WOODS HOLE OCEANOGRAPHIC INSTITUTION

ORAL HISTORY OF SUSAN PETERSON

Interview by Frank Taylor, January 21, February 12, March 19, 2003

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TAYLOR: We're at the McLean Laboratory for our second session with Dr. Susan Peterson on her oral history, and during the first session we got through a lot of your early years, Susan, and how you got to Woods Hole and in what . . . . [Electronic beep.]

VOICE: Oh.

TAYLOR: Garfield used to do this for "Network News." We're at the McLean Laboratory at the Woods Hole Oceanographic Institution for our second go-around on the oral history with Dr. Susan Peterson, and during the first session we talked about your early years. We talked about your education. You can look out at all the snow today and think of your number of years spent in Hawaii. [Laughs.] Because I check the Honolulu temperature every single day in the paper. And what it was like coming to the Woods Hole Oceanographic Institution, in which you were in really kind of an unusual role for an oceanographic institution, you being an anthropologist. Now what I'd like to really get into was what was a typical day like for you in your discipline, the kind of thing you were doing?

PETERSON: Well, when I first got here, I was studying the New England fishing industry, and the first several years that I was in Woods Hole, so in the early '70s, I would get up every morning at 4 o'clock and drive to New Bedford. The New Bedford fish auction for scallops started at 6, and the fish (the finfish) auction started at 6:30. So I would get there, watch the proceedings of the auction, meet the people who were bidding on fish, and generally it was a very small, crowded room filled with people--in the wintertime--in great wooly clothes and stomping boots, and so forth. The bidders would stand up at the rail, and there was a chalkboard,

and the dealers would bid on the fish. The fishermen and boat owners would stand toward the back and mutter about different prices being offered, and so on and so forth. My dissertation work in Honolulu had been on the Honolulu fish auction, and so I was very interested in the way the New Bedford auction worked, compared to what I knew from Hawaii. So, after watching the auction each day, I would then interview the boat owners or the captains or the crew who were there. I would talk to the dealers who bought the fish to find out what some of their strategies had been in buying it: why were they buying this rather than that? And then after the auction ended, generally a smaller group of people would go off for coffee, and at coffee we would sit around, and I would get the background, the background of the port, get to learn about the people who were active in the port, what the political issues were, what the technical issues were, what some of the labor issues were. The fishing industry was unionized at the time, and there had been a series of strikes, between the fishermen and the . . . the fishermen striking because the boat owners were not offering benefits, particularly medical insurance for the fishermen's families. So it was a wonderful early start to the day. Then, after . . . .

TAYLOR: Let me ask you a question, though, right at that point. That's a relatively closed society in many, many ways--fishing families and the people they supply and all that. How did you get yourself into this group? How did you get yourself accepted so that they would talk to you?

PETERSON: Well, the first day I went to Woods Hole to the National Marine Fisheries Service Office, and met with a fellow named Dennis Maine[SP?], and Dennis had worked there for a number of years. His job was to monitor the catch, so he would go and talk to all of the boat owners about how much fish had been . . . . He kept a running tally, and every day there was a recorded sheet that was printed that showed the pounds of various species caught by boat. They kept handwritten records in their office. So I could look at their records and find out the names of all the boats. I could get the names of the boat owners. I could find out a little history about what they'd been catching, to get a feeling for things, and then Dennis took me around and introduced me to the waterfront, showed me where the various boats tied up, and showed me where the auction was. The auction at the time was run by the union, and so I went and introduced myself to John Burt[SP?], who was then head of the union, and said that I was going to be studying the fishing industry, and I thought a good place to start was to observe the morning auction, just to get a feel for how it worked. And he said, "Fine," and he told me when

and where and how, and so on and so forth, and so I just showed up and stood there. And as the only woman in a very small crowded room filled with men, they all talked to me. "Hi, what are you doing here? Are you a student?" I was very young, and I looked even younger. Everybody talked to me, and I just gradually. . . . I'm sort of friendly cheerful, and I'd find out who they were and what they did, and mornings would progress, and I'd get to know more and more people. There were the usual sorts of hangers-on guys who sat outside the auction hall, waiting to get an odd job here or there, and they were good sources of information about who was going to be where when. I began to get the rhythm of the fleet--when boats were expected in, and when were going to be big days, and when were going to be slack days. But my goal was to get to know the boat owners, to find out from them how they ran their businesses, how the businesses were financed, how they hired captains and crew, how they determined what sort of technical changes they were going to make on their boats, what the financial problems they might be having were, whether or not it was credit, or whether it was credit for short-term things like ice or food, how the payments were made to the fishermen. In New Bedford there's a system called the Lay System (L-A-Y), and that's how, when the catch is sold at auction, it's divided into shares according to a formula. The captain gets so many pieces, and the boat owner gets so many pieces, and then each of the deck hands gets a single share. The engineer gets a share and a half. The first mate gets a share and three-quarters. There's a very complicated formula that's negotiated, and then the boat itself gets a share that's supported to pay for the repairs and maintenance on the boat, so if a catch was sold for $2,000, there was a formula by which that money was divided up, and it varied from one group of boats to another, depending on what the union was, and it also varied between scallopers and draggers. Draggers are the finfish boats. So it's very easy to say all this now, in a few short sentences, but at the time the process was of course known to everybody <u>in</u> the industry, but not well known in the rest of the world. The reason you want to <u>know</u> that is that if you have over-fishing going on in certain stocks, you need to be able to figure out, well, <u>why</u> are they over-fishing those stocks and not fishing <u>these</u> stocks, and of course it's market driven. And part of it is the price they receive for the fish, but also part of it is the cost of catching the fish--how many days at sea? How many men do they need? What are the holding problems with certain types of fish? Which maintain better quality onboard the boat? These are not refrigerated fishing boats. These are all boats that load ice, and then the fish are packed in the hold on ice. The round fish--the cod, haddock, and

pollock--are gutted and put below on ice. The flat fish are just iced directly. All of this affects profitability of the boat, and of course if you're the boat owner, your goal is to make money, and pay down your debts, and return money to your investors. In those days your investors were mostly your extended family, so it was important that you did a good job because they would certainly speak their mind. [They laugh.] So if you could change the motivations of the captains and the owners, then you could change pressure on the fishing stocks, so you had to know how it worked. So my goal was to figure out how it worked, where the pressure points were on boat owners and boat captains, how to predict where the most money could be made, and if you were going to cut off some sources of fish--either geographic areas by closing fishing grounds, or reducing the amount of fish that you could catch in tonnage of X species in Y time period--then you had to be able to predict how these individuals, who are all individual entrepreneurs, how they might behave both individually and collectively.

TAYLOR: This really interests me, because if anything is current in the world today, it's fish stocks, scientists claiming one thing, fishermen claiming another thing, and so on. When you became friendlier with these fishermen, and you would try to discuss these issues with them, what would a conversation be like? I heard a Sebastian Junger . . . .

PETERSON: Lecture? Yeah.

TAYLOR: Yeah, and he said, "You know, some of these people you might not like very much. They're pretty rough around the edges, and things like this." How did they react with you? I mean what would a conversation be like?

PETERSON: Well, generally we'd talk over coffee in the morning, right after the auction, because there was sort of a slow time. The boats were all tied up at the main dock, waiting for the auction to be over. Once they knew which fish house had bought their fish, then the crew had to go get back in the boat, get it started and steam over to that fish house for the fish to be offloaded, and then for the tally to be run and the money to be paid, so the boat owners or sometimes the captains have a little time in there to talk. I generally started by asking just a few questions. My goal was more to let them talk and tell me what their pressure points were, what their problems were, rather than trying to impose my structure of the universe on them. They had their own vocabulary for their finances, and they had their own vocabulary for crew issues, and classical labor issues, that weren't the same vocabulary I would have used, so I was trying to learn their terminology. So generally I would try to get them to tell me how did they start their

business, who did they own it with, how did they make decisions about equipment. A classical fisheries management tool is to limit gear. If they're catching too much fish, then we'll change the mesh size on the nets, so more fish will get away, or we'll change the um places they can fish, or we'll change the depth at which they can run their . . . all these kinds of manipulations that fisheries managers have done for hundreds of years. The boat owners and the captains are very clever. I mean they're not going to lose money. They're not going out there and come back with what's called a "broker." That means you paid out more for your ice and food than you made. So they're very good at getting around most of these physical constraints. There's always a lot of innovation going on with equipment, the electronic equipment that was just being introduced--the depth finders and all of the other things that were common on research vessels were being introduced into fishing vessels, so they could begin to not only pinpoint where they were catching the fish, using LORAN, but also at exactly which depth and temperature they were catching fish. So they were becoming more sophisticated hunters, and so even while the regulators, which were back there saying, "Well, we'll change the mesh size on the gear," these guys were saying, "OK, I know where I can do this and that," because their goal was to maintain their income. So the daily conversations may only be five, ten or fifteen minutes, a group of people coming and going. I was constrained because I generally could only talk to the fellows who spoke English, and at the time most of the boat owners and captains were uh Norwegian in ethnic group and place of birth. They'd emigrated to the US before the second war. A fair number of Canadians, both from Nova Scotia and Newfoundland--of course they spoke English. And then a number of Eastern Europeans: there was a small group of Latvian boat owners, again who had come over in the '30s and '40s, who spoke English. At the time, the Portuguese influence on the fishing fleet was quite small. There were quite a few Portuguese, first and second generation fishermen who worked as deckhands, more in the scallop fleet than in the finfish fleet, but they were at that time--in the '70s--predominantly labor rather than management. Now, that changed dramatically over the next 10 years. As the price of fish and the value of boats grew, a lot of deckhands and a lot of fellows who had worked as engineers or mates earned enough money that they went and invested in their own boats and started their own businesses, and so there became a shift in the population of fishermen in the late '70s and early '80s, so that the Portuguese-Americans and the recent immigrant Portuguese were more likely than not--at that time in the '80s--to have some boats that were owned and operated by ethnic

Portuguese. At the start it was predominantly Yankees, Norwegians, Nova Scotians and a few Eastern Europeans. And so we'd just have a conversation. There was always some uproar going on in the fleet. First of all, there was always a complaint about the price they got at auction. And then there's always some complaint about a new regulation that was coming down, always complaints about the foreign fishing effort in those early '70s, because you could see them. One day I went out in one of the Coast Guard planes that left out of Otis Air Force Base that was responsible for going out and flying over and just assessing all of the foreign vessels that were out there, to make certain that they had their numbers painted in big letters. This was part of the international team that was monitoring the fisheries, and it was an impressive over-flight. I mean there were a lot of ships out there. And the American ships looked like this. [GESTURES?] And the foreign ships looked like this. I mean we looked like corks compared . . . . Our largest boats in those days were a couple of old steel hull boats built in Texas. They were 125 feet long. Well, some of the Russian and Eastern European ships were 400-, 500-, 600-feet long. So these were substantial, and toward the end even bigger than that. So most of our conversations were short. They were to the point about whatever was bothering that day, but you have to remember I was there for years. So the cumulative conversations are what I was counting on, learning bits and pieces, not getting a whole story in one day in one five- or ten-minute conversation, and of course I gradually got to know who was sort of connected to whom, who were the relatives, who had joint ventures in terms of partnerships in boats, who had invested in fish houses and who were investing <u>outside</u> of the fishing industry as well, in car dealerships or real estate or other ventures. So it's not a quick and simple process, learning how this whole structure worked. The fishing industry remains the dominant single industry within the Greater New Bedford area. It's a billion-dollar industry when you look at not only the value of the fish landings but all the associated industries. <u>Today</u>, it's a billion-dollar industry. Then it was a multimillion-dollar industry, very, very important to the regional economy, and so it was delightful to begin to figure it out and put it into order as an academic would. How does it work financially? How does it work culturally? How does it work within the community?

TAYLOR: Now, they knew you were a scientist, and for a lot of the fishermen, "scientist" must be a bad word.

PETERSON: Yeah, because the scientists were always the ones who were--mostly the National Marine Fisheries Service scientists--who were shutting them down or changing the rules, or allowing those foreigners in to fish.

TAYLOR: But interestingly enough your discipline is one that I always saw as kind of a crossover science. You took into consideration what a social scientist might take into consideration as well as what a hard-core scientist, a natural scientist, might take into consideration, and try to bring the two things together. Did the fishing people get to understand this about you, that you were non-judgmental? You weren't going to tell them, "You can't fish here," or "You should do this"?

PETERSON: Yes, they recognized that I was there gathering information, and then when I started to [clears throat] produce reports or public speeches, I always let them know. I said, "OK, here's what I'm going to do." I ran drafts of things by them, just to make certain that I'd gotten it right. Not that they had editorial control, but I didn't want to get it wrong. [Clears throat.] I was very interested in maintaining the fishing industry's capacity to represent itself well in a political setting, so my argument was that the more information we have on how it works and what its value is how it's spread throughout the community, the more impact you can have politically and economically in the region, and they certainly knew that. They knew that more information was better. After we'd have coffee in the morning, then usually the captain or sometimes the boat owner would go over to the fish house that was unloading their fish, and I'd go with them and watch the fish being taken out of the hold. There's another union, the lumpers, whose job it is to take out fish, and they are independent contractors, and in those days the boat would just tie up to the dock and a stainless-steel chute would go up, and then down in the hold the fish would be forked into these huge canvas baskets, which then would be winched up onto deck and swung over and dumped into the chute and then as the fish came down the chute there would be sorting boxes, and they'd be sorted by size. Generally they were sorted by species on the boat already, so the boat owner or the captain or the mate--for sure, I mean there was already somebody there--doing a tally as the fish came off the boat. They would have done a tally when they put the fish below. They were doing another tally as the stuff came off, counting the crates that went away, what they weighed, what the mix was, because the price of fish is not only by species but by size, so that there's different value. Whale cod as not as valuable as the intermediate size cod, and then the scrod cod is smaller, are more valuable. So it's in their best

interests, and then they would keep their tally. The fish-house owner would have his tallyman there, keeping the tally. Then at the end they would compare note and then they'd go up to the office and get their check. So it was a nice . . . . And then the boat owner'd take the check over to a settlement house, which isn't a thing done by Mrs. Adams in Chicago. A settlement house is a house that takes the money and then has the formulas for dividing it all up, and the settlement house that same morning gets the money in, allocates all the money, pays the ice house, pays the food vendor, pays the gear vendor if you had to buy new twine or whatever, pays the captain, pays the crew, pays the boat, and usually by noon or 1 o'clock, all the money has been exchanged and redistributed.

TAYLOR: [Laughs.] Very complicated.

PETERSON: There are lots of little businesses that are clearly affiliated with the fishing industry, but I think the settlement house business is the most interesting.

TAYLOR: Now when you would discuss issues with the fishermen, were these conversations always one where they were advocating a cause or something?

PETERSON: Oh, no, hardly ever. Mostly it was just general conversations. A lot of times, depending on what was coming up . . . . I mean I can remember in 1974 it was during the Watergate trials that spring and summer, and this was very controversial, what was happening, and a lot of that time we didn't talk much about fish at all. We were talking about what was happening politically in the country. So it made me aware of how connected they were. We often talked about what they were reading for newspapers, what their sources of information were on prices being offered in other areas. Who did they phone to get information about prices for fish being offered in Boston or Portland, Maine? At the time, most of the fish was taken out in New Bedford, iced into these tubs and immediately put on trucks and sent to New York or Boston. A substantial amount of it was immediately shipped out of the city to be processed elsewhere. Some of it was processed in New Bedford, filleted and boxed for restaurants in the area, but a whole lot of it was sent out whole to the major fish wholesalers on the East Coast, so it was a busy time between the teamsters and the longshoremen.

TAYLOR: You're anticipating another question that I'm going to ask, but one just before we get to that. In terms of being advocates for their cause, in the Gloucester area, the women had taken on pretty much that role. I mean they're the presidents and vice-presidents and whatnot of these fishing councils. Did you find the same thing true in New Bedford, in that area?

PETERSON: In [clears throat] the 1970s, [clears throat] a lot of the wives kept the books for the boats. The political forums where boat owners and captains met were generally organized around specific issues, whether they were legal, or technology or whatever. They might be called by a university group that was looking at technology. They might be called by the National Marine Fisheries Service to talk about some of the considerations being done for restricting fishing. The only time I met wives of any of the fishermen were at social events. I don't think . . . . During school holidays, sometimes the children--the sort of 10- to 20-year-old kids might appear with their parents, and those would be boys and girls--might appear with their fathers on the boat or taking out fish, or whatever, but I don't think I can think of any uh women that I knew in New Bedford that I saw during the day. Now, there were a lot of women who worked in the fish houses, but they weren't necessarily related to the fishermen. That's a different thing. Fish cutters are different than fishermen. Now, I was also studying Gloucester at the same time, and in Gloucester it's different. I mean everything's different. The species caught are different. The conditions are different. The way the fish are sold is different. You name it. I don't remember meeting any of the wives there either in the early '70s, but one of the things that became very clear in '74 and '75, when the fishermen's organizations began to lobby for a 200-mile limit, is that fishermen can't fish and lobby. They can't be politically active, and so there were some people who were hired by the fishermen's associations to work, and some of them were women. Some of them were retired fishermen. In Gloucester it was the fishermen's wives' association that became politically very active, because they knew the ups and downs of the industry from their spouses. In New Bedford there was a boat owners' association, and then there was a fishermen's group. The fishermen's group was the union group, and they had hired directors who were men. So the advocacy was done by the staffs of those organizations.

TAYLOR: This is the question that I thought of a minute ago. The Fulton Fish Market in New York has a lot of Mob connections. Is that true up in this area too? I mean Teamsters were mixed up in it, and there was a lot of connections.

PETERSON: I was there a lot, and in both New Bedford and Gloucester I never saw any overt indication that there were Mob connections. I would hear a lot of stories that if you were taking your truck down to New York, you had to be really careful, because the fish would walk before it got to where it was going. But in New Bedford it was a pretty well-regulated community internally. There were different union groups because truckers were Teamsters, and so the

truckers trucked fish. The longshoremen typically offload boats, and so they had a separate union, which were called lumpers, which offload fish. I'm not quite certain what the evolution of that was. The fishermen were not Teamsters at the start, but there was a change in the 1980s, maybe about 1979 or 1980, where the fishermen left--I'll think of that name of that union in a minute--and joined the Teamsters, and there was a lot of kind of ugly rumor at the time, but I don't think it was classic Mob-related. I think there was just a lot of discouragement about prices and benefits and so on and so forth.

TAYLOR: So then essentially what you found out, that the fish industry is almost like a whole bunch of city states, each one operating a little bit differently than the other one.

PETERSON: That's right. People talk about the "fishing industry," and I always laugh, because it's all independent entrepreneurs. I mean it's a guy who owns a boat, and he has shareholders, and he has employees, and he makes decisions. So it's a small entity. He may have an asset--the boat, which is worth millions of dollars, and he may have high gross revenues, because he gets paid on the gross--I mean what you see coming in as the gross--sale of the fish, but it's all distributed, so it's a nice small business, but collectively, the boat owners, although they belong to an association that represented them, there was nothing that compelled them to act in the same way. In fact, that would have been in restraint of trade. So they got together and they did work for issues that affected their economic well being--loan programs, insurance, a whole bunch of issues that were of collective interest to them, but they were like herding cats, so when you'd have a negotiations session, and someone would say, "Well, the New England fishing industry has agreed to do this," we'd all kind of looking around, saying, "Who agreed? Who <u>is</u> the New England fishing industry?" Even when they had a hired spokesman, someone that the Association hired as staff, it was very difficult for that individual to say, "This is what the fishing industry will do," because he had all these independent entrepreneurs where were not bound to follow whatever was laid down, so that was one of the most difficult things. It <u>remains</u> one of the most difficult things in managing the fishing industry, because how do you negotiate with <u>all</u> of these individuals? How do you ever reach consensus across such a broad group of people, each with slightly different conditions? I mean each <u>boat</u>'s a little different, and each <u>crew</u>'s a little different, and certainly financial conditions of some are different, and willingness to fish so many miles out from sea. I mean some will, some won't.

TAYLOR: Sort of like the United Nations, isn't it?

PETERSON: Yeah, well, no, I think it's even more exciting than the United Nations, but hey!
TAYLOR: Well, it's interesting. Now essentially you've really talked about what your work was with a specific group, but this is a very involved kind of process. You had the fishermen. You had the government, which, for a number of years, put all kinds of money out there to help people buy more and more sophisticated vessels, with more and more scientific equipment. Then you would come back here, and you'd have to deal with fisheries people, and people that are scientists, and I'm trying to . . .
PETERSON: OK, usually by noon or 1 I was back in Woods Hole, and then I would do my notes. In those days we had things called typewriters, and I would type up my field notes, and then I would--generally in the afternoons--gather the other part of the information, what was happening in the various government agencies, from the state level up through the international level, the federal level, the international agencies that were out there that were relevant to New England, making contacts in those offices, finding out when various trade associations were having their meetings. There's the Atlantic States Marine Fisheries Commission. When did they meet? There was the Tuna Commission. There was the Atlantic Salmon Commission--a lot of things that were peripherally of interest from a policy point of view on fisheries in the Northeast. Predominantly I focused on the fisheries issues that were for the important species caught here--cod, haddock, yellowtail, flounder, pollock, red hake, so on and so forth, the things in New England.
TAYLOR: The things we've come to count on as a New Englander.
PETERSON: Yeah, yeah, and of course some of the other species too--lobster and crabs and shellfish--because the scallops certainly made up a huge part of the financial piece of the picture. So getting to know the regulatory framework. And then finally getting to know the science. What were the stock issues? You needed to know what the reproduction rates were, what the histories were of each species of fish, what the current theories were why some of the stock fluctuations existed, what the environmental factors might be--that whole range of things, and that was [clears throat] . . . . A lot of that had been done. Bigelow and Schroeder had written their classic description of all the stocks of fish, so of course you read <u>that</u>, and then gradually got to know the scientists who were actually doing the current work on the various stocks of fish, just to make certain that I was up to speed on current theories, current ideas, techniques that were being developed, that allowed people to differentiate amongst stocks. Were they all one stock?

Were they separate subspecies? This was in the early days of biochemistry, so a lot of the work being done in the Woods Hole community [clears throat] had to do with being able to identify. If you're going to manage cod, is it all one species, or is there a cod of Southern Georges Bank? And is there the cod of Nantucket Shoals, or where are we talking? So that was fascinating. Then of course there was just a lot of interesting stuff going on amongst my colleagues at the Oceanographic. One of the delightful things, and the reason I always tried to be back by around noon was every day there was a noon seminar for the various departments, and [clears throat] particularly when I was first here I tried to go to those every day so I would learn what was happening in the various departments. So I'd begin to recognize people. So I'd learn a little more about what the Institution did, because it was easier to go and sit and munch on your sandwich or your leftover whatevers, and be talked to. It was sort of painless. And then uh it took me years to get my courage to actually ask questions, because I didn't have a strong background in some of the sciences, but I picked it up. So I really enjoyed being back here. I tried to get back by the middle of the day, and then just a lot of time on the telephone, a lot of time reading, and then going to meetings.

TAYLOR: Would you discuss these issues with scientific staff here? Just as an example, I would hear a report from a fisherman that says, "What are these scientists talking about? We can walk on the cod out there, there are so many. Then, on the other hand I'll hear the scientists say, 'Yes, but the size of the species, the maturation of the species and whatnot is not what . . . .'" Did you ever discuss those kinds of issues, to try to bring the two viewpoints together in your own mind?

PETERSON: Well, there was a lot of general discussion, particularly when we were coming up toward one of the fisheries management meetings, where there was going to be a group of people getting together, setting quotas, or whatever, so that would start a lot of conversation going collectively amongst the group of people in the Woods Hole community who were interested in fish, and that means the people down at the National Marine Fisheries Service, a few people at the Marine Biological Laboratory and the Oceanographic scientific staff. So yeah, mostly it was the folks in the Biology Department, obviously, but then there were some issues, when we were talking about other environmental factors--the warm core ring issues. There was a lot of interesting work going on. I would say that, while I never became an advocate for the fishing industry, I think I was able to articulate their point of view in some cases better than an

individual in the industry would, because I knew it from so many points of view that I was able to summarize more easily than an individual boat owner could do, who generally spoke from his own experience.

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PETERSON: And because I had a pretty good database. People would say, "Well, or you restrict boats greater than 125 feet." I could raise my hand and say, "Well, you know, there are only two, so those guys are going to be really cross that you're going to make them behave differently than everybody else, so maybe let's look at how the data plays out. Let's look at how the data cluster on boat length, if you're going to use boat length as an administrative tool, and see where the clusters are, and then let's look at where those boats of various lengths are actually fishing, to see whether or a boat length restriction would make any difference." So a lot of what I had was collective information, particularly about the New Bedford fleet, because I lived nearby, and I could get there regularly. The Gloucester fleet I knew pretty well, but I had to rely on my notes [laughingly] more often to think of those kinds of things. And at the same time I wasn't very good about the inshore fleet, the smallboat fleet. I really wasn't looking at boats 35 feet and under. I wasn't looking at the lobster, the inshore fishing fleet, although in later years I did become more knowledgeable about them. My dominant interest was the commercial fishing fleet that was fishing from three miles out.

TAYLOR: Um-hum. What did you fin the attitude was towards foreign, like the Russian factory ships and the Japanese ships that go through and sweep the ocean clean?

PETERSON: [Laughs.] Well, they hated them and they admired them. I mean they were jealous to some extent that they had the capacity to do that. What was um disconcerting from the New-England fishing-fleet's point of view is that while it was a fairly sophisticated, moderate-sized boat fleet, it ran its business by being opportunistic. When stocks were available, they caught those, and when they weren't so available, they caught something else, and there was enough mix and match in the fisheries that they could always make a pretty good living, even though, if you looked at the long-term fluctuations in the stocks, you'd say, "Gosh, what did they do that year when everything was so low?" While that was so low, something else was out there. What the foreign fleets did: they did directed fishery. So they would come in, and they would have a contract for haddock, and so they would come in and just specifically fish haddock. And they had the same science we had, so they knew that there was a big year class coming up, so

they would plan, and they would send their boats over, and they would just whomp those haddock stocks. So what it meant for our fishing industry is that a lot of their versatility was gone, because they couldn't use . . . . The peaks were all taken off the mountains, and in some cases it wasn't just the peaks. Most of the mountain was eroded as well. And so the New England fishermen were left without their normal . . . . Their pattern of fishing changed dramatically when the foreign fleets came in and hit those stocks so aggressively and so thoroughly. So whole year classes were just [snaps fingers] gone.

TAYLOR: It's also like a mom-and-pop operation going up against Wal-Mart or McDonald's or something like that.

PETERSON: Exactly, and in fact that was one of the arguments, although we didn't have Wal-Mart then. One of the arguments we made for the 200-mile fishing limits was so that the New England, the American fleet, could essentially manage itself within that are and protect the resources and manage them better. So that was a strong argument not only developed in the United States but developed elsewhere. It was much more popular in the rest of the world than it was here. The military fought long and hard to avoid extending national boundaries to 12 miles, and extending the fisheries boundaries to 200 miles, because it influenced their capacity to send military ships into certain areas, particularly some straits that were less than 24 miles wide. They could no longer go. So the US military really fought those changes that were being discussed broadly in the Law of the Sea, narrowly in the US Congress under the Magnuson Act.

TAYLOR: Gee, when you order fish and chips, you don't know that there's that much that's gone into that fish that you've got on that plate.

PETERSON: That's right.

TAYLOR: You said another thing that [clears throat] (excuse me) really interested me too. You also worked with people from Fisheries and some from the MBL, and it's always been my experience that hasn't been an awful lot of communication between the Oceanographic Institution and the other institutions in the Woods Hole area.

PETERSON: Formally we share a wonderful library. Informally I think there <u>has</u> been a fair amount of communication--different missions, different goals. At the beginning, when I first came here, MBL was really seasonal. The Ecosystems Center was just starting, and so the fact that they had full-time, scientific staff <u>there</u> was also new. The National Marine Fisheries Service, I think, had pretty good collaboration with a number of the scientists, particularly the

Biology Department, because a lot of the work . . . . And in fact there were some sort of lend-lease programs, where some of the National Marine Fisheries Service folks would come work. We had a couple of NMFS staff people who came as marine-policy fellows to work on policy issues related to the work that they'd been doing for the Federal Government. So I think different missions, different funding, different views of life, but a fair amount of overlap. Certainly socially I saw people from all those organizations.

TAYLOR: It just seems to me that the Marine Policy is in kind of a unique place. It's almost like that we talked about the anthropology being kind of a crossover, where you could bring things together.

PETERSON: Yeah.

TAYLOR: I think there is more of a chance for an outreach in that particular area than perhaps in some of the others, or more willingness to, or . . . .

PETERSON: Well, I think there's always been pretty good collaboration between the Biology Department and the National Marine Fisheries Service, because they share some interests. I don't know how things are now. I left here in 1984, but in the '70s and '80s, things were pretty cordial. A lot of my funding came through the National Marine Fisheries Service, because a lot of the management was done by the federal government, or by the state government, and states never have any money. The federal government was beginning to see the need for the kind of data that I described. It's putting together the reality of the fishing industry--the boats, the men, the businesses--against the proposed regulations. So I got quite a few contracts to continue to develop that data.

TAYLOR: And what was your magnum opus when you finished all this?

PETERSON: [Laughs.] I don't think there ever was a mag . . . . I mean I gave a lot of public talks. I think there was a real evolution. I wrote up some of the material as uh blue-cover reports, technical reports out of the Institution. I provided a lot of data during negotiations about some of the management plans, was very active during the start of the . . . when the 200-mile limit was being considered, and then later on when it was enacted, and the various fisheries councils were established, and the scientific advisory committees were set up. I was on both the New England and the Midatlantic fisheries scientific committees. So I spent a fair amount of time using my expertise in establishing some of the new protocols that were used in the start of formal fisheries management here in the US, and I did that very actively from '76 to '80. Not

very many other people in the Oceanographic were involved in those things, although other Oceanographic scientists certainly have served on the international fisheries commissions and so forth. I know Dick Backus was on the Whaling Commission in the '70s. So using your skill and then applying it was what I felt was appropriate. So I wasn't doing a magnum opus. I was doing small things, most of which fell on the instrumental side rather than great literature side.

TAYLOR: It's very [Tape stops and starts again, repeating last three lines.] interesting, though, in that essentially what you were doing was applied. The general public could see a value in the kind of thing you were doing, without necessarily needing to know about all the issues with Law of the Sea and all these other things that get mixed up in making this, where you could actually come out and say, "Well, this is this and this is this" sort of thing. Is that one of the goals you set for yourself, as a marine policy person, to be able more to connect with the public, perhaps, than the scientific community, or both?

PETERSON: Well, I think when the Marine Policy Program was started by Paul Fye and his colleagues, that the idea had been more theoretical than practical, that the goal had been to influence policy by writing on large esoteric topics such as Law of the Sea, international relations, and if you look at the early history of the Marine Policy Program, many of the people who were there were international lawyers, international economists looking at very big-picture issues that were related to the Oceanographic's interests in doing research around the world. The Oceanographic was not very thrilled about having a 12-mile territorial sea and a 200-mile fishing limit, because it restricted the capacity to do research in those areas. It required yet another layer of permitting and allowed some coastal countries to say, "You can't come here." And there have been some dust-ups with some of the countries early on who had declared their <u>own</u> 200-mile limits, which our country didn't recognize, and how were we to negotiate with them? And so I think a lot of the early uh perceptions of the Policy Program would be that policy fellows would be doing research and writing in the international journals, really policy journals. They were deadly dull. So what <u>I</u> was doing didn't meet those early standards. Nevertheless there was a niche. Obviously there was a demand for it. It was just good luck that I was here, that I had gained this body of knowledge about the fishing industry, and that all these transitions were underway within domestic and international fisheries policy. I didn't hesitate to put my oar in. But I didn't publish in the grand literature. I didn't publish in the refereed literature, and I should have, but I didn't. I spent all of my energy writing things that were understandable in the <u>general</u>

literature. I mean I could write for the common people, but I couldn't . . . . And I did a lot of newspaper interviews. I did interviews. I went to outreach meetings through the fisheries councils and so on and so forth. I can talk and I can write, but I didn't do it as the standard academic route, as would be done by the lawyers. A lot of the people who were here as political scientists and economists too were working on much more of a theoretical level. I have to say that I have some small theories about how and why things work, but I don't have a theoretical construct from a classic anthropological point of view about the fishing industry. I don't think it's amenable to a theoretical construct. As I said, it's herding cats, and it's very difficult to develop a theory about that. There's certainly some theoretical issues on market-driven issues, certainly on auctions, how auctions function and how prices are set. On that part I'm fine on theory, but as to the workings of this diverse group of individuals and small businesses, I think I added a lot to the knowledge about how small businesses work, but I didn't develop it in a theoretical or academic sense.

TAYLOR: But really, then, a lot of your interest was of an educational nature.

PETERSON: Oh, yeah, I mean my idea was you have a body of information and you try and do something useful with it. And the useful thing at <u>that</u> time was . . . . Perhaps naively I thought it was possible using some economic theory that had been developed on how to manage common property resources using limited entry, where you provided X number of boat owners with access to the resource, and, if there were only X number of them, that you could develop a rational management plan for the resource. So I was working toward that. It was very controversial, and most of the people in the fishing industry hated the idea, although I must say in later years, particularly the fellows in the scallop industry. Scallops had been badly depressed in the early '70s, and there were very few scallop boats left in New Bedford. I think there were nine or ten. So I was young and fresh. I had this theory. I came in, and I said, "You know, what we ought to do is we ought to agree now to limited entry in the scallop fishery, and you guys are there. You've already got your equipment and stuff, and then we'll figure out how much capacity is needed to harvest stocks at various levels, and we can do a nice little management thing." And they said, "Nah." So of course then the scallops came back. The fleet expanded like crazy. There was tremendous over-investment in harvesting, in boats, and there was a lot of bankruptcy. And it was at <u>that</u> point some of these old-timers came to me and said, "You know you were right. If we had limited entry, we would have ridden the crest. We'd have done OK,

but we would still be doing OK. Because we wouldn't have had this [claps hands] huge hit and then nothing." So I had a little theory out there that I was trying to work on, but [clears throat] the issues were overwhelming, since we went from no fisheries management, except to say how big could the scallop dredge be, to try to overlay a fairly complex management structure. It's not surprising nobody bought it. Now there are a whole bunch of other social and economic constructs--I mean individual fisheries quotas, where an individual boat can say, "OK, here's what my quota for the year is." And it's by species and by ton, and that allows me as a boat owner financial flexibility to fish when I think the prices are going to be best, or when I think weather conditions are going to be the most favorable, or whatever, to fish for that piece of the pie. That's another way of divvying up a common property resource. All of these are exceptionally controversial when you've been in an unlimited, open-ended situation. So I had a lot of ideas for what I thought would make the fishing industry more stable and more profitable for the people who were already in it, who had already made the investment both in capital and in learning. But that transition didn't . . . .

TAYLOR: Did the political arena ever come to you and talk with you about how you saw issues or anything like that?

PETERSON: Oh, yeah, there were always lots of meetings, where you were meeting with various staff people from Senator Kennedy's office on down to local electorate.

TAYLOR: Did you find them to be knowledgeable?

PETERSON: Yes, almost all of the elected officials that I dealt with, at both the state and the federal level had, first of all, excellent staff people, knowledgeable about the industry, but also they themselves. I mean Gerry Studds and Senator Kennedy--they themselves knew a lot about the fishing industry. So you could give them the *Reader's Digest* condensed version and they knew how to deal with it. But mostly I worked with their staffs.

TAYLOR: OK, and would you see that was one of the areas that you thought your kind of research should be reaching out to?

PETERSON: Oh, yeah. I mean I wasn't interested in publishing stuff that wasn't ever going to be read by anybody. As I said in our <u>last</u> interview, one of the delightful things for me when I went back to Honolulu all those years later was to find out that a guy who was now <u>bidding</u> at the auction had read my thesis. I thought, "Ohhhh. [Laughs.] OK." [Clears throat.] So . . . .

[Tape stops and starts again.]

TAYLOR: When we discuss all this, it's such an involved and complicated situation--the whole fishing, sustainable fisheries, all that kind of thing. I had asked you, just before we changed tapes, if the political arena was really very knowledgeable in what they were doing. I mean did they come to people like you? And you said, yes, they did. You did find them to be relatively knowledgeable people. In order to keep that kind of person in office, they have to be voted for. And that means the general public has to have some kind of idea on what's going on in the fishing industry, and I think the average person's view of fishing is *The Perfect Storm*. Can you address that?

PETERSON: [Clears throat.] The fishing industry in the '70s and '80s got an inordinate amount of public press coverage, almost all of it favorable, in part because they are independent entrepreneurs. There's a lot of physical danger to what they do. There's a lot of street smarts required to be a fisherman, and I think those are all admirable qualities. So the fishing industry: not only is it important in the local economy, I think it's one of the traditional industries of New England, and so it got very good press. The general public's understanding of how the fish on their plate got to them of course wasn't very good, and in fact most of the fish that was on their plate wasn't caught by US fishermen. The amount of fish eaten per capita has been growing remarkably in the last 25 or 30 years, but in the early days fish was eaten by people who lived along the coast and by people who ate fish sticks, and fish sticks were all European-caught fish that were packaged, and some of them processed here in the United States on blocks.

TAYLOR: You mean the Gorton's fisherman isn't . . . ?

PETERSON: It was processed by the Gorton's company, but the blocks of fish came from Northern Europe, and so there were a lot of . . . . There was a whole evolution in food in the United States, partly brought on by Julia Child, but partly brought on just by people traveling more and eating a broader range of food items. For example, there are squid resources off the East Coast of the United States that were totally under-harvested. I mean the few squid that were caught were mostly caught to be used as bait rather than to be eaten. And so, in the '60s and '70s, when the European fleets came over here they came to catch squid, because squid was a highly desirable thing to eat, not because they would use it for bait, so a lot of what has happened in the fishing industry is an evolution in the market, the demand for what they eat. So people know about fish, even though they might not have known what they were actually eating at the fast-food restaurant or the fine white-tablecloth restaurant. They might not have known where it

came from. So I think the fishing industry has always had good political support, good regional support from the general public. Fishing issues that got on ballots or had to be voted for, candidates that supported the fishing industry I think did very well. And I know I sat on a panel years and years ago with Gus Schumacher, who worked at the World Bank and at one time was Secretary of Agriculture here in the Commonwealth. And his job was to talk about local (Massachusetts) farming, and my job was to talk about Massachusetts fishing, and we were each given 15 minutes or something. And he made some generalizations about farming and then spoke specifically from his own family's experience running a [clears throat] fairly large farm west of Boston. And my experience--I could speak about all the fishing ports. I could tell how many people were in it. I could tell how much money was made. I had this huge database, and at the end of this little presentation, he said, "If I knew about farming what you knew about fishing, I could be a much stronger advocate for agriculture in Massachusetts, but we just don't have that kind of information." We have mom-and-pop agriculture, too, but unless we know about it, we can't advocate for it. So in some ways there are some inequities, but I think that the fishing industry actually got disproportionately good press.

TAYLOR: Did environmental issues ever throw kind of a monkey wrench into this works? The reason I asked is I discussed one time with a fisherman in Bergen, Norway, about he was showing me all of the boats that had been beached, and his claim was that came about because of all the picture of baby seals being slaughtered and whatnot, and they put a stop to that kind of thing. Of course more seals, more fish were eaten, the less catch, more people out of work, and all that. But that was an environmental issue that got involved in there: the slaughter of the seals.

PETERSON: I think most of the environmental groups that started to develop expertise around fisheries were concerned about over-fishing issues. I don't think that the Bambi issue, which is the beautiful little seals, I don't think that that existed for most of the fisheries that we're talking about. Nobody was catching whales. Nobody was catching things that people were anthropomorphizing, so they were just fish, and they were just catching them. The conservation groups were concerned about over-fishing, and they were concerned particularly about the effect of other industries on fish stocks, and, if you will recall, at one point there was a proposal to drill for oil on Georges Bank, and the fishing industry had a very strong ally then from the Conservation Law Foundation, which fought the issuance of permits by the Department of the

Interior for oil and gas drilling on Georges Bank, predominantly to protect the commercial fishing industry. So again there was a strong advocacy, strong partnership between the environmental groups and the fishing industry. That began to break up only recently, maybe in the last 10 or 15 years, when the US showed its inability to mange its own resources. We got the 200-mile limit. We had aggressive fishing. We had tremendous government loan programs. People bought more boats than we ever needed.

TAYLOR: Very sophisticated boats.

PETERSON: Very sophisticated boats, lots of technology, big bucks, and then the US fleet became capable of over-fishing in the same way the foreign fleet had over fished. So we essentially collectively shot ourselves in the foot, and then there have been some crashes where there've been great financial losses to individuals and small companies in the fishing industry. When [clears throat] that occurred, some of the environmental groups said, "Whoa, what a minute! This was supposed to be a self-regulating industry, and we had the fisheries councils, and they were supposed to be setting quotas or devising means to prevent over-fishing, and that's not happening." So again, there have been lawsuits by various environmental organizations, both suing the fisheries councils and suing the federal government to make them manage the fishery on a sustainable basis. And so while some of the environmental groups . . . . It's sort of like a love-hate relationship now between environmental groups and the fishing industry, because sometimes they're allies and sometimes they're at loggerheads. Even more recently, there are controversies because, with more intense fishing effort on the fishing grounds, there have been some work done showing the effects of some of the gear on the surface of Georges Bank, what happens to the benthos. And there are some pretty good physical records now, both video and then core samples done that show that some of the equipment has capacity to essentially destroy the benthic community, and therefore the capacity for regeneration, and the more boats you have, and the more fishing you're doing, the more you're making a desert out of some of those areas. So these are issues that are brought up because we now have the capacity to look at the bottom of the ocean with TV cameras and things that we didn't have 20 and 30 years ago, and we also have a fishing fleet that, through (again) technology, are now able to comb the bottom in a more thorough way than was done up through the late '60s, early '70s.

TAYLOR: And the fishermen are really clever. No matter what regulation you come up with, they find a way of getting around it.

PETERSON: That's right. They're called entrepreneurs. That's their job.

TAYLOR: Did you ever go out to sea with one of the fishing boats?

PETERSON: No, I actually had arranged to go to sea with a boat, and I'm blanking on its name right now, and for good reason. I'll tell you the whole story. I met this fellow, and I said, "You know, I'd really like to go out on a trip." And he said, "Look," he says, "I've got a daughter your age." He thought she was my age. She was in high school or something or college. He said, "She wants to go too, and so next time there's a vacation the two of you can come along, and you can share my cabin, and I'll bunk down with the fellows down in . . . , and so you can have that experience." So I wrote down my name and phone number on a piece of paper and he stuck it in his cabinet, and a couple of weeks later his boat was lost at sea in a storm that came up, which was terribly upsetting for a number of reasons, but it was upsetting because we don't lose very many fishing boats. And about 15 years later I was sitting down in my lab in Redfield, in Backus's lab in my cubbyhole down in Redfield--it mustn't have been 15, I mean 10 years later--and a fellow here from the Oceanography, and I'm wishing I could remember his name, came in, and he said, "Susan," he said, "I'm a recreational diver, and I was diving on a wreck, and it was" this boat, and he said, "and I was going through the captain's office, and I opened a drawer, and I pulled out a piece of paper and here was your name written on it," and he returned to me this piece of paper that I had handed him, and that certainly sent shivers up and down my spine. So, no, I never went out fishing on a commercial boat here in New England. I get seasick. [Laughs.]

TAYLOR: So does just about everybody else that goes off to sea from the Woods Hole Oceanographic Institution. Some of them it lasts a day. Some of them it's a continual kind of thing. I don't get seasick.

PETERSON: Great weight loss regimen. I recommend it highly.

TAYLOR: I get land sick.

PETERSON: Oh, yeah.

TAYLOR: I'm fine when I'm at sea. The minute I step back on the dock, the whole dock heaves for about a day and a half.

PETERSON: I did that too.

TAYLOR: Now, you stayed with this particular line of inquiry up until early to mid-80s?

PETERSON: Yeah, I continued to work actively on fisheries policy through the mid-80s. After the passage of the 200-mile limit and a number of other political changes, the next major international controversy became the dispute between Canada and the United States about who owned Georges Bank and where you drew the line and so on and so forth. So I was working as a consultant to the State Department on that issue through the mid-1980s, which was really interesting. If I'd been the negotiator I'd have done what Canada did. Canada came out saying, "We want all of Georges Bank. We're going to draw the line this way," ignoring a few little blobs of land like Cape Cod. They claimed Cape Cod . . . . I think the claim was that Cape Cod was just a sandbar and so not really part of mainland United States, so if they drew the line between their mainland and our mainland that they got all of Georges Bank, and of course the United States for some--I don't know--wimpy reason just claimed a small part of Georges Bank, where we could have made the argument for a much bigger chunk. We should have been equally outrageous in our claim, and then we might have actually gotten all of Georges Bank, but we were just such wusses, anyway.

TAYLOR: Well, with knowledge, couldn't we have been made the claim that Georges Bank geologically?

PETERSON: Oh, yeah, we made that argument. We made that argument, but what the scientific . . . . I was there for fish. There were geologists there. There were historians there. We were looking at historical this and that. We were looking at everything. The State Department does the negotiations. So anyway, as it is, we've lost the top third of Georges Bank as a US . . .

TAYLOR: Where most of the fish are.

PETERSON: . . . as a US-managed fishery, right. It was a setback more for the fishermen from Boston and Gloucester than it was for the New Bedford fishermen, although a number of New Bedford fishermen did use those grounds. I continued to do fisheries management, but at the same time in the '70s I became more and more interested in what affected fisheries' abundance, and got more interested in environmental factors that might be affecting fisheries. I mean I already knew what the humans were doing, from the just harvest point of view, and then I started to look more about what the reasons . . . . Where do the fish come from? How can we ensure that there are greater stocks of fish? What kinds of coastal issues are there that might be dealt with that would ensure greater volume of catchable fish? So I became more knowledgeable about coastal water-quality issues, wetlands, and so on and so forth. At the same time, in the

‘70s, I’d fallen in love with John Teal, who was in the Biology Department here at the Oceanographic, and is an expert on salt marshes, and so he and I were very interested in looking at some of the potential effects of coastal pollution on salt marshes and how that might be translated into the coastal fisheries.

TAYLOR: Those are nurseries for a lot of your fish. So this is where your interests . . . ?

PETERSON: That’s where our interests meshed. So he’d also done a lot of work with fish back in the ‘60s and ’70s, with tunas and so forth, working with Frank Kerry[SP?] and Dave Masch, but his interest had been maybe 50 percent focused on salt marshes, so coastal-ocean quality issues. So, because that’s what we talked about at home, that became another interest of mine. So I kept up the fish piece, but also started to learn more about the coast and coastal ocean issues, and particularly pollution--not so much gross acts of negligence. I wasn’t looking at ocean dumping, for example, where garbage or dredge spoils were being dumped, but the insidious forms of pollution, the runoff caused by storm water, the discharge from wastewater-treatment plants.

TAYLOR: All the non-point-source . . . .

PETERSON: Well, some point sources as it relates to sewage, but also non-point-source from individual households, the stuff that comes off streets and so forth, really at the same time we’ve had fairly strong coastal-zone management efforts here in the country for 30 years now, so this sort of fit in to my coastal issues. I’m interested in coastal issues also because of a lot of the aquaculture. I’m interested in the economics of fishing. Where do the fish come from? Well, some are caught in the open ocean. Some are harvested from near-shore waters, and some are grown in natural occurring bodies of water or in artificial tanks. The economics sort of glued it all together, so in my interest in aquaculture, the coastal water quality became really important. So I began to sort of revitalize my water chemistry, learning where all this stuff came from, and how various nutrients behave in the coastal ocean. So I was sort of balancing those issues. Not wanting to leave fisheries, but to become more knowledgeable in something else.

TAYLOR: You’re getting the fish’s side of the story, so to speak.

PETERSON: Well, exactly, but also I had become frustrated with the fisheries-management piece. I’d been doing it for quite awhile, not nearly as long as some of my colleagues, and I don’t know how they dealt with their frustration, but in some ways I felt that the problems were intractable, that I couldn’t see that there was more that I could provide that would help solve

those problems. To some extent, time had to go by, experiences had to be experienced before people were going to be willing to make political and social changes to address them, and I could just see myself sort of staring down a long tunnel of just frustration, of feeling like where are we going? So my personal goal was to expand so that I didn't have to deal just with something that I kept thinking, "We're not going to get anywhere with this."

TAYLOR: Well, when you look at any of those issues, they almost all now seem to be something that we'll delay but will not solve.

PETERSON: Yes, and so I like happy endings. [Laughs.] I'm trying to think, "Where's the happy ending here?"

TAYLOR: You don't like the movie where everyone dies, huh?

PETERSON: No, I don't go to those movies.

TAYLOR: I'm going to get myself into all kinds of trouble saying this, if the director of this institution listens to these tapes. What you do is a lot more interesting to me and I think the general public than the thickness of a copepod shell in the first centimeter of substrate, or something like that. If you were director of this institution, how would you change some of the things we do here in terms of maybe getting information out to the public, or like marine policy is a very small area here in this institution? Are there any changes you would make?

PETERSON: Well, there <u>have</u> been remarkable changes in the 30 years since I came here. I mean the Institution does do a lot more applied work than it used to do, and a part of that is a result of the Policy Program, but part of that is also the result of individual scientists realizing that they need to bridge that gap on their own. Now, certainly there're some types of science for which there is very little policy implication. And that doesn't mean it's not valuable in adding to the general knowledge about the world. I'm a strong believer in knowledge for knowledge's sake. But an institution like this, which operates internationally, and is a leader in the international scientific community, needs to do a mix and match of the pure science with the publishing and the refereed literature and the applied science. It's <u>very</u> difficult to do that. For years we had a magazine, the *Oceanus*, that Bill MacLeish published, and then went on from there. And that was used widely in schools, in high schools and even in 7th and 8th grade, in junior-high classes, and in colleges. It had articles written that were technically correct, but written for the . . . to teach.

TAYLOR: The layman.

PETERSON: Yeah, [clears throat] and I think that did an excellent job. It was uneconomic. So I think that the administration within the Institution has to make decisions for the well being of the entire institution, and they couldn't afford to operate it at a loss, and so they no longer publish it, and there are now some other formus in which that information is expressed. There was a little hiatus in there before we had Web pages and now there are a number of institutions that make their information more widely available--through the Internet, through formal education programs, links with institutions. So I think the Institution is moving along, but there's a difficult . . . . You can't make good policy based on bad science, so you have to have a dedication to good science. I mean good science is the base, and if you're going to do something well, you should be doing good science here, and I <u>think</u> that if I were directing it I would be focusing primarily on making certain that that good science happened. But secondarily, for those members of the scientific community who were <u>interested</u> in the policy side, in the applied work that could be done, in reaching out through various networks, I think I would find a means for rewarding that rather than penalizing it. I went to the University of Illinois and the University of Hawaii, both land-grant colleges, where faculty were required to . . . . There's three legs to the stool, and one is teaching, one is research, and one is outreach. And while this isn't a land-grant [laughingly] oceanographic institution, I think we were a one-legged stool for a long time, and then we expanded the education program, the collaboration with MIT and some other teaching efforts, and we became sort of a one-and-a-half leg stool, and the outreach part, the outreach into the community is still . . . . This stool has a very sharp slope to its seat.

TAYLOR: It is getting better, though.

PETERSON: It is getting better, and I don't think it will ever be level. I think that the research should be what the Institution is known for. But we need to put a few more bricks under [laughingly] some of those other legs. [Laughs.]

TAYLOR: Well, I think maybe the looking down in some cases on the educational side of the whole thing for a researcher maybe was something that will have to be addressed in the future.

PETERSON: Well, our capacity to educate has increased, and I think largely because of the Internet. It's much easier now to look up things on salps or red tide. Now you go to the Aquarium in Boston or Los Angeles, and they have jellyfish, wonderful floating creatures, and you look at them, and you think, "Oh, I'd like to know more," more than you will learn at an Aquarium that's basically there to engage you momentarily, and now you can find out more

about the work being done by Larry Madin and Rich Harbison and so forth by . . . . There's some great links. It's sort of what the *National Geographic* used to do we now can do much more broadly.

TAYLOR: OK, I'm going to stop us at that point, thinking of time constraints here, because I want to be able to make time for another . . .

PETERSON: OK

TAYLOR: . . . point, but . . . .

[END OF TAPE 2]