

Frank Taylor: We are at the Redfield building of the Woods Hole Oceanographic Institution to talk today with Dr. Donald Anderson about his life and his career. Just before we start off, I would like to start by saying that Dr. Anderson is one of the recognized authorities on Alexandrium, and I would say in the world. I remember watching him as a guest on Emily Rooney's show, on *[Greater] Boston*, with great interest. We are going to spend a lot of time talking about red tide as we go along. Because that, along with climate change, is one of the real buzzwords that the population in general has heard. May not know much about, but they have heard it. To start off, can you tell me where you come from originally and a little bit about your mom and dad?

Donald Anderson: Well, I was born in Milwaukee. My father was a marine engineer in World War II. He was a lieutenant in the Marines in the Pacific. He and my mother got married right after the war. So, it was a baby boom of war babies. I had a brother, two years older than me, and myself. We're the only two. We moved around the country a fair amount. Born in Milwaukee, and then moved to Salt Lake City. Then, ultimately, my mother and father separated and she raised two boys herself. We started then back in the East Coast where her family was. But for a single mother raising two children, she found different jobs. She worked for the government, and she would find different jobs and then moved to them. So, we moved from Massachusetts; Sudbury, Massachusetts to Illinois; Lake Forest, Illinois to Southern California, and then to Northern California –

FT: [laughter]

DA: – while searching for jobs that were a little bit better and would allow her to support her children. So, once we got to Northern California, I went to high school there for four years in Marin County, just north of San Francisco. That's where a number of the decisions were made actually that headed me towards a career in science.

FT: Let me ask you a few questions. First of all, what were mom and dad's names?

DA: My mother's name is Joan Anderson. My father was Earl Anderson.

FT: You say you have a brother?

DA: Yes. My brother was Dennis Anderson.

FT: What did Dennis end up doing for a career?

DA: Dennis is quite different from me. He stayed out on the West Coast during the rather turbulent times of the [19]70s and [19]80s. I came east, which made quite a difference in my life and in his. He then became very much wrapped up in the culture out there with Zen and various types of analysis psych. He was actually a counselor, a psychiatric counselor. But he was also very much into Indian, Native American traditions, and just there almost like being a shaman. So, he was also a musician, very nice musician, very good musician, an environmentalist, but very much more on the side of the arts. He was an artist as well: art, music, and so forth. So, we were very different, if you can think of that. I go out to the East Coast and become an engineer

and a scientist. He's much more on the artistic side.

FT: That is an interesting combination. As you talk through this, I am saying, "Oh my heavens, all of the connections you and I might have." One of my favorite restaurants is in Milwaukee, a place called Mader's, which is a German restaurant. We went to Lake Forest – my wife is from Des Plaines, which is [laughter] nearby. My sister-in-law moved to Oakland, and she is a member of an ashram there. About every three years, she spends a year living in India, and then the rest of the time at the ashram [laughter] and so on. So, quite a few connections here. So, I understand how you could have that kind of situation. You say you went to high school in Marin County?

DA: Yes, I did.

FT: What was your high school career like?

DA: That's an interesting thing to look back on because I had just literally moved into the town a few days before the beginning of school as a freshman. So, I didn't know anybody. I didn't have the benefits of all of the people who had grown up with each other and who had these various groups of friends and so forth. So, it was a difficult time in the beginning to get to know people. Because my mother was, again, raising two children on a small salary, I worked. I worked constantly. I worked in a little ice cream store. I got a job right away as a freshman, worked right through high school, probably at least five to six days a week, closing up the store at 11:00 p.m. at night doing my homework in the back room. I was going out to serve people and then going back to my homework, getting back. I was doing this because, actually, I was giving half of everything I earned to my mother. The rest I was actually saving towards college, right, like you used to try to do. So, between work and all of the issues of being new to an area, it was difficult in the beginning. But gradually, I developed friends and so forth. One of my continuing hobbies is golf. I played golf out there and played on the golf team and made a number of good friends that way. On the social side of things, it took time to develop, but it worked out fine. My brother had a harder time. I guess because of those various moves, he went to four different high schools. So, that was much more difficult for him. But the other issues about high school, I found it fairly easy. It was a good school. But I was able to do all of this after-school work and so forth and still keep up my grades and be in the best classes and so forth because I can handle it. I could handle it well.

FT: Now, I am an ex high school teacher. It has always been difficult for a new youngster that comes into a school system that does not know anybody, particularly when you are in a totally different part of the country in a place like Marin County, which may have [laughter] traditions in more ways that may be very different from where you came from.

DA: That's for sure.

FT: How difficult was it to maintain schoolwork and a job at the same time? That was not a common thing during your particular years that you were doing that. That was supposed to be when kids were supposed to be kids and could – [laughter]

DA: When I think back on it, I obviously was able to do it because I finished very high up in my class and got very good test scores and so forth. Perhaps it helped that in the early days at least I was new and didn't know a lot of people, because then there weren't a lot of distractions and things to do instead of working and so forth. I really had a strong – and still do, I think – work ethic that I was going to help out. I was going to do what I needed to do to help us get by. I was just fortunate because I could interrupt myself constantly, but still get the homework done. Like I say, some of the classes came naturally. So, I was benefiting from some basic skills in certain areas that allowed me to do that, whereas someone else may not have been able to.

FT: This sounds like the ability to multitask at a very early age.

DA: You are right. That's one thing that characterizes, I think, almost all of the WHOI scientists. It certainly characterizes me. In order to survive and to keep a lab going as long as I have here and all these different programs, you have so many different balls in the air at the same time. Being able to keep track of them, keep them from falling, keep everything moving is something that I – it's a skill I know I have and maybe had it back then, or maybe that's what helped to develop it. I don't know.

FT: We will get into that more as we go along. But one of the things I have learned during these oral histories, to be a scientist here, particularly a senior scientist, is truly the major leagues. [laughter] It really is. There is an awful lot that has to be gone through. We will talk more about that. Did the strong work ethic come from something where you just felt "I have got to help mom out" in this kind of situation?

DA: It absolutely did. I just always remember us being in debt. We never had extra money. We always were borrowing for this or that, and I didn't like it. I just wanted to do what I could. It felt like it was the right thing to do. I know I had friends that said, "How come you give half of your salary to your mother?" I said, "Well, you should. That's what I'm doing this for. I'm doing my part even as a freshman or a sophomore in high school." So, it was very much something that I wasn't forced to do. It just felt like I should do. I think that that developed a strong ethic, strong work ethic that, again, still stays with me.

FT: That must have been another thing that you had to struggle against too, because Marin County is not a poor county.

DA: [laughter]

FT: This is not a place where kids do not have change in their pockets.

DA: That's right. It was the same back then. There were some very wealthy communities there, and there were lots of the groups of kids who, of course, had everything. By working, you set yourself aside from that. It kept you from various activities because "No, sorry I got to work. I got to go to this," even on a Saturday, Saturday nights, all of those things. Those were busy times when I had to work. It was also interesting when I think back, because I got very much into being a good soda jerk. That's what we used to call them back then.

FT: I remember. [laughter]

DA: We used to develop a way where we would scoop ice cream and would actually flip it up and catch it in the cone, and then even make a dimple in the first scoop and scoop the second one and catch it. Everybody loved that and would always ask you to do it. The manager got upset when he first heard, but then he realized that people were really enjoying it. So, he said, "Go ahead and do it." We'd occasionally throw it up, whirl around behind us and catch it.

FT: [laughter]

DA: Do those kind of things. But it was just something that you'd get into, turn it into a little more fun. I also remember, interestingly, and I think it's carried through to this day that we had the cash register where all you did was ring up the total. I had to do all the math in my head. So, if you came in and ordered two doubles, a single, and a Coke – and back then a single was fifteen cents, and a double was twenty-seven cents. I don't remember what a Coke was. But I basically in my head knew four times twenty-seven, plus two times fifteen, plus twenty-three or something. I would just ring up that one number in the cash register and do change and so forth. So, I have always done a lot of figuring in my head. I can handle a lot of numbers. Many is the time I will just think through a problem just in my head, doing approximations and so forth. I think, again, that was some interesting training I got, just from doing all that day after day after day. Hundreds of times in a week, I would be adding things up and ringing them up that way. Instead of the way they do it now, where they punch in all the numbers, it does everything for them. It tells them what change to give out. That wasn't the case.

FT: As an ex-teacher, it is really interesting to me to hear you say that and what a value it was to you. Because I remember one of my big shocks when my children were young and they were at the stage where they had to learn their multiplication tables, they were introduced to them. If I wanted them to learn the multiplication tables, I had to sit there with flashcards at home at night and go over it. I consider multiplication, division, subtraction, addition as some of your survival skills and to be able to run it through your mind. So, how old were you about then, seventeen, eighteen, somewhere in there?

DA: Yes. Actually, this is getting a little bit out of sequence, but some interesting events – some events that happened later that fell right into this – as you'll hear in a little bit. I went to college at MIT. My freshman physics instructor was a man named Philip Morrison who was – he was famous. He was one of Edward Teller's group that actually were the ones that made the bomb in the war. He also did all the reviews, book reviews, for *Scientific American*, just an amazing scholar. It had been amazing also to have him as my freshman physics instructor. These are back in the slide rule days, right? Every class, he would start it out by asking us a question. This is a small group of ten, fifteen people, asking us a question, and we had to do everything in our head. He would say, "How many blades of grass are in that lawn over there? You've got five minutes. Go." Everyone sits there quietly and turns it into a problem in their mind, "I have this many blades of grass in a square inch. That looks like it's ten yards wide, ten yards on the side." Then you do all this in your head, and then at the end, we would compare numbers. When you use slide rules, you work out these calculations. It works beautifully. You can do multiple series of calculations. But you don't know where the decimal point goes. All you've got is a number.

So, what you had to be able to do was take your problem and know roughly where your decimal point was going to be. So, he was teaching us that kind of thought process. Again, it has carried through. But again, I think it came easily to me because I was very used to doing a lot of numbers in my head. So, again, it's out of sequence, but it does fall into that.

FT: No, I understand. You were also talking, when you were in high school, of a period I would not have been caught dead without my small slide rule stuck in my [laughter] breast pocket. Because I did just about everything in class with them, from computing grades to going over different kinds of problems that the students might be working on. So, it seems that at an early age you not only learned how to stick with the task, you had a conscience in terms of what your role should be. It was a great thing for building strength of character. You cannot say that, but I can say it listening to what you had to say on this. Because being familiar with where you moved to, I know that was a difficult situation you were in.

DA: Yes. One indication of just the kind of town it was, was that for our senior prom we got this close to getting the Jefferson Airplane as our band, right? [laughter] We didn't have quite enough money in our accounts. So, it was a pretty interesting community with some wild times about to begin. In fact, that's part of this story, as it goes forward. One thing, I look back and I wonder how did I really get into science and engineering. There's really two pivotal things that happened back in those days.

FT: That was going to be my next question. [laughter]

DA: Well, in addition to the fact that some of these classes were fun for me and came easily, I had an aunt, one of my mother's sisters, who was taking interest to me at some point. She did a very simple thing, but it had a big impact on me. She basically was living on the East Coast, sent me a clock, an old, electric clock. She, in various correspondence, we had talked about what I was going to do in the future. I didn't know, didn't really think about it. She says, "Well, if you can take this clock apart and then put it back together again and it works, then you should be an engineer." It was just real simple, her simple way of viewing the world. But I did that, I put out a big newspaper on a desk and I took everything apart, had all of the gears all set up.

FT: A challenge, was it, really?

DA: Yes. It was just, "Can you do this?" I didn't know if I could do it. I didn't have a lot of tools or any experience in it. But I just took it apart. It was also just seeing it and knowing where the pieces would ultimately fit together again and keeping that – and there were a lot of gears in those old electric clocks too back in those days. I put it back together again and it worked. From that day onward, when someone said, "Well, what are you going to do," I said I'm going to be an engineer.

FT: Really?

FA: Because it was that simple for me. It was like someone of authority, someone said, "Here, this is what you can do." So, that was one major thing.

FT: So, in a sense, an aunt became a mentor in a certain sense.

DA: Absolutely, she did. I told her how important that was. For her, it was just a little thought, a whim. She had an old clock, she didn't want to throw it away or something and "Here, let me send it out (west?)." I'm sure I was a freshman or sophomore when I did it, but I still remember it to this day. But the other real pivotal time for me was that I was competing for a fellowship, for a scholarship for college. It was in what's called the Hertz Foundation. Hertz rental cars, they had a foundation, and they had a scholarship program. I applied and I was told I needed to go to a place to have an interview. The first one I went to was at Lockheed. I go into this office of this man. Instead of just sitting there and talking about what I was doing in school and what I wanted to do or anything, he basically has me stand up at a blackboard and starts asking me questions. He asked me, "How far is it from the earth to the moon? How far is it from the earth to the sun? Let's call that first one a small R and the second one a big R. How long does it take for the moon to go around the earth? How long does it take for the sun?" He's helping me through this. Ultimately, with his guidance, we had Kepler's third law derived on his blackboard.

FT: [laughter]

DA: But he was seeing the way I was thinking and so forth. So, I remember leaving that interview thinking, "Wow, this is going to be quite a challenge to get anywhere to get this scholarship." The next one though was at Berkeley, so across the Bay a little bit from Marin County. I went there. He was the chairman of the physics department. To this day, I want to find out who he is. I still haven't. I have been remiss this way because he's had such an influence on my life. He asked me all these questions about science and things like that. Again, grilling me about various things to see what I knew. Then at the end of the interview, he basically said, "Well, where are you going to go to college?" I said, "Well, I applied to Berkeley, Stanford, MIT, and actually Harvey Mudd, a small college in the South California." I said, "I got into them all, but I don't know where I'm going to go." This was 1966. He just looks at me and he says, "Go to MIT. You should go to MIT. Get off of this coast. Get away from here." I said, "Why? What's the story?" He says, "There is so much unrest already on Berkeley, on the Berkeley campus, in California in general, whether it's drugs or Vietnam or all these other things, that this is just a very distracting and difficult place to get an education right now." He said, "Just go east. It's just not the same out there." Again, with the same finality that happened with that clock, I just – from that day forward, "Where are you going to go to college?" "I'm going to MIT." That was it. Somebody of authority, someone that knew a lot said, "This is what you should do." I will admit that once I got to the East Coast, it was a very much – things happened out here much slower than they did in California, especially all the protests, all the drugs and so forth. It took a few more years for it to really hit hard out here. So, it wasn't until I was a senior that they were starting to march down Massachusetts Avenue and break store windows and things like that, whereas that was happening early on – two, three years earlier – on the West Coast. So, that decision has made, obviously, a huge bearing on my life and career.

FT: [laughter] The minute you said that, I said, "Yes, there is a significant difference between Telegraph Hill and Mass Ave [laughter] particularly during that period. I had had other people, Larry Madden for one that went to Berkeley, that said during that period it was really kind of tough out there. Yet, you could have gotten a wonderful education at U Cal Berkeley, Stanford,

certainly, and then MIT. Given the financial constraints at home, was it necessary for you to have a scholarship?

DA: Yes. No question about it. I did win that Hertz scholarship, which helped a great deal. MIT gave me money as well, some scholarship, some loan. Then I even went in the beginning into ROTC as another way to make yet more of the expenses back in MIT. It was interesting too, when I think back, that I had saved up with all that work. I remember the number I had saved up, \$1,900 of my own money.

FT: That's pretty good.

DA: That's saving, yes. That really is saving, given that I was giving half of it away and so forth. But that was enough to pay one year of tuition at MIT in those days. Nowadays, you can't ever expect a child to work for two or three or four years and save enough money for a year of tuition at these colleges. You're talking \$30,000 or more that they would have to earn and save over a few years. But back then, I did it. So, I had some of my own savings. I had this Hertz scholarship, I had just a little bit of a scholarship from MIT, took some loans as well. Then, as I said, I started out in the ROTC program, which also paid a little bit, although I did ultimately drop that.

FT: Now you say you already had lived in the East Coast. You lived in Sudbury, Mass?

DA: Yes.

FT: I am from Framingham, so almost right next door to that. So, it was not a strange beast to you when you came out here, but it was significantly different. I have often felt that you always ought to have a passport to go to California. It is like a different country out there. [laughter]

DA: Right.

FT: The east is significantly different. Weather and everything is very, very different. That was not much of a shock to you when you came out here?

DA: Well, I think I was still a very naive young man. But as far as the weather and other things, I could deal with that. But again, there were some real difficulties in making the transition for me. Well, the best way to describe it is MIT does an orientation for its freshmen where you go and for a part of a day you sit in a auditorium and they talk to you about what the experience is going to be like. They're trying to tell you that you got admitted, you can make it through here, but you got to realize there are a lot of really smart people here. One of the things they did was show the graphs of the scores of everybody on their board scores on the SATs. I had done very well in mine. But when they showed my class for the, let's say, verbal part of the SATs, even on verbal, I was below fifty percentile. On the math, I don't know what I got. It was high, but it was below fifty percentile. Then on the chemistry achievement test – I'll always remember this – we had an open book course for chemistry. When I got to take the chemistry test, I was so used to being able to find things in books and so forth, that I just – I knew how to do chemistry and I knew how to find things if I could look at it. But if I had to memorize something, I hadn't

memorized it. So, I got a 438 on my chemistry achievement test, which was one of the low eight scores out of nine hundred students in my entire class. So, I had the very bottom of the chemistry curve. This is all what's hitting you as you're about to go into this very well-known and intimidating school. I'm seeing that when you're the tops in your class, when you get to MIT, you're less than halfway, and in some cases down in the very bottom of the pool. That whole time, I'm thinking, "I did really well on this math level two achievement test," I got a 793. Maybe it was math level one. But one way or the other, it was written up in the local paper and so forth. It turns out that was below fiftieth percentile.

FT: [laughter]

DA: More people got eight hundreds on it. So, anyway, I walked out of that feeling, "Oh my gosh, what have I gotten myself into?" And is something that needs some explanation. I joined a fraternity at MIT. The explanation needs to be stated that MIT fraternities are very, very different from the image that most people have of fraternities all over the world, all over the country. I was in one that really cared about the various brothers and helped me get through some difficult times in my freshman year and, in particular, with studies. Because as you could gather, I didn't study really hard in high school. I did what I needed and it was plenty. But once you get to a place like MIT, I was studying really hard. I flunked my first calculus test, my first chemistry test, and my first physics test. I remember the numbers, I got a thirty-eight on my first calculus test. I don't know, class average might have been sixty-five or something like that. What was wonderful was that in my fraternity, they cared about the new pledges. After everyone took 18.01, which was calculus, you'd stand up at the dinner table and everyone would tell their scores. My was low, then the next test mine is low. Then right away, things started to happen. They moved out the roommate I had, moved in a chemistry sophomore to be my roommate. My other roommate was another freshman who was struggling. If we were downstairs fooling around after dinner, the other members of the house would say, "Go study," where they would stop in, "How's your physics going?" The night before a test, one of the physics majors in the house would stop in and talk to you for a little bit. It was very, very supportive. What I learned was that I was studying hard, but I didn't know how to study. They taught me the right way to study at MIT. There really is a way to do it, whether you don't do every problem you were assigned in a given problem set, you do enough to figure out what they're driving at. Because you can't do it all, you get behind. Once you fall behind and you're not learning anything in your lectures – there's a whole thing you learn. So, I was struggling that first semester, but ultimately pulled things out, and then ended up doing very well with that sort of support. So, again, having made that decision to join this fraternity was a wonderful one in retrospect. It's a huge difference in my life, not only on the academic side, but on the social side too. Me and a lot of others like me were not very adept socially, and that helped a great deal. I could have spent the whole four years in MIT in a dorm, sort of walking in the tunnels underneath the institution and never emerging to the light of day or something like that. It happens there, but I luckily broadened out a lot.

FT: What was the fraternity?

DA: It was called Chi Phi.

FT: Chi Phi. Because to me, one of the best ways of teaching when I had accelerated courses and accelerated kids, my goal was to get them to help each other. I think that is one of the best ways to educate people. Of course, MIT has this tradition in many ways of doing just that. In terms of the level, just for someone who is listening to this so they have a clearer picture of what – I always had the opportunity to take two of my brightest students to MIT to go to the plasma fusion facility. We ran into, one year, a young man about seventeen years old, ponytail, earring dangling from his ear and so forth. But he was just completing his own plasma fusion setup. He had started designing it when he was fourteen, and he was [laughter] doing research into radio waves in the ionosphere. I looked at these two youngsters I had, I said, "Now see, that is smart." [laughter]

DA: Right. Now, that was a real awakening. You go from everyone's considering you one of the smartest people in your high school, to then you're absolutely ordinary and maybe even below average. I learned to make the best of what I could do. At least I got good grades ultimately. I was definitely on a rise. It was interesting, there were some students who had had a lot of the calculus classes already. They went to the various science high schools and so forth, and they were fooling around their freshman year because to them it was easy. Many of them [laughter] their grades went down because they didn't learn how to study at this place, and they didn't develop the good habits.

FT: Well, thank heavens you developed those good habits, some of those good habits, very early in your life --

DA: That's right.

FT: -- in terms of being very pragmatic about [laughter] facing what you ultimately had to face. Because a lot of people who would have said, "Ugh, I am going back to the West Coast. This place is too much for me."

DA: Especially right. Imagine you flunk your first three major tests – the first three tests you take – and this is several months into that first semester, you have to think, "I'm not going to make it here. I'm over my head." Thank goodness that I had people counseling me that were saying, "No, that had happened to me too. You're just doing it wrong. Just do this, and we'll help you." Then innate ability start to kick in and then you get a little better, and then you start to get into the swing of things. But it was a difficult time. Because another thing, I had decided – I'm not sure why actually in retrospect – that I was going to be an aeronautical engineer.

FT: That was going to be my next question [laughter], why you picked the –

DA: I don't know why I went into aeronautics, but it was one of those glamorous fields at the time with the various space programs and so forth.

FT: Who were all on their infancy then.

DA: Right. It was a good place to be. So, I started out in that department and started taking the classes. But I was both struggling in them and they just weren't appealing to me a lot. I actually

had a job in one of the labs that was funded by Pratt & Whitney. Another thing I did to earn money there was I was working in the evenings there too. I remember testing ball bearings for Pratt & Whitney jet engines in the basement of the basement lab of the aero building. But at some point in that first year, I just decided that aero and astro wasn't for me, and so then I switched majors. I switched into mechanical engineering. I was starting to take classes there. It was an interesting time because mechanical engineering is not just levers and pulleys and things like that. At that stage, you had to know electronics, and it was the beginning of the computer era –

FA: Wow.

DA: -- systems, computer systems. A number of the computer groups were in civil engineering and in mechanical engineering. So, at some point as that program was developing for me, MIT offered an option of basically designing your own degree program within a major. So, I put a bunch of classes together that were under the general theme of systems engineering. So, it was mechanical systems and electrical systems and computer systems, and even a little bit of management systems. I put them together, got it approved. So, that was my major within mechanical engineering.

FT: How did you evolve this idea?

DA: That's a good question. Because I think what it was, was that I really liked several of those areas and I wanted to put them together in some way and not just focus on one of them. Computers, those were the days when you had key punches, you had big card decks and so forth. There were a lot of that capability at MIT, and it was fun. It was actually fun to write programs and do that. So, I really liked that, and I liked the electrical circuitry and things like that as well. So, when I was given this opportunity to design something – I even put in this management element, which is actually an interesting part of this whole sequence. Because ultimately, when I finished MIT, I was applying to business schools. I'm not sure when that transition happened, but it was from aero and astro to mechanical, to the systems engineering, to then management systems. It was the sequence that I was following. Several little sidelights here, one, the computer skills that I developed there stayed with me my whole life and had been very, very important. One of the things that came about of that is that I was able to get a job after I graduated doing computer work. But before getting to that, realized that now we're talking about 1969, 1970, which was when the Vietnam War was just at its peak in terms of problems. It was the time for the march on Washington. It was the time for all of the protests that really did hit the East Coast. I don't remember what it was, perhaps a co-op class of some sort. I was working at Honeywell, a computer company then, out on 128. I would go out there once or twice a week and work with them. I remember in their offices watching television of the marches going up Mass Ave that people that would – this was all going on at that point. It was a very, very disruptive time. But I was keeping the straight and narrow. I was keeping a good occupation. I had in the beginning of my time at MIT joined the ROTC, Air Force ROTC, as a way to potentially pay for some of the college expenses. Once a week – I used to have a uniform – we'd dress up, we'd go march out on Briggs Field, take classes and all of this. Again, I look back and I made a decision that I'm happy I did, but I wonder just what I really knew for making this decision. Because I remember one evening – when I was probably either end of freshman year I

think, maybe it was early sophomore year – of getting a phone call at dinner. It was the Air Force ROTC people saying that they were going to give me a full scholarship for the rest of my time at MIT to stay in the Air Force ROTC. I would also, of course, have this obligation afterwards of having four or five years or six years, something, of being in the Air Force as an officer in payment. Right on that phone call, I turned it down and said, "No, I don't want this. In fact, I am dropping out of ROTC." That was earlier, it was before a lot of the protests. There was a time, a year or so later, as you'd be marching, people would be throwing things at you and so forth. But it hadn't happened yet. But maybe I was sensing it or maybe I just didn't like what I was seeing in the military. But one way or the other, I dropped that and was finding other ways to try to make money to pay for the college. But when I get to that last turbulent time of sixty-nine to seventy, it was – again, I was keeping myself in a job with Honeywell that I knew would give me an occupational deferment so you wouldn't have the draft. Then everything changed, everything changed right around December, January, or something of sixty-nine and seventy when they had the first draft lottery. That's the same time that Nixon got rid of occupational deferments, got rid of the reserves as a way that you could avoid service. All the ways you could avoid getting into the military, they were gone, and they added this first lottery. My friends from the fraternity and I, we had a class, a night class, a psychology class that we're all in. Eight or nine of us went over there. One of my roommates had a little transistor radio, and he was writing down the birthdays as they were called off. We're sitting there in this class and just trying to listen. Then there's another one, he'd write it down, and we would all look over his shoulder. At about forty, his number came up, then he just said he couldn't do it anymore. He handed this off to someone else. Eventually, we decided we couldn't stay in the class, we weren't focusing. We walked back across the river into Boston, went up to my room, we all continued to listen to the radio. At that point, I hadn't heard my birthday. I'm thinking, "I'm into the three hundreds now, I'm safe." A roommate of mine from my freshman year, who knew my birthday, pokes his head in and he says, "Don, I'm really sorry." I said, "What?" He says, "Your number." He says, "You're really low." I said, "Oh, no, I haven't heard my number at all." He says, "Yes, you were one of the first ones." We looked, and somehow my friend had not – between six and ten, he hadn't gotten any of the birthdays. It's the lost reception or something like that. I went from thinking I was in the three hundreds to finding out that I was number eight in the lottery. This was in January, and I was going to graduate in June. This was the time when everything was going bad in Vietnam and lots and lots of bodies coming back every month. It was a crazy and difficult time, if you can imagine, all of a sudden.

FT: As I listen to all this, you have kind of doubled the difficulty [laughter] of growing up, if you will. You had this situation on the West Coast. Essentially, through no fault of your own, I mean, this is the cards that were dealt you. But then coming out here, things slowed down, but you also started to run into a situation. I remember Professor Zinn over at Boston University had massive crowds coming out in the streets for protests. Now, Boston University was within walking distance of where you were.

DA: It happened at MIT too. They took over the president's office. The students took over the president's office in protest. We'd go to some of our classes and the instructors wouldn't teach us what they were going to teach us. They would have a discussion about the war and about what was going on. Everybody was engaged at different levels. They ultimately closed MIT early. This was an amazing thing. They closed MIT early that year, Spring of seventy, by at least a

month. Maybe they closed in April instead of May, middle of May. They told all the seniors, "You're through. Whatever grade you have, they're yours. That's it." I don't know what they did to other underclassmen. But they closed because it was far too disruptive. If you can imagine the protests, all the issues with drafts. Another thing that was going on was that every month all these students from MIT and Harvard and so forth would go and have their draft physicals. That was another time when they protested and would dress up in togas and paint things on themselves and do all these crazy things to try to fail their physicals. That was yet another story. So, it was an amazing time. Luckily, that's what came late in my – I think back to this advice I got from the Berkeley physics professor. Because that was what was happening two or three years earlier in Berkeley. Again, I've gone back to my high school reunion. Quite a few of the people that I know that went to places, like Berkeley and a number of the schools around, struggled and dropped out or burnt out or whatever. Certainly, there are those who made it. But there was a yet another force, not just the academics, that were making people drop out. It did hit people hard. But it just took a little longer to hit the East Coast, I think.

FT: How did you keep it all together during that period and keep your eye on what the final goal was?

DA:

Well, again, I was busy enough between the classes and doing this work at Honeywell, and then I was on the golf team. We had a really good golf team actually. MIT doesn't give out scholarships, but we were one of the best teams in New England, and I was one of the better players on the team. So, that was a nice distraction where I was – again, I can blame that on my fraternity in the sense that freshman year I'm struggling and one of the upperclassmen says, "You play golf, why don't you play golf for MIT?" I said, "Yes, right, I'm flunking out, I'm going to go out [laughter] and take my afternoons and play golf." He says, "You'll be surprised." He says, "You just cannot do only studying at this place. You do better in your classes if you can get outside, if you can do something. Get some exercise, do something else. Get your mind going on something different." He said, "Just try it." So, I did, and he was right. Not only did I do just fine academically, but some of the people that I know the best, that I still know from MIT, are my golf team buddies.

FT: It is interesting, at one point I was the field events coach at Tufts University. We could quantify that the kids had a higher grade point average when they were in competing than when they were not.

DA: I believe it. I wouldn't have believed it until somebody, again, told me to give it a try from my fraternity, but they did. So, that plus the other coursework keeping you busy, work keeping me busy, I was able to stay away from a lot of the distractions. But at that time, I was also – it happens to everybody that you get burned out from all the engineering classes, all of the rigorous ones, and you start thinking, "Well, I'm going to go into business. I will manage engineers rather than be one," right? I have all these branch points in my life where things happen, and you look back and you realize how much luck there was or just whatever. I had applied to business schools. I had done well at MIT, so I applied to the three best business schools in the country: MIT, Stanford, and Harvard. I got into MIT and I got into Stanford, and Harvard says that, "You are accepted, but in two years. Go out and work, you're too young, still naïve. Go out and work

for a while, and then your business classes will make more sense to you. You're automatically admitted in two or three years, whenever you want." Interestingly, I guess wanted to go to Harvard. So, I turned down MIT and Stanford, and I took a job with a company that spun off of one of the departments, the civil engineering department actually, that did a lot of computer work, computer engineering type work. The whole idea was that I was going to get this experience and then go to Harvard Business School.

FT: Standard MBA kind of thing?

DA: Standard MBA, yes. Then I started working for this company, and it had all sorts of – it was a civil engineering company, so they were designing airports in Puerto Rico and highways. I've driven the highway that goes from San Juan to Ponce in the southern part, and I did some of the design and plotted out all the sections of it along the way.

FT: Cool. I have driven that highway too.

DA: I knew nothing about that. That was the whole thing, I knew nothing about environmental science or some of the construction science we were doing. I even helped to plan the glide paths for the airport down there in Ponce, through the sugar cane fields and so forth, looking at mountains and trying to figure all this out from books and manuals and things. I was using the management of that company as these are the guys I might become, and I decided I didn't like that. I didn't like their life compared to the life of the engineers doing the work on the ground, that that was interesting and challenging and so forth. I saw them as sort of writing proposals and reports and having meetings and negotiating budgets and things. I guess it didn't appeal to me. This company was based in Cambridge, and so I was still living there. I, at some point, then made the decision that I wasn't going to Harvard, never notified him, never went back and said, "You've admitted me." I then applied to MIT civil engineering to become an environmental engineer. The idea was that I was being asked to do all these things that I didn't know anything about, I might as well get some training in it, and I can at least feel like I know what –

FT: That is interesting because environmental was not a big word back then.

DA: Yes, it was a very new field.

FT: The average person's view of what a mechanical engineer and a civil engineer would be very different than the whole idea of environmental kind of thing. Were you looking at it in terms of areas like you mentioned, the road and figuring where an airport would sit in relation to mountains and where flight paths would be and all that kind of thing. Is that the kind of thing you were talking about?

DA: Those were some of the things I did. Because environmental science was new, that was what I wanted to learn more about, with air pollution and water pollution, and to be able to help on the environmental impact studies, helping to design things in an environmentally-sensitive fashion. So, I actually went back not to get a – there was an intermediate degree. They have a master's program and they have a Ph.D. And then there's something called an engineer's degree, which is sort of in between. You don't do a Ph.D. thesis, but you do all the coursework, then I

think you may do a small thesis or something. But you get an engineer's degree and then you could become a professional engineer. That's what I thought I was going to do, become a professional engineer in the environmental area. Again, another one of those bits of luck or serendipity, I went into the civil engineering department, a civil and environmental engineering department. The way they work that, they take in their graduate students and you work for a year taking classes and so forth. Then after that, you choose the laboratory that you will settle down in or the professor you'll work with to do the rest of your work. They also will provide funding for you. I had three or four different faculty that I was talking to about working for them. They would've been anything from somebody who dealt with the water that flows out and into power plants and channels and hydrodynamics and that sort of fluid mechanics. At the other extreme, a very new professor who just arrived from Caltech, François Morel, who was a water chemist, and he did aquatic chemistry. But he was very newly arrived. So, he was one of the ones I was talking to, and I liked him. I liked him a lot. He was very, very smart and very dynamic. So, I chose to go with him. The interesting thing about that, in retrospect, is that François is a scientist. He was in the engineering department, but he is a scientist. His approach to everything is scientific, and it's much less of the nuts and bolts of an engineering approach. He swept me up into that world. I just never thought of this engineer's degree again, went and got a master's and then a Ph.D. in this aquatic chemistry area.

FT: I would like to define that a little bit. There were a couple of things I would like to know about that. As I recall, you got your master's in seventy-seven, was it?

DA: Yes. No, the Ph.D. in seventy-seven.

FT: It was seventy-six.

DA: Or seventy-five. I think it was one of these things where the master's was something that you do just to get it. I don't think I even had to. I think I just wrote a quick thesis and got it. The work was what then counted towards your Ph.D., so it was part of my Ph.D.

FT: So, it was one of these programs that – even though they do not call it that – it is really a Ph.D. program, and somewhere in there you get a master's degree.

DA: Exactly. You get the master's and then you have these tests, the general exam to make sure that you are allowed to go on to get a Ph.D. So, maybe you do the masters just in case that doesn't go well. I don't remember. But anyway, I did get the master's, but then kept going.

FT: See, that was one of the interesting things I saw. You went from mechanical to civil engineering. Then all of a sudden I saw this aquatic thing, which also happened to be in the department of civil engineering. [laughter] One of the things I have always wondered about you was that you had this background that to me did not seem to really fit with the Alexandrium. Now how did this happen?

DA: There's even another part of it too that is interesting. I didn't mention any of this earlier, my mother is a Christian scientist. The reason I say this is that throughout high school, that meant that I never had any of the immunizations. I also was exempt from taking biology classes.

So, it's interesting that I went into college with no biology whatsoever and look where I am now [laughter] in the biology department of Woods Hole. At some point it'll come up again I'm sure that I think that this very quantitative background I had of various engineering courses – and some of it in chemistry and all of that – has allowed me to approach my biology in a very effective way. We'll get into that more, I'm sure. You certainly could never have guessed from my career path that I would end up where I am now or even be doing well at it, because none of my training seems to be directly relevant to being in the biology department. But actually, it does fit, if you think about it. What I did in the civil engineering department was the same thing that I had done in the mechanical engineering department. They allowed you to put together a concentration of courses, which I called aquatic sciences. That was my focal area.

FT: So, this was your title that you put on?

DA: Yes. It was courses that I took at Harvard, courses at MIT in various departments. I started to take a few of the course on soil mechanics and fluid mechanics and structures and so forth.

FT: Tell me a little bit more about this whole program you set up at that level. What kinds of things did you –

DA: Well, for example if you wanted to learn everything you could in that system – so you remember biology at MIT, it still is all cell and molecular biology. They don't do traditional botany or ecology or things like that. That's just not MIT biology department. So, if you wanted any of that training, you had to go elsewhere. I took classes at Harvard, a number of different classes at Harvard, in biology of the algae, for example, and those kinds of things. As civil engineering started to hire people, like my advisor – and then they hired a woman named Penny Chisholm who was trained at Scripps, who's a phytoplankton ecologist. She has a lot of ties with Woods Hole and is still at MIT, a very, very productive and wonderful person. She was arriving the same time I was a graduate student. To follow this line now of you want to be in environmental science and sort of learning as much as you can about the water, then you want these types of courses and you don't want to spend your time then taking, again, soil mechanics or bridges and highways or that kind of thing that civil engineering would offer. So, you could put together this package and then that would be the coursework, and the you of course had to choose a thesis. That's where I keep talking about these pivotal points. That's where, again, serendipity – but I can remember the day that I decided to do work on the red tide was during my graduate time at MIT. When my advisor took a bunch of us – he had five or six students at that time – up to a house that MIT owned, up in New Hampshire, in Woodstock I guess. Maybe it's Vermont. But we had a retreat. We'd talk about various projects that people were doing. But that was my time to figure out what will I do for a thesis. I remember near that time we had had a huge red tide the year before in New England. It had caught everybody off guard, closed down the shellfish beds around the entire New England coast, nobody knew what the story was, a visible red water and a big outbreak. So, it happened, it'd had been in the news and so forth. As students, you're trying to think, "What am I going to do for my thesis?" There are all these different possibilities. Then my advisor and I were talking, and he says, "That red tide is interesting. There's got to be some good chemistry questions in that red tide because it seems to be related to river outflow, and river water has all of these different kind of organic compounds in it that will –" his interest was in trace metals, copper and iron and zinc and so forth. They are

all bound up by a lot of the substances that come out in these tea-colored rivers and so forth. That was the same water that was predominantly associated with this red tide. He says, "There's got to be a story in there." I remember, we were walking around one of these fields behind this house in Woodstock late at night, just he and I, we're just talking about what I was going to do. That was the time where it was like I'm going to do a Ph.D. on, in this case, the chemistry, the water chemistry behind this New England red tide. So, that's what my thesis started out on. I was growing cultures of this organism and adding different amounts of trace metals and some of these organics and so forth. In the course of that, I started to form cells that were no longer swimming around, but would fall to the bottom of these culture flasks. I didn't know what they were. I was looking in papers, and I still didn't know what they were. But I found someone down here at Woods Hole, who's in the geology department, who worked on similar stages in this class of algae. So, I got in touch with him. His name was (David Wall?) in the geology department here. He was very nice, very welcoming. He said, "Come on down. Let me see what you've got." I said, "I think these are the cysts of what we currently call Alexandrium." Then we called it Gonyaulax, that was the genus. He looks at them under the microscope – he was over there in the Smith building – and he says, "No, these are not the real cysts of a dinoflagellate." He was able to explain why they weren't. He says, "This is some sort of a temporary stage." But then he said, "But you know what, we had an outbreak right here in Falmouth just last year of red tide. Let's go grab some mud from the area where this happened and look at it." So, we did, we went over to a little perch pond over in Falmouth and brought some mud back. He had this process that he and his colleagues had worked out where you sonicated it in certain ways with this sound, basically, that breaks particles apart and you sieve it. We looked under the microscope, and then there are these cells. He says, "I think one of these is going to be this Gonyaulax." I then would isolate them and put them into little chambers and get them to germinate. Ultimately, got some to germinate that I then grew and turned into Alexandrium. So, we have then discovered the real cyst, the resting cyst, the seed of Alexandrium, this red tide species. You think about how this went. I'm doing chemistry and civil engineering. Then I'm starting to deal with someone down here in Woods Hole, and we start getting into some real biology. What was happening there then during my thesis was that I was gradually moving from water chemistry and engineering issues towards biology. Once you've discovered this new resting stage for the dinoflagellate that causes red tides in this region, just amazing questions that you can ask. Even though I only found this cyst almost out of curiosity of what was I seeing in the bottom of my cultures, all of a sudden it opens up new doors. So, then I was coming down here a lot and doing field studies in this little perch pond, looking at when these cysts germinated, when the blooms happened, and making a nice connection between their germination and then the increase of the cells. Then when the cells would die off, you'd see new cysts being deposited and so forth. So, the way my thesis went, the first chapter, the first piece of it, was all about trace metals and the way they affect this organism and the way it swims and it becomes non-modal. The next chapter was one about not only these temporary type of cysts that we I had brought down from these cultures, but then the real cysts, describing what they were, describing them, and saying, "This is an important stage." Then the third one was let's see how these cysts function in the natural world here. Sure enough, they were the real reason. You could start to explain when these red tides were occurring, where they're occurring, on the basis of that cyst. So, the thesis was hard to call a civil engineering thesis, but it was [laughter] a good one. Then several things happened then, again, that's almost out of my control. I was applying for jobs, right? "What are you going to do? You got your

Ph.D."

FT: Let me interrupt you right at this point. Because there are several stages during your life that you have to make very, very significant decisions. When you are finishing up the program you have, one of the decisions you have to run into, am I going to be the professor? Am I going to be the guy in the tweed company leather-arm patches, or am I going to go into research or am I going to do some kind of combination of the two? Do you recall any of your thinking about how you arrived at your decision?

DA: Well, I know I was being broad in my job applications, and I was going to let the jobs help me decide which ones I really want to do. Because I was applying for a job with Patel, which was out on the West Coast, a big consulting company. Remember that I'm in a water chemistry program. So, I also was applying for civil engineering jobs, straight civil engineering jobs, where they had water chemistry. I was offered one at the University of Maine, I was offered one in Edward Island, in traditional civil engineering department. So, it was almost going into sanitary engineering, water quality, wastewater treatment plant design, that sort of thing.

FT: If it was Battelle, it certainly would have been. [laughter]

DA: Or Battelle, did the same thing. At the same time, I had the science emphasis that I was also trying to follow through on.

FT: That was something that really – to use a current term – kind of turned you on at that point, the science applications?

DA: Yes. Being outdoors, being in the water, seeing a biological system that you're trying to unravel and getting the pieces of it, it was good. But then I wasn't sure I was going to be able to make a career out of it or just whether I was trained well enough to go on in that field. Then one of these bits of serendipity happened again. I had applied for a postdoctoral scholarship down here at WHOI. We have this postdoctoral scholar program. It's a very prestigious program. In that year, I got to the short list. I was very, very close to getting the offer, and then I got declined. So, I got a letter saying, "Sorry. You got very close." The person that was my sponsor down here called me and said, "It almost happened, but we didn't get it." I said, "Well, that's the way it goes and just like you get other job rejections or whatever." I was traveling around looking for jobs. But unbeknownst to me, Jim McCarthy, who is one of my thesis committee members – he's a professor at Harvard, very well-known and respected professor at Harvard, trained at Scripps, a real oceanographer – he really liked my thesis and he liked me and he liked the work. Unbeknownst to me, he called up somebody down here at Woods Hole and was just livid about the fact that I didn't get a postdoc. He just apparently said things like, "This is a hugely important topic and this is the guy who was on top of it, and he's going to be easily funded. You'd be a fool not to take him as a postdoc." This is what I've been told in retrospect. Whoever he talked to eventually found some money somewhere, and then I get a phone call saying, "Oh, well we have found a position for you. So, now you can have this postdoc." [laughter] I was off, again, looking for jobs elsewhere, I had given up. But then because of that intervention, which I didn't ask for, which I didn't – again, it just totally surprised me that it had happened, but it was just because he really liked the thesis I had done. So, I came down here,

FT: One of the points you bring up I think is so important that a lot of people do not realize. During that period of the thesis, man, if you have got someone that is willing to go to bat for you, [laughter] it is such an important – it is not just a guy just sitting there. [laughter] They really have to get you in, break your first trip to the spring training for the Red Sox, so to speak.

DA: Well, especially somebody with Jim McCarthy's stature too. He was very well respected down here. I guess one of the things he was told was that because I had worked with Dave Wall, I had already gotten some exposure to Woods Hole. It was as if they were metering this out in little doses, and I had already gotten mine and it's time for someone else to get theirs. He just told them that was really silly because here was a – he saw far enough ahead. He said that "Don not only should be able to do a really good postdoc, but he should be able to keep this field going and working in these salt ponds, like Perch Pond and so forth. There's just research for a decade here."

FT: That was very far seen.

DA: It was.

FT: Because when I was doing Bob Gagosian's oral history, one of the things we addressed was the departments that he had helped establish here in the institution, those that he felt he was successful at and those that he felt that he was not successful at, he had not been able to establish a good whatever. This is someone that is really looking down the road in terms of – because when I was a kid, a red tide occurred, but you did not hear about them very often. It just exponentially kind of exploded. [laughter]

DA: You'll hear in a little about, in this case, one of the department members in biology who had that same kind of vision. That was John Ryther. We'll get to that in a bit.

FT: But you essentially said that what made your decision on this, where you were going to go, was you wanted to be a working scientist. You wanted to be out in the field and do what people think scientists really do.

DA: I look back and I also see that there are people who have wanted to be biological oceanographers their whole life. I don't know whether Larry Madden is one, but he might be a good example of someone who took all of the classes, who then learned all these skills, did a Ph.D., and then was looking for a postdoc in exactly this field, got it here and then continued. They had this tunnel vision. They've done it and they've succeeded at that. I admire those people. But it's so obvious that wasn't the case for me. All along, whether it's undergraduate or graduate years, said, "Don, you're going to be a postdoc or a scientist in the biology department at Woods Hole Oceanographic Institution." I would say, "No way. No, that is not a logical extension of the trajectory I'm on right now."

FT: But you know what is very interesting, as you have described all your experiences, almost what you planned out for yourself is now thought of as being cutting edge in terms of scientific education. When you said you could kind of design your own course and look at – and you

talked about having several systems that you wanted to look at. I think of so many places now that will take freshmen and sophomores in, and they will give them a semester of each one of a whole menu of different things. Then a little bit later on, you could start to make some decisions as to what you would really like to get yourself involved in. Because most kids who go to college do not have a clue what they want do. [laughter]

DA: Even after college they don't know. I took the position here – that's what I was driving at is that other people would've just jumped up and down and in hysterics when they get an offer to get a postdoc at Woods Hole. But I remember it being matter of fact about it, "Okay, that's what I'll do," it's was sort of – again, the way that things were still so amorphous in my mind about what I was going to do and all of that.

FT: But did you not teach a year at MIT?

DA: It was just the time between I graduated or I finished in February, and then I came down here in September. So, it was eight or nine months I was an instructor up there.

FT: Was it during that time that you decided you did not want to teach and such or –

DA: See, I already knew at that point that I was going to get the postdoc down here, or I knew within a month or two of that that I was going to get the postdoc. I think it was actually because I was also about to get married and my wife was an MIT graduate student, so between her finishing and doing other things, the time to begin was going to be September. So, I got some work up there in the meantime.

FT: But that is you bringing another thing that is – I guess it could be classified as serendipitous. But when you are engaged or you are getting ready to get married, then other factors start to enter into what your decision is going to be.

DA: Tell me about it. You'll see in a little bit how important that was in, again, the continuation of my career. Because that very nearly took me away from Woods Hole, as I'll tell you. Basically, my wife – her name is Kay, Kay Hudock; she kept her name – was working at MIT, but then applied to the MIT Sloan School, business school. So, while I was in the Ph.D. program in civil engineering, she was over at the Sloan School. We were together for a good two, three years or more.

FT: How did you meet?

DA: At a party that a mutual friend had. She always tells this story that we talked – I was playing squash at the time, and she wanted to learn how to play squash. I said I would teach her. She viewed me as a squash instructor and not as a date or anything like that. I viewed this as this is a way I can get to know this woman, right? [laughter] She was right. She said, "Well, once he teaches me how to play squash, at some point he's going to not want to play squash with me anymore because I'm not that good, but I'll at least learn." Not that I forgot, but I was busy doing something, and then at some point she called me. She called me and said, "You said you were going to teach me how to play squash." So, we would then meet at the MIT squash courts and

play. Then ultimately, went out to dinner, and at some point made the transition from – in her mind, it was really in her mind. I thought these were all dates. So, I had to get her over into a different mode, and ultimately that happened. Then we spent a lot of those last couple years, while we're studying, but together. Then we got married in May of that year, of seventy-seven.

FT: You must have been thinking it was all pretty worth it about that time. [laughter]

DA: Everything was going well. I had a postdoc, I'm newly married. She got a good degree, an MBA from Sloan School. So, then she got a job over in New Bedford at the Acushnet Rubber Company as a finance person. So, then we had –

FT: I think I just heard about that on the public radio this morning. Did they make parts for automobile?

DA: Acushnet Rubber makes all of the windshield wipers and ball joints and things like that, O-rings.

FT: Well, they were just talking about their current difficulties in this financial climate.

DA: Well, they took over a lot of those old factories over there, the old brick factories and so forth. Again, that has a bearing on all of this. They also have a nice rubber division, the golf division, which is – you hear about Acushnet Titleist golf balls and so forth. But she was in the other one. So, I come down here. I am having this wonderful experience in science because I've got this perfect system to study over in Perch Pond where these red tide cells germinate every spring and we get a bloom that's reproducible and you can just – it's like having it right in your lab. It's only a few miles away. I got some funding right away from the National Science Foundation and from Sea Grant. So, I'm a postdoc, but I'm already funded. I've got a program going, which is just what Jim McCarthy said would happen. I'm getting invited to places. I got invited to Japan because they have got a big red tide problem. They had just started to read papers from me about these cysts, and they realized how important they were to this whole process.

FT: That is pretty early in your career to be – [laughter]

DA: Very early. It's very early. In fact, there's a funny story there. I was corresponding with this man over there who wanted me to come for three weeks to Japan and travel around and give lectures at these different universities, based on all this work I had done at my Ph.D. and at WHOI, the first several years at WHOI. I agreed and I went over there, and he said he would meet me at the airport. I come out of the area by the luggage and there's a van.

FT: Had you done any traveling out of the country at that point?

DA: At that point, no. I think I had a trip to Brazil that was before or after that one that was – I think it was after. This might have been one of my first ones.

FT: So, this was going to be something basically pretty exotic.

DA: Yes. Basically, a fellowship for three weeks, travel around Japan, have somebody with me constantly twenty-four hours a day taking me from university to university. It was a real special thing. But as I'm there at the luggage area, there's a man on the side with a sign saying Dr. Anderson. So, I walk over and I say, "I'm Dr. Anderson." He looks right at me, he says, "No, you're not. It's not you. It's a different Dr. Anderson." Okay, fine, then I leave and wait to find who's waiting, who's supposed to meet me there. Nobody does. Eventually, everyone's gone except for this guy. I walk over and I said, "Which Dr. Anderson are you looking for?" He says, "Well, it's not you." I said, "I'm Don Anderson." He says, "Well, I'm looking for a Don Anderson, but he's a much older man." [laughter]

FT: You anticipated my next question. [laughter]

DA: He says, "He's a much older man. He's written all these papers about cysts and red tides and so forth." I said, "Well, that's me." Finally, he understood and so forth. But the Japanese system is such that they expect that you're going to be very senior when you've made these kinds of discoveries and written a lot of papers and so forth.

FT: I was all set to ask you about how old were you at this time, because this is pretty advanced.

DA: This would have been in eighty-two, eighty-three. So, what is that? What is it? I'm born in forty-eight. I'm thirty-something, thirty-four, something like that. [laughter]

FT: You were hardly out of the washing-the-test-tube stage here.

DA: Anyway, that was a wonderful trip. Again, it was because they recognized the importance. It's the same thing Jim McCarthy had recognized, the importance of those discoveries and the whole dynamic of these (problems?). So, here I am, I'm traveling around. Again, I mentioned there was a trip to Brazil. They had had a big red tide and they wanted some experts to go down there, and I was part of a group that went there. So, I'm really enjoying my career. My wife, meanwhile, is very unhappy. She's staring at a brick wall, has thirty minutes for lunch. It's a factory mentality and so forth, so she's not pleased at all. But we're trying to deal with this. There are two things happening in parallel here. They had a job opening in our department for a phytoplankton ecologist in our department. But they wanted it to be a blue water phytoplankton ecologist, meaning someone who works on algae out in the middle of the ocean, right? So, our department chairman at the time, George Grice, comes up to me and he says, "Don, you should apply for this job." I said, "But I'm not a blue water phytoplankton ecologist. I work in the nearshore, the coastal zone. Those are the algae I work on. It's not blue water." He said, "You should still apply anyway, just to let the department know you're interested in staying here." So, I did. Then a few months later, he comes up to me and says, "Don, we've had to drop your name from the list." I say, "Why?" He says, "Well, because you're not a blue water oceanographer." [laughter] So, that was it, I had thought, things went. Then interestingly, they got down to one candidate who came here and gave an interview to talk about the Chesapeake Bay, which is certainly not blue water.

FT: I was going to say.

DA: Because there were things about his talk that people didn't like, next thing you know, he's been rejected. At that point, there was a department meeting. Again, I knew nothing about it. That's where John Ryther, one of our senior statesman from this institution – this department, one of the original people here at Woods Hole – I have heard, argued to everybody that they should put my name back on the list, that they should hire me for this job. Because, again, the vision he had, this was a big area. I've already made an impact. I have got the right things going for this, and he really saw a future. So, because of that, I get offered a job here as an assistant scientist. Coming in the back door, it's again serendipity, whatever you want to call it. Yes, I applied, but it wasn't something I expected to get. It fell in my lap because not only did someone give a job interview that was the wrong one to give, but then they had someone inside who saw some potential and argued for me.

FT: In the almost two hundred oral histories I have done, one of the things that I have noticed about the oceanographic that I think is very unique here but I think is very, very valuable here, is a lot of the people that work here do not necessarily flourish in the field in which they trained. [laughter] Somehow they get people that they just know can make an impact in whatever they trained to work in here. In a sense, when Ryther was talking about this as a possibility, I think that is the thing they were looking at, "we'll will make this grow" kind of thing. Go ahead.

DA: I was just going to say that the postdoctoral program is so important in the staffing of this institution. In my department, if you asked all the people who were postdoctoral scholars to raise their hand, usually well more than half of the people in our department, sometimes two-thirds will raise their hand. So, it is a way that the department gets to know people and gets to see what they can do. It also gives those postdocs a chance to see if they can thrive in this WHOI environment, which it does take a special kind of person.

FT: We are going to talk about that some. [laughter] There are times I have heard about this particular environment and my toes curl. This is a real tough thing. Particularly during the winter, it is a very isolated community in many ways. What you have here, those are going to be your friends, they are going to be the people that live around you.

DA: But it is the fast lane in many ways, a lot of culture, a lot of things, a lot of multitasking. So, it does select for certain kind of person. But see, the interesting thing was that was all going on, and here I've got myself in a new position. My wife's really unhappy and she's starting to look for jobs elsewhere. As a result of that, I have to actually start looking for a job elsewhere too. I looked for and was given a job at the University of Rhode Island, back into their traditional civil engineering department. But the reason that I actually accepted it was that they also gave me a – I was told I was going to get an adjunct appointment at the school of oceanography at their Bay campus there, and I would be given the lab there too. So, it was this tiny, little civil engineering department that did nothing but sanitary engineering, sewage treatment plants and so forth. But there was this connection to the oceanography group and even a place to have a lab on that campus where the oceanography school is. So, I accepted. I actually accepted that job and said, "I will go there." My wife is, meanwhile, looking at various positions, and lo and behold finds one at Wheaton College. She basically comes back to me one evening, she says, "Well, I've got a job and I'm going to take it. It's what I really want at

Wheaton College working for the vice president for finance. By the way, it is equidistant from Marion, where we live, to Norton, versus Norton to the area of Rhode Island we'd be living in if I went to URI." So, she said, "So, honestly, it doesn't matter to me where you go to work." I think she knew that I wasn't really happy about the idea of moving. Then, again, what happened is there was a space war at the campus at URI, and next thing I'm being told, "Sorry, we'll give you the adjunct appointment, but we can't give you this lab at the Bay campus." That's all I needed to say, "You guys have changed the rules. It's over. [laughter] I'm turning it down." So, I was able to back out on that acceptance and stay here. That's when Penny Chisholm, who I mentioned was part of my thesis committee, has been a friend for a long time, she said to me after that, she says, "Don, you would have been miserable at URI. This is the place for you here." She should have told me that before, but she knew enough about the situation. So, then it's solid. At that point, don't have to move, I can continue what I'm doing, my wife's happy. So, everything is on the up and up.

FT: Well, I know you have a commitment here, and we are getting closer. There is one more thing that I would like to have you comment on because you just talked about it. One of the real issues with being at the Woods Hole Oceanographic Institution is that all these highly educated men and women that come here very often have wives or husbands that are also highly educated and want careers of their own. It is very difficult to get the two working together. So, I guess kind of a lucky thing that that –

DA: Well, it's a lucky thing. It's also depends on who you have with you. Again, it's part of the story. We had our first child in eighty-six, Brian. My wife was working and I was working. I would actually stay home and work at home a day a week to take care of Brian and would stay home a day a week, and then we would have three days of daycare. So, that was a hard thing to do. I remember in those days, we went to some dinner, Thanksgiving dinner or something, with a number of my colleagues in this department. I remember sitting there, my wife and I have this little baby. We're looking around and everybody that was there, all of the scientists that we were having this meal with were from my department, were divorced, every single one of them right around the table. We're the only one with a young child. It was like, my gosh, this is what this place does to people. It's really hard to keep a keep a marriage together, and here we are with a young child. Our children were spaced four years, sometimes five years apart. So, then we had another child, another boy, Eric. At that point, my wife was still working up at Norton, and they wanted to actually make her the vice president for finance there. Then she faced the hard decision of – at that point, they want her to live on campus. That is then a long, long drive to get down here. We had two children. She basically then said no, she didn't want it. So, she actually resigned and left there, and then took care of our son Eric and Brian at that point. She did part-time work here and there, but it was more her decision. That's one of the things, again, you can look back on and say, how does one balance that? I was willing and trying to do whatever I could to help, but thank goodness I was never put in the point of having to make a decision where it's my career or it's your career, which one are we going to go with, which some couples do have to deal with. It's got to be difficult. In my case, my wife made that decision for us.

FT: See, I have asked people [laughter], kind of being forward, and said, "Well, why was the decision then that it was going to be your career rather than your wife's?" Most of the time, the jaw just drops and there is no ready answer that comes out from that.

DA: We didn't talk about it explicitly, like I say, your job or my job. I think it was just that in her case, she was seeing enough stress about raising two children and trying to take a high level – a vice president job at a college. She saw enough stress in her life and just decided that she didn't want to do that right then.

FT: I know. Time –

[end of transcript]