreme Court in that lawsuit rendered an incredible decision which is without precedent and has not been repeated.

Bruce Babbitt: 06:09 But they, the court basically going through all of this incredible history of quarreling and fighting, said, "We hold that the Congress has delegated the management of the Colorado River, of the lower river, to the federal government in the form of the Secretary of the Interior." And the secretary is, by virtue of that court decision invested with—he becomes effectively the water manager of the Lower Colorado River. It's a remarkable transformation, a lot of controversy at the time. That has in fact--and we can discuss that more if you wish--resulted in a quite interesting, precarious and, and kind of really very productive balance between state and national interests in the river, and the role of the Secretary. So, I arrived in Washington and all of a sudden I'm suited up as the water manager of the Colorado River. And you know, that was like a, like a sardine to a cat (laughter).

Bruce Babbitt: 07:21 And I grabbed at that and said, "This is really gonna be interesting." And, of course, the issue at the time was increasingly the management of Glen Canyon [Dam]. They were surplus years, a lot of water running in the river. And the question was, how were we going to manage it, and the hydropower issue became more and more important as the river damage becomes equally apparent, as I've described. Well, the bottom line of that is, it's complex. It's not clear what the answers are. There are a lot of serious contending interests at stake. And the only conclusion you can draw from that was, it's time to get the scientists involved, and to get really serious about water management. The second part of that was, how do you do that? And the answer is you've got to get all the contending parties together. You can't just go say, "I decree:

here's a science program." You've got a lot of people out there: universities, states, federal agencies, and so that's kind of the platform on which we got into the Glen Canyon river management issues.

- Paul Hirt: 08:44 You mentioned a lot of contending interests. Some of those are within the Department of the Interior itself. You know, you've got the US Fish and Wildlife Service on the one hand, with a wildlife and fish mandate, you've got the Bureau of Reclamation with a dam and irrigation and hydropower mandate, how did you find, um, how was it trying to orchestrate and integrate all of these contending interests even under your wing in the federal government?
- Bruce Babbitt: 09:12 Well, the Department [of the Interior] is a house divided in terms of all of the agencies, and frankly, the Bureau of Reclamation historically was a kingdom unto itself. The great years of Floyd Dominy as the manager of the Bureau who spoke only to the President and the Congress, who didn't even bother to talk to the Secretary of the Interior. He ran an empire all of his own. And the Bureau has still got, particularly in those times, much of that kind of legacy kind of in its DNA. There were two things that I think really gave me the leverage to say, folks, we're going to get together and it's no longer, you know, unilateral decision making. One, of course was Grand Canyon, a national icon. It's not like you're going to go out and say, "Well, here's the big muddy river. We'd like to see some nice science with no constituency."
- Bruce Babbitt: 10:16 This is the Grand Canyon. And there had been some legislation moving in that direction. The second one was the Endangered Species Act. I rapidly came to realize the incredible power of that act. It's strongly drafted, and the Supreme Court had consistently interpreted the act as saying it is the, in the case of conflict, the Endangered Species Act rules. And that meant that the humpback chub and the warm water adapted species in the junction of the Little Colorado River particularly, were at risk, and that the Fish and Wildlife Service was now going to be, somewhat to the surprise of Bureau of Reclamation, a really big player. And that gave us the chance to bring it together.
- Paul Hirt: 11:18 So do you remember when, so I guess it was the Record of Decision in 1996 while you were Secretary, that kind of mandated the creation of the adaptive management program and the implementation of that 1992 Grand Canyon Protection Act. You want to talk a little bit about the Grand Canyon Protection Act and then that Record of Decision that led to the creation of the program?

Bruce Babbitt: 11:46 Well, I'm going to talk only a little bit because I don't have a lot of detailed memory about that. What I had in mind at the time, of course, was, we've got to get at this problem. We need the science. We are awakening to this concept of adaptive management, which I can describe at more length, and it's clear that we've got to get people moving in the same direction and not only within the Department but in terms of the scientific resources outside the Department, in the universities and elsewhere. Now. That's basically my role. I mean, I said, "Do it." [I] signed the document, and went on to other things. So I don't claim paternity for all of the detail that went into all of that. I've really watched it from afar. Of course, went to the great event when the first big flood is generated out of Glen Canyon.

Bruce Babbitt: 12:54 Pretty exciting standing up there on a ramp, opening a valve and watching this Niagara of water cascading down into the river as kind of the keystone of the adaptive approach, which is we've got to stir that sediment up, get something going on those beaches and see how it goes and adjust. And, interesting enough, we're still doing that twenty-five years later. We still haven't learned everything.

Paul Hirt: 13:20 Yeah (chuckles). I think that's one of the foundations of adaptive management science, is that you're always learning and you always need to be adaptable to what it is that you learn by monitoring the effects of your actions.

Bruce Babbitt: 13:31 Well, it was interesting because I came to my perhaps limited understanding of adaptive management through forest management. And that got started at Northern Arizona University where, on a summer day in 1993, I spent a morning with Wally Covington, in his forest lab, and got deeply engaged in that. And Wally took me up to Mount Trumbull, which was a forest administered, not by the Forest Service, but by the Bureau of Land Management, where I could basically run the joint, and spent a day with Wally up there and then started giving him grants to manage that tract up there in an adaptive way. This was the entire issue of fire, the history of fire suppression and fire restoration, which at the time was one, largely unknown, and secondly, really controversial among the forest professionals who had been brought up in this, uh, what do they call it? The 10:00 AM Theory. Any fire spotted on Day "X" has got to be out by 10:00 AM the next morning. And here's Wally saying, "No, no, no, we're going to use fire." And that really brought me into this kind of adaptive management understanding. We did some similar kinds of things in the longleaf pine forests of the South, that sort of got me into this iterative kind of process in the way you design things and make

adjustments. So it's really that background that I brought very quickly, a year or two later, into an understanding of what we were going to try to do at Glen Canyon.

- Paul Hirt: 15:30 You mentioned the importance of science in decision making for land management a couple of times. You--you made a strong effort to strengthen scientific research in the Department of the Interior when you were Secretary. At one point you proposed establishing a National Biological Survey to try to coordinate scientific research across federal agencies. Can you talk a little bit about that effort?
- Bruce Babbitt: 15:59 Sure. The basic issue was kind of simple, what I, as we get into all of this forest management, river geomorphology, endangered species--looking around, it becomes clear that the biological science--what there was--was embedded in kind of silos in each agency and was very much oriented toward "what am I going to do tomorrow for a particular issue in my agency, in my region and my jurisdiction," scattered all over the place in Bureau of Reclamation, Bureau of Land Management, Fish and Wildlife Service. So, the obvious thing to do, was to say, "Wait a minute, science has got to be, one, comprehensive; and secondly, at a remove from day-to-day decision making. You've really got to kind of use the knowledge and the needs of the managers, but sort of integrate that into a larger concept of what the issues are, how it is, what kind of information you need, in an ecological kind of a sense.
- Bruce Babbitt: 17:17 Now interestingly enough, on the earth science side, that's exactly the way the department was always run, since 1880, when John Wesley Powell came off the river and established the Geological Survey as an independent agency with data and results available to everyone. So the idea was to try to get the biology out of all this scattershot stuff into something resembling what's done on the earth science side.
- Paul Hirt: 17:50 And how far did you make it with that?
- Bruce Babbitt: 17:54 Well, it was a typical kind of Washington political story. I put this fresh-faced newcomer, this great idea, invoked the name of John Wesley Powell, we've got to finish his task on the biological side. I gathered up all the science stuff, put it in a combined budget and say, "Well, you've got a US Geological Survey. Now we're going to have a Biological Survey." And of course, in the spirit of the times, Congress kind of shot it all down, blasted it to pieces. And in one of these odd kind of throw me in the briar patch kind of sequences, out of all that wreckage, I said, "Well, why don't you just throw all these remnants into the Geological

Survey? It's already there, we won't create anything new." And of course that was the perfect result. I didn't have the courage to propose that in the first. That is a complete integration of natural science and that's what we've got today. Through all of its ups and downs, it's clearly the correct model.

Paul Hirt: 19:00 So, at a very specific level, you were able to establish a new science organization for Grand Canyon and the Glen Canyon Dam Adaptive Management Program. There's an organization called the Grand Canyon Monitoring and Research Center now, GCMRC. I think it was your effort to create an independent science body that led to the creation of that separate Grand Canyon Monitoring and Research Center.

Bruce Babbitt: 19:32 Yeah. Again, I'm not the father of all the detail, although I'm happy to claim paternity for the idea. But the important thinking behind that was that even as we consolidate biological science at the national level, in order to get political support we're going to have to look across the landscape and see how we can integrate science and scientists around kind of nodes on the landscape of mutual interest and mutual problems. And interestingly enough, my thinking around particularly to how it is we were going to activate universities, and not only for their science but for their political clout. Scientists may not realize this, but universities have a pretty big constituency among elected officials. I'm thinking if we can draw these circles of interest, get all of these university constituencies in and give them a reason to be lobbyists with their congressmen, we'll generate some support. And that support right now is much at risk but in the longer run, over decades, I think it's worked pretty well.

Paul Hirt: 20:57 I'm thinking back to who are the designated stakeholders in the Glen Canyon Dam Adaptive Management Program, and there's no designated university representative. Is that, I think Dave Garrett told us that you and the Secretary's designee who participated felt that because he had been dean of the Forestry School [at Northern Arizona University] and represented academic science, that it was probably covered. Do you remember talking about whether there should be a designated university representative on the team?

Bruce Babbitt: 21:30 No, I don't specifically remember that, but the important point was that he was a university leader and, by whatever name, he was there, and in each one of these, the particular combination of how you put all of the different people together, it was pretty ad hoc.

Paul Hirt: 21:50 Well, you did insist that there, that this whole program be, um, report directly to the Secretary's office, which was an important innovation, and that there would always be a Secretary's designated representative. Can you talk about why that's important and how you think it worked out during the years that you were there?

Bruce Babbitt: 22:14 Look, that's just politics 101. You want to get something done, you'd better not delegate it out through all the existing bureaucratic channels. You better say, "one, here's what I want done; and, secondly, report to me." And that simply sends a message, that kind of awakens people to the fact that this is a priority, and better get with it. And there's nothing unusual about that. I mean, that's tried and true political administration 101. It always tends to drift a little bit with time and you can say, "This is my project, report to me." The next secretary may or may not see it quite so clearly. And there may be some kind of geological drift, if you will, out into the various strata of bureaucracy. But it's the right approach.

Paul Hirt: 23:19 One of the persons we interviewed was Anne Castle, who was Assistant Secretary for Water and Science under, I guess, the Obama administration, and she talked about how when she got there, there was no unified voice among the Interior agencies on the, you know, that were participants in the program, and she had to sort of convince them all to try to talk and caucus together and come up with a common Department of Interior position on various decisions. Did you--how did you attempt to coordinate and integrate the different voices and interests of the different agencies?

Bruce Babbitt: 23:59 The bureaucratic answer to that is that's why you have all these agency heads. Next layer up is Assistant Secretaries, who have beneath them, two or three agencies who in turn report to a Deputy Secretary, kind of up the pyramid, and hopefully kind of enforces that kind of coordination. Uh--I didn't get much out of that. I basically spent my time on the phone talking directly to agency heads. I mean, if there's a coordination problem, I'm going to call up the head of the Fish and Wildlife Service, I'd call up the head of the GS [Geological Survey]. And I'm not sure that in the long run that was the right way to do it. What I'm confessing is, I really ran sort of wild across all of the bureaucratic coordination and said (slaps his legs), "I don't have time for that. I'm just going to deal with people and tell them what to do and tell them to talk to each other." That's a, if you will, a personal admission. I'm not sure that that's good government.

Paul Hirt: 25:11 (Laughs) Do you, what were you, do you remember what you were trying to accomplish when you were calling up these individual agencies? I suspect you're probably trying to get over some obstacles or get some direct communication going.

Bruce Babbitt: 25:23 Well, there were of course specific issues. I'll always remember an early conversation that I had with the president. I don't remember, there was a third party, there were just three of us, and I was asked in the presence of the president, "What is the legacy you want to leave for Bill Clinton?" And I kept thinking about that again and again and again, because there were just scores of decisions and directions and all that stuff, but ultimately you've got to say, what is it that really needs redirection in the most intense way? Now what that meant in my case, I spent a hugely disproportionate amount of time with the Fish and Wildlife Service, because getting the Endangered Species Act in motion and in play was a huge task, and I'd spent enormous amounts of time out on the field all over the country with people kind of saying, "We've got to make this act work."

Bruce Babbitt: 26:35 It's powerful, it hasn't been deployed. It is the ultimate ecological management tool, whether it's the old growth forests of the Northwest, whether it's re-regulating the Colorado River, endless kind of stuff like that. So I'm bonded with the Fish and Wildlife Service. The second orphan during my time there, I think, was the Bureau of Land Management. Park Service is a mature organization. It needs attention, but it doesn't need a bear hug because it's got its spirit, its cadre, its support. BLM was a real orphan. So I picked them up off the street and brought them in and said "Look, BLM, you guys have got an inferiority complex, understandably. People think of it as the Bureau of Livestock and Mining, and everybody wants to take away all of your beautiful assets and give them to the Park Service. And BLM is just a dumping ground for the other 200 million acres of land. And I said, "We're going to leave a legacy for BLM in which becomes a conservation agency, and we're going to do that from, you know, root and branch. We're going to start giving you national monuments." There weren't any national monuments in the BLM system because whenever something was thought to be a place of special interest, it would go up to the President, and he'd sign an Antiquities Act declaration and give it to the National Park Service, thereby deepening the despair among the few environmentalists that you could find in the BLM. I said, "Stop."

Bruce Babbitt: 28:19 I went to the President with the first big monument proposal, Grand Staircase-Escalante. We drew it all up, put it all together, did all the bureaucratic stuff. The Park Service is looking over

my shoulder, licking their chops at the newest unit of the national park system, and I said to the President, "I want you to do something different." I want you to give this monument, keep it in the administration of the Bureau of Land Management. That's just one example of a lot of issues, so, the BLM played a big part in the Northwest Forest Plan, and I would say those are two examples of what I've been saying, kind of the 80/20 management rule, which is, in any organization, as a kind of rule of thumb, you ought to spend at least 80 percent of your time on no more than 20 percent of the institutions, agencies, or whatever you're doing. And those would be examples.

- Paul Hirt: 29:24 So that you could actually not spread yourself too thin, but concentrate on getting something big done.
- Bruce Babbitt: 29:31 Yeah. Look at where the opportunities are and where there's not been enough attention and there's some real gain involved and, you know, put your time there.
- Paul Hirt: 29:43 So one of the other legacies of your time and the Clinton administration is getting adaptive management science integrated more into land management decision-making by various agencies. You mentioned the Northwest Forest Plan. That's kind of where adaptive management science grew up, was in the Pacific Northwest. Do you feel like you were successful in getting, in helping to sort of usher in a new kind of a management paradigm? Because before that, in the 1970s, it was all this linear, you know, plan and manage, you know, you look out fifty years, decide what resources you want to have, and you manage toward that and there's none of this sort of collaborative decision-making, none of this incremental manage, monitor, and adapt. Do you feel like you were able to change that management paradigm toward adaptive management?
- Bruce Babbitt: 30:39 Look, you can never claim credit for a complete victory. Everything--there's a process in motion, I guess what you need to do is think of it across time. What I would think is--going back to 1990, where there was just you and a few other, you know, woolly-headed academics out there, saying, "Adaptive management, please, hear what we have to say." It's really out there on the fringe. It's now front and center into everything. But it is a continuing process because in a way adaptive management, even as you have success integrating it, it tends to degenerate into a slogan. Rather than saying, "here's adaptive management, it instructs us to do something," you get this kind of degeneration in which it becomes inverted: people do what they want to do and say, "This is adaptive

management." Nobody will ever know the difference. So there's got to be this kind of, you know, really strong, incessant look at what's going on.

- Paul Hirt: 31:58 Yeah. That was my next question is how do you feel? I mean, there's a difference between an academic theory or model and how it plays out in the real world when you try to implement it. Talk a little bit about your feelings about how the idea of adaptive management actually played out.
- Bruce Babbitt: 32:19 Well, I think maybe I should get off of the main track and talk a little bit about what I'm doing in California now, where adaptive management is really being put together in a really strong way. This is the whole issue of water management up in Bay Delta system of Northern California, and it involves water coming off the Sierra, the huge reclamation projects running down to the Mexican border, the decline of the salmon runs for lack of water in all of the streams running into the delta, a whole variety of endangered species issues. They have nine or ten regulatory agencies with direct power, three or four federal agencies, three or four state agencies. A huge scientific establishment. California doesn't lack for science. They've got the best university system in the world and a huge amount of resources. There's a scientist sitting on every stream in the whole state, they're all over the place.
- Bruce Babbitt: 33:34 And, the problem now demands integration and experimentation because the difficulty of these issues in terms of trying to find the right water balance against all of the demands, and the obvious degradation of the natural systems, calls for really moving the science effort up and putting the money into adaptive research. The basic problem in a really complex biological fluvial system like the San Francisco Delta is no one really knows what's going on and what it is that, how it is resources can be altered or managed to make a difference. There is so much noise in the system from 100 years of gold mining, exports contamination, ocean conditions and all of that. But the idea that anyone can come in and just say, "Well, here's a lot of science. Let's do 'X'," is doomed from the start, without an intensive effort to define what it is that--to set up the hypotheses of what are the variables, and that's, in a really complex system, a very iffy job, but you've got to do it. And then to get the scientists together and say, "Okay, we're going to use this intervention and measure the results and be honest enough, honest enough to admit failure." The kind of null hypothesis. We have put up a hypothesis, put resources into this, and it made no difference at all. It's a hugely important

part of science, but it's kind of bypassed by the politicians who hate that kind of a conclusion, as valuable as it is.

- Paul Hirt: 35:56 You're underscoring the importance of recognizing uncertainty both in the natural world and in our ability to--the kinds of decisions we make, the funding amounts that are appropriated, the science that we do, everything is uncertain. Yet for so many generations we kind of, we Americans and we policy makers, kind of assumed that we could know enough, and eventually perfectly know nature and how it would respond to our management actions. Can you talk a little bit more about how uncertainty challenges decision-making at an administrative level for someone like you?
- Bruce Babbitt: 36:40 Well, the most dramatic example, I think, is when I came to Interior in 2001 [Bruce Babbitt served as Secretary of the Interior from January 1993 to January 2001], the Colorado River system was full to overflowing [Lake Powell was virtually full from 1996-2000, but fell well below full capacity after 2000 through the time of this interview in 2018]. We had spent some time a year or two before up at Glen Canyon in which the water was up against the freeboards, the spillways were running 100 percent, and it wasn't an immediate emergency, but we were beginning a discussion of what's, what happens if the system is no longer containing the input. It was really quite close. Underscoring the fact that all of the decisions we were making in those days were based on kind of a short-term assumption that we had a system in which there was plenty of capacity to deal with all of the demands. And we were actually running scenarios about how we would apportion surplus. This was the great issue that came out of--(unintelligible, both talking at once)
- Paul Hirt: 38:00 This was the early 1980s, that was that El Niño year of 1983 I think you're talking about.
- Bruce Babbitt: 38:04 Yeah, yeah. How are we going to apportion all that surplus? Let's get together, but we've got to make discretionary decisions. How do we do it? And it was at precisely that point that the nineteen-year drought that has extended from 2001 to the present time began, and all of the assumptions that were being made, quite understandably, about the hydrology of the system, based on own life experience and our own short time in charge, had just been upended and it seems to me that's kind of a morality tale about let's be careful about the assumptions we're making. No, no. We are, appropriately, locked into a lot of planning on the river in terms of drought scenarios, prolonged, seemingly permanent droughts driven by climate change, and

that's important, but let's not get too certain about any of our models. Do the best we can, but let's always be looking kind of at the what-if question.

- Paul Hirt: 39:26 You talked about the importance of getting better communication and coordination between Interior agencies. Another aspect of adaptive management and the Glen Canyon project itself is getting different stakeholders beyond the federal agencies, people who have an interest and a stake in a resource, to come together, to talk to each other, to collaborate on decision making. Can you talk about why you think that was important to integrate into the program and how you, what its unique challenges are and how you think it works out?
- Bruce Babbitt: 40:04 Well, look, the need to get people together is self-evident, and there's no reason to go on about how important it is. It's important and it's self-evident. The question is, how do you get it done? I think all of us in this business have been through endless kind of Kumbaya stuff, we're going to have another conference, and we're all going to get together and agree to do "X." And, human nature tends to prevail. Unless there's some enforcing mechanism in terms of a predictably better outcome that you can have a piece of, or more money, or a stick, cooperation is just a nice song.
- Bruce Babbitt: 40:56 So money is the obvious one, but there are others. There are nice lessons in the administration, the Interior Secretary's administration, of the Colorado River, because when the court set the Secretary up as water master with all of these unilateral, unprecedented, overriding powers, there was a lot of fear that this was some sort of giant federal takeover. It didn't happen. What happened was, it became the incentive for a lot of really great collaborative decision-making. This example is just state-federal. Because through successive administrations has evolved a pattern in which collaboration is encouraged. And there have been, there's been no big-time litigation on the Colorado River for fifty years since the decision. The states have, slowly at times, not quickly enough, but have continually worked out all these incredible differences, and they've done it not just out of goodwill but out of the knowledge that if things get out of hand, the Secretary steps up and says, "It will be done this way." And so you create a balance.
- Bruce Babbitt: 42:34 It's kind of, you know, incentives, all of the soft incentives, plus some kind of real incentive, which is: you don't do it, it'll be done to you. So it is important to kind of think those through in terms of how they apply to day-to-day collaboration and what goes on. I have--I've spent the last two years in California

advising Governor Brown, trying to get parties together, statewide, into a management plan. It's been very difficult because we don't have quite enough sticks. I not infrequently tell my audiences when we're doing all this sort of negotiation stuff, "I wish I were back doing this in Arizona," because the reason we got the Groundwater Management Act of 1980 done is because I was in office and I had the power to do something really bad if they didn't get together. So you had to kind of work all this stuff through in a context of, of realistically what's available.

- Paul Hirt: 43:51 You're not the first interviewee to mention the importance of funding in the success of these adaptive management programs. The funding mechanism for the Glen Canyon Dam Adaptive Management Program is pretty unique. It's a kind of an earmark of hydropower revenues. Do you remember how that was arranged?
- Bruce Babbitt: 44:14 Not in any detail, but that the, what I do remember, really, is it was an obvious cash cow. I mean, it was just sitting there, the source of the problem and the source of the revenue are one and the same. And the other thing that made it pretty easy is, it's kind of, that's the Willie Sutton Rule. You know, the reason you rob banks is because that's where the money is. And the other thing that made it easy is, it's such a vast amount of revenue, but in the budget process, where you're dealing with these huge billion dollar figures, it's awfully easy to come in and say, look, we just want a few pennies. You know, thirteen million dollars a year is nothing. It's a rounding error in the budget of the Western Area Power Administration. So there wasn't any real opposition. But the reason it's so important, and we must get that back into the budget, is I've always been impressed with the importance of making modest grants to bring people into alignment.
- Bruce Babbitt: 45:41 You don't have to, you know, give out rivers of money. There is something about just the reality of some support which generates more support, and it would be a shame to lose that. And given this reality, we've really got to go after that, and hopefully keep it alive. It's been tremendously successful. I mean, the record of work that has been done in terms of the understanding of these fluvial systems. I see the fruits of that work where, what I'm doing in California now, where much of the travail of all of these issues in California is generated, in an interesting way, not by Glen Canyon Dam, but by Shasta Dam, which is the linchpin, the storage linchpin, of the Bureau of Reclamation facility on the Upper Sacramento River. And remarkably, the operation of that dam poses analogous issues

all the way down the river in terms of the fisheries, the food chains, the seasonal hydrograph and how it spreads across the land, and on and on and on. And all of this work that's been done in Glen Canyon is directly applicable to defining how you'll go about addressing some of those issues in a totally different river system.

- Paul Hirt: 47:19 So as a model that can be applied to many other regions.
- Bruce Babbitt: 47:21 Yeah, absolutely. Absolutely.
- Paul Hirt: 47:24 A few minutes ago, you seemed to be re-- obliquely referring to the fact that the Trump administration in the last few months has swept the funds that used to support the Glen Canyon Adaptive Management Program, requiring that all the hydropower revenue go back to the [U.S.] Treasury, I guess. Have you any knowledge of that having ever happened before, when a dedicated funding stream established, you know, in one decade gets swept or, in the case of the Glen Canyon Dam Program, do you know if it's ever been taken away?
- Bruce Babbitt: 47:59 Look, I'm sure this is not the first time. The budget process in the United States Congress is not a tidy, admirable process. All sorts of weird things happen. So undoubtedly, it has happened. And that's just a statement that, you've got to, you can't take things for granted. You've got to keep the constituencies actively engaged in making the case (coughs), excuse me, for maintaining the fund. I don't think it's happened before in the Glen Canyon context over the last twenty years, but it's, I think, the first time and it won't be the last. Generally, these things happen.
- Paul Hirt: 48:48 So some people may wonder, should every funded adaptive management program be continued indefinitely? Maybe we should evaluate whether we're getting enough bang for our buck. Do you have any opinions about this particular adaptive management program? Has it served a useful lifespan or do you think it should be continued, and why?
- Bruce Babbitt: 49:13 Look, I'm not close enough to draw a rational conclusion. I do think it's important to periodically, in any kind of ongoing program, to think carefully about the direction, and the cost-benefit, and the results, and whether this function (coughs), excuse me, can now be internalized into other parts of other programs. That's a fair question. But in this particular context, I obviously can't tell you exactly what I think, because I don't have the facts.

Paul Hirt: 49:56 Well, we're just about to wrap up. Is there anything that we didn't cover that you'd like to say about adaptive management, about science and the federal government, about the Glen Canyon Dam Program specifically?

Bruce Babbitt: 50:11 I have a feeling I've said too much already. (Laughter.) It's likely to be quoted back at me in ways that I will be quick to say, "No, no, I didn't mean that. It was entirely on the context. (Laughter.) I was led into that deliberately by an overreaching questioner." (Laughter.) No, I think, I think this has been terrific, and I understand the importance of this. I've always been a little shy about looking back and sort of going into this sort of, "Well, in the old days we did it this way," to an audience which is saying, "Come on, the old days are gone, let's talk about the future." But the past does inform the future, and what's happened in all of this program really does inform what it is we're doing elsewhere, and what it is we've achieved, and what more needs to be done. So it's been a lot of fun. I enjoyed it. Thanks.

Paul Hirt: 51:12 Well, thank you very much, Bruce.

End of interview