

Interviewee: DONALD RICHTER
Interviewer: MARY EMMA HARRIS
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[BEGINNING OF TAPE 1]

MEH: Donald, how did you come to be at Black Mountain College?

DR: Well, actually it started much earlier with my introduction to Buckminster Fuller.

I was a student at Institute of Design in Chicago and was taking courses in product design. One of my professors was Professor Buckminster Fuller – a very enjoyable class. I

really learned a lot from

Bucky. He has been my

mentor, so to speak. I

remember working with

him with little ping pong

balls and gluing the ball

together. We made various

kinds of models demonstrating his geometry. We also made a geodesic dome

out of aluminum panels, folded triangular panels, a 31-grade circle dome, and

erected it in a big classroom. But then we made, also made a structure which

he called the "necklace dome." It was a 31-grade circle made of tubes with

strong cable, aircraft cable, inside the tubes and through the joints. So this was

one of our class projects. It was interesting. We assembled it and tightened up the cables in its assembly. It was at that time we discovered what he called "involute geometry" – involute construction. In any case, after graduation in 1949, we went with Bucky to Black Mountain College – a number of us. As I recall there were seven or eight, including my brother Bob Richter and Jeff Lindsay and a number of other people. One of the things we brought with us was the geodesic dome, the necklace dome, and erected that in Black Mountain College. Bucky came up with the idea of putting inflated bubbles on top of the dome for insulation but also for acoustic control. It was a very beautiful structure. When we involuted the structure by pressing through every cross, X-cross, in the structure, it became extremely rigid. That harks back to some research I did, and perhaps I have some photographs of this-- Okay, this is a photograph taken of the dome, this necklace dome, geodesic dome, erected in Black Mountain College. As you can see in the photograph, it is really a very strong structure to support all these people suspended from the necklace, hanging from the necklace.

MEH: Yes, I think this one – If you look, it's not, people aren't suspended. It's the one image-- You were showing how light it was.

DR: Oh yes. Yes, that's right. There were two people sitting on a platform suspended from it.

MEH: Oh, I see. So those people are suspended. They're not sitting on a platform on the ground.

DR: It's hanging from the dome. So there are some other pictures with numerous people hanging from the dome. So it was a rather interesting structure.

MEH: Now the plastic cover was the cover that you were using for insulation and –

DR: Insulation and waterproofing. Bucky has created so many interesting things that have been used subsequently in other structures. As a matter of interest, in London, in England, Miro [PH] Company built a large series of dome – geodesic domes – that were covered in a much similar manner. So this preceded Bucky's work and our work here by many years.

MEH: Now before you put this down, your arms are probably getting tired. Are they okay? The plastic covering was a-- had air inside the sections?

DR: Yes, they were inflated.

MEH: They were inflated. Okay.

DR: Yes. Like the large bubbles, or pillows, that were inflated.

MEH: You made that at the college?

DR: Yes.

MEH: But you brought down the necklace dome. You had already really done that at ID.

DR: Correct. These ideas are used in subsequent, by other people in other kinds

of structures – other geodesic domes, as a matter of fact.

MEH: Okay, now we're ready.

DR: Okay, this was a model dome that my brother, Bob Richter, and Harold Young, also of the Institute of Design, made this model. We worked in our basement at home and assembled and made all the components for this model showing a 31-grade circle dome. This was also transported to Black Mountain College and assembled there. I do have a black and white picture showing its use there.

MEH: And the black and white picture we'll look at in a minute, but that shows the scale. This makes it look enormous, but actually it's a very small model.

DR: That is correct.

MEH: It's not mountain size.

DR: No. It's, oh it's probably two-three feet across, to give some idea of the scale.

MEH: The idea was that you could have a climate controlled situation here with a house inside under the dome?

DR: That's right. One of the--

One of the things we

thought would make a lot

of sense would be to use it

as a skybreak to create a

desirable climate inside

and have very open living

environment inside the

dome. I don't know that it shows in that picture, but there were to be screens

that could be revolved around the dome to blot out the sun where it's a problem. We found it to be an interesting project, school project, and we did take that along with us to, to Black Mountain College.

MEH: Okay.

DR: Okay, here you see an aerial view of how the various rooms could be arranged within the dome, and some shade covers over various rooms. It was a very intriguing idea.

Various examples have been tried. Not exactly like this, but living inside transparent domes. I think the idea is still something in the future, for common use.

MEH: Okay, let me just-- Okay --

DR: There are various views of the dome from different angles.

MEH: Okay, go ahead.

DR: Okay. This is a black and white photograph of the dome model set up in one of the classrooms at Black Mountain College in 1949. In the background, hanging from the wall, is a picture or a model of a hexpent dome, a model that I made using hexagons, pentagons as compared to the 31-great circle of the geodesic model house. The geometry of the hexpent dome turned out to be a much more efficient system.

MEH: The dome here, the model, shows the actual scale, whereas that other photograph is so cleverly done it makes it look full size in the mountains.

DR: Yes. As a matter of fact, it did. It was quite nice.

Very early on I became interested in structural shapes, shell shapes, and made independent study of various kinds of domes. These were formed in plastic.

It is an involute type of dome, as you see in the model, and on the top model picture, if you want to focus on that, shows the three different sizes of hexes and pentagon that are used to make up the model. In the lower picture, it shows the stiffness of that model made of very thin

plastic. But it was still extremely rigid. This concept has not been really exploited as of today.

MEH: So this was –

DR: This was all independent study before Black Mountain.

MEH: Was this done at the Institute of Design?

DR: Excuse me. That was after Black Mountain College.

MEH: And this was – if you left Black Mountain in about '49, you were doing this independently, not working for a corporation.

DR: That's correct. During that period of time I was in writing contact with Buckminster Fuller who was at M.I.T.

MEH: Okay. That would have been about what year?

DR: That was 1950. Here you see a model, a variation of the 31-grade circle, which was actually done before going to Black Mountain College, and

that was done at my home again. We had a nice workshop down in our basement, and so I made a model of a stayed-rib – called it a stayed-rib dome structure.

The next picture down shows a frame that was being made to mold fiberglass panels to make a full-size structure. I don't happen to have photographs of the completed mold.

We did –

MEH: There are photographs. There's one in my book.

DR: There are. Yes.

MEH: I have a question. Now was this being done at Black Mountain?

DR: No, this was actually done at my house before Black Mountain College and then at Black Mountain College we continued the project, but had difficulty with the curing of the plastic. We never did complete it. I remember using one of the empty classrooms and building – making it into an oven – and heated the room as much as we could to try and get this plastic to cure. It never really did cure, so it was an interesting experiment, but incomplete in the sense that the plastic never did set.

MEH: I've been told that before. Some people thought it was the humidity, or the heat –

DR: It could – we tried heat. It was humid. Humidity should have helped, so I think the plastic [?], or the accelerating agent probably was bad, or maybe mixed the

wrong combinations. None of us had chemical degrees or plastic understanding, so we were novices in that area.

MEH: Now the one at the bottom, picture at the bottom –

DR: Yes. That is – that started-- that again was my independent studies, and that was some of the types of involute that actually preceded the ones I showed to you on the previous series of pictures. The one I show there on the bottom was not a very rigid system, but I learned a lot from it.

MEH: Let's go back a little bit more. Where were you before you went to the Institute of Design? How did you end up getting there?

DR: Well, I was a merchant seaman during World War Two.

MEH: Where are you from?

DR: Chicago. While I was in high school I was a merchant seaman on the Great Lakes and on ore boats during one summer and the following summer – started at sixteen. [NOTE BY RICHTER: The ore boats were actually large ships that carried iron ore from Deluth to the steel mills in S. Chicago.] The following summer I was in the other ore boats, and then while in high school I tried to join the Navy. I took a test. I had bad eyes. But had bad eyes and I

passed the mental exams for being a radio operator, the written exams, but I didn't pass the visual even for that position. When I went in for an exam for the draft, they said I was 1-A. I said, "Well I don't want to go in the army. The navy won't have me. I'm a merchant seaman--" So, I went to the West Coast – took a bus to the West Coast and got aboard a ship and went out to the Philippines, getting ready for the invasion of Japan. Fortunately saved many thousands, thousands of lives with the atomic bomb because if that had not ended the War it would have been a very bloody war in Japan. They would have fought very fiercely. But in any case, we went from there – since the War ended, we took the load of cargo to China and Singapore – not Singapore but Shanghai. First ship in there in Shanghai after the War. I saw – something that has influenced me forever is the hardship those people lived under, the conditions. We visited some of the small villages, and I became very interested in the idea of housing and what can be done to help these people. From there I went to the East Coast and went to South America, and again I saw people in very terrible living conditions in Brazil and Paraguay and Uruguay. So came back to Chicago and heard about the Institute of Design just beginning, just opening up. It was an outgrowth of the Bauhaus. Many of the professors were from Germany and the Bauhaus. My mother had suggested I go there, and it was a good suggestion because that's where I met Bucky. Actually after Black Mountain College he was in Boston, and he called me up and asked me to join him at M.I.T., to assist him in his teaching, which I very gladly did.

MEH: So what background in education did you have to prepare you to assist him?

Had you been to college already?

DR: Well, yes. After graduation, after graduating and after Black Mountain College, then I was doing the independent work and in correspondence with Bucky and showing him the various things I'd developed. At that time he asked me to join him.

MEH: So this was after Black Mountain.

DR: After Black Mountain College, yes.

MEH: That year at the Institute of Design, who were the students who were working with Bucky?

DR: Oh, there were, there was, of course, a large class. I don't have a photograph with me, but I do have a photograph of all of us inside the dome. I'm sorry I didn't bring that. Inside of the aluminum panel dome that I described earlier. Harold Young, Jeffrey Lindsay, oh my – if I saw the pictures it'd help my memory. Of course, my brother and Nakagawa. See my brother was actually in that class behind me, but he still had some classes with Bucky. Bucky taught a couple of years there.

MEH: So, a whole group of you came with Bucky down to Black Mountain.

DR: Right.

MEH: Do you remember physically how you traveled? How you got there?

DR: Bus. We took a bus, and someone met us and took us to Black Mountain College. We came in small groups, you know. It was a wonderful time. Black Mountain College was very unusual, and we were certainly free to experiment

and do what really interested you. Of course, we had, as people from Institute of Design had, a lot of common interests. We would have discussions, and some of them got fairly lively on design of domes and how it should be done. Jeff Lindsay and I were great friends but we didn't always see the same solutions from a design standpoint. I remember a group getting up very early in the morning and climbing one of the mountains there and being on the top of the mountain to watch the sun rise. What an experience that was. That's beautiful – It's beautiful country. It's too bad the college is no longer there. But it's –

MEH: Did you have any idea really what to expect before you went?

DR: Had no idea at all. I'd never, I'd never heard of the college, but Bucky was going there and that's what we wanted to do.

MEH: This might seem like a really impossible question to ask, or maybe you would think it's got to be so obvious, but how would you compare the physical situation as well as the working atmosphere at the Institute of Design with that summer at Black Mountain?

DR: Oh, they're very different certainly. The Institute of Design was actually located in a very old building, a granite building, four stories high, and we had classes in the basement all the way up into the attic. So it was certainly more academic, more controlled, with specific classes you needed to reach and achieve a Bachelor of Arts degree. Black Mountain College – of course, at that time we were not, I was not looking for further degrees, but further experience. So, in that sense it was very fulfilling. I didn't, I really had no idea what it was going to

be like. All the people that were with this had some more GI Bill so they used that. Of course, I didn't have GI Bill. I paid for my own. But I ran out of money, so they gave me a scholarship to join there, which I greatly appreciated.

MEH: You arrived at Black Mountain on the bus. Did you get to know many of the regular Black Mountain students that summer?

DR: Several of them, but we pretty much worked together as a team, trying to develop this fiberglass dome. So we did meet at various – it seems like we had interesting parties every second night. I remember one of them was with Bucky and all of us got T shirts. Perhaps you heard that story before. But we all had T shirts and different names printed on them, and it turned out to be the names of the disciples. [LAUGHS] Bucky had "J.C." on his. But it was a lot of fun. But we did go – For example, going up to the mountain, we did go with other people from the area and who were familiar with it. We would have gotten lost ourselves, certainly.

MEH: Do you have any memories of Kenneth Snelson that summer?

DR: Oh, yes. Yeah.

MEH: Did he really join your group, or was he apart from your group? Do you recall?

DR: I don't recall. I certainly know Snelson. He must have been with the Institute of Design, but there were two different classes and so perhaps he was with my brother's. I was in the class ahead of my brother.

MEH: But he was at Black Mountain that summer.

DR: Yeah. As I recall, he was there.

MEH: Yeah, but he had come from Oregon, not from –

DR: Okay. So then he must have been – But his sculptural interest, and I know one of the things he made was this discontinuous compression tower. It was an interesting solution. Many years later Bucky – this may be jumping ahead, but he suggested that we look at discontinuous compression domes. I had no idea what he was referring to because I was only familiar with Snelson's structure, and I thought that wouldn't make much of a good structure. It may be a nice sculpture but not a good structure. But he was really referring to a different system that is now being used extensively in large stadiums, this discontinuous compression with fabric cover. I had no idea that's what he had in mind. He was a very fantastic guy. I think he learned as much from his students as the other way around, and maybe that's always true because we're –

MEH: What was Bucky like then?

DR: That's hard to describe.

MEH: Well, try.

DR: [LAUGHS] He was very much the professor, I would say. Yet, he didn't talk down to people. He talked at a level. He was always interested in any thoughts we had and tried to encourage independent thinking. I know Jeff Lindsay felt that – he became very concerned about his ideas being stolen or that kind of thing. He and Bucky had some disagreements about that. I knew Bucky – or knew Jeff later on, and he started to feel the same way about me, that I might be taking things of his. So he became very reclusive. But Bucky is – It's hard to say, because I think our relationship, my relationship with Bucky, was something special, because I did join him at M.I.T. and after that I went with him

back to New York and Long Island, and rented a room close by so we could talk. So, I learned a lot from him after graduation. He then suggested at one point that I should go to an aircraft company, work as an engineer in an aircraft company, and I thought, you know, that's – After Black Mountain College, felt free to do anything, try anything, so I said, "Yeah, I'll try that." I saw an ad in the paper that an aircraft company on Long Island was looking for engineers, so I said "Hey, I'll apply for that." I went in and applied for it, talked to their Chief Engineer, and he asked me a simple question of "If you had a series of bolts in a joint in this pattern, how would you figure out the load in each bolt?" I looked at him and said, "I don't know." [LAUGHS] I had no idea. Came back and told Bucky this. He said, "I'll give you the name of two books on aircraft engineering." He gave the names to me, and I bought those books. I studied them from cover to cover. At that point my mother passed away in Chicago so I went back to Chicago. At that time I saw another ad in the paper and – looking for aircraft structural engineers in Fort Worth for Convair. So, I went to apply for that job, and I showed some of the pictures like the ones we discussed earlier. They said, "Okay, you're hired. Report to--" They didn't ask me the question about bolts. I could have answered it at that point, but they didn't ask. So anyway, I went to Fort Worth, Texas, and they gave me a badge, Senior Structural Engineer. Of course, I didn't know senior from junior from whatever, but it turned out that most of the people that graduated as a structural engineers were filling out charts. They were junior engineers, and here I was getting all the interesting work. So, again, If you feel you can do it. So I learned

on the job, and they transferred me to San Diego and still in contact with Bucky. In fact, in Fort Worth we sponsored a meeting at one of the colleges there for Bucky to speak to the students and display. I went to San Diego, transferred to San Diego to help them with their aircraft, vertical aircraft jet and delta-wing, so I did some work on that, and maintained contact with Bucky. When he got the project to do the dome in Ford Rotunda, he asked if I would analyze the structure to get his building permit, which I did. He got the permit, and I went out there to visit and see how it looked, and it was beautiful.

MEH: [TECHNICAL REMARKS] Let's go back a little bit to Black Mountain, that summer. Do you remember Natasha Goldowski?

DR: Yes.

MEH: Do you remember any disagreement between she and Fuller about the metal? She was a corrosion expert, a chemist. Do you remember any discussion between she and Bucky about the metals being used in the dome and whether they would corrode or whatever?

DR: No. No, I was not aware of any such discussion. There could well have been. She was an interesting person. Her mother was there and I recall they were there from – they were there from Russia, and one day we all decided to have a party in the evening for Russian Navy Day. [LAUGHS] I remember she became very upset with us, because we were really poking fun at it, and really probably shouldn't have but, you know, we were kids and young people. Anyway, she became very upset that we would celebrate in that manner. We had the Bebopky Room [LAUGHS] and all kinds of fun things.

MEH: Do you remember a celebration of was it Bastille Day that summer? Does that ring a bell?

DR: No. No, we didn't – We probably did. We had many different celebrations but I don't remember that specific one.

MEH: I think the Black Mountain people called you "The Spheres." Does that ring a bell at all?

DR: The group? No. I never heard them call us that, but it's –

MEH: The Disciples or The Spheres.

DR: The Spheres, yeah.

MEH: So, at Black Mountain do you have any memories of mealtimes at the college?

DR: Oh, just vaguely. Just vaguely. It was a large room, I remember. I do have one very definite memory of that, though. At one time I was helping distribute the food and had a tray of some food and took it to a table and rested it on the back of a chair to set the food out on the table. The chair tipped and the food [LAUGHS]. What a mess. But that was my one and only attempt at being a waiter.

MEH: Did you do any other Work Program – did you work on the farm at all, or have any other assignments?

DR: No, they didn't have that – No, I was not involved in that at all. I don't know that any of our people were, in the Sphere group. Perhaps they were. I don't recall.

MEH: What about Vashi and Veena? Do you have any particular memories of them?

DR: I remember the names, but nothing specific.

MEH: The Indian dancers?

DR: Yeah. No, I don't. I remember going to various parties with the various people at Black Mountain College and the various dancers, yes, but I don't have any specific recollection.

MEH: Okay. They had actually come down with Bucky from the Institute of Design.

DR: Oh, really?

MEH: They were not part of the regular Black Mountain community. I'm just going to throw – I'm asking you to remember things that happened over fifty years ago, so I'm just going to throw some names out and see what might trigger some memories. What about Emerson Woelffer. Did you have anything – Did you take his class, or know him?

DR: I knew him, and he came from Black Mountain College. Or no, I'm not sure about that. He was there. Yeah. I remember that we went to his place one time, and he showed us some of the paintings he did that night. Apparently, he would like to take a few drinks in the late evening and then paint all night. In the morning he'd wake up and sort through them and select the good ones and had to throw away or repaint the others. I don't know. But I remember his telling us one time that he went down to Mexico to paint. I don't know if you heard that story. But anyway he went down there with all his paints and came back with some very brilliant paintings, and was showing a group of artists and people who were interested in art his various paintings. One of the people said, "It's obvious that these were paintings of Mexico, they're so brilliant and colorful." He said, "What they didn't understand is when they filled my order for paints

they neglected to put black color in there," so all his [LAUGHS] colors came out brilliant. But he was quite an interesting person. I enjoyed him.

MEH: What about the Walleys? John and Jano Walley. They were from Chicago.

DR: Yes, they were from Chicago, yes. As a matter of fact, they owned – no, they rented a place right close to the river in Chicago, on the North Side, not too far from where the Institute of Design was located. So, they rented the second level, and a very spacious, nicely decorated in modern taste. Down below there was sort of a storefront, and the storefront is where we assembled that necklace dome I told you about. But interestingly, behind that, in the back of the room, there's a door and there was a room in back and they opened the door and showed us in there. It was a – what, a betting place for horses. Horse betting. Of course, it was totally illegal, but that's where it was going on. They were doing it at the time. But interesting. They were a nice couple. They taught at the Institute of Design. I was not a student of either one of them, but we got to know them at Black Mountain College because we went with them to Black Mountain College, met them there, but also enjoyed talking to them in their own house, in their upstairs. They showed us some of the work they'd been doing. I have lost contact with all of these people, actually. Are they still alive, do you know? No.

MEH: Did you go into the surrounding area much, besides just hiking up the hill?

DR: We went into Asheville one time, several of us. It was interesting. There was Nakagawa, a fellow that was an American Indian, I suppose –

MEH: Martinez?

DR: Martinez, yeah. I think he was from Mexico. But anyway, he was a Mexican Indian combination. Harold Young and – what was the fellow's name from Milwaukee. I don't remember his name. Anyway, we all went to Asheville and went to a bar. Walked in at the bar to have a drink, and the waiter, barkeep, came up to me and he says, "Is that a black guy?" I said, "Yeah, he's black." He said, "Well sorry, we can't serve him here." So we all walked out and we went into another neighborhood and went into a black bar, and they refused to serve us. So, [LAUGHS] we didn't have any drinks that day. But we did buy a watermelon off of a black fellow there, and he gave us, gave me too much money in change. So I gave it back to him and he couldn't believe it. But we did enjoy the watermelon. But that's about, about the only traveling we did outside of, outside of the college.

MEH: Do you have other particular memories of the college? Anecdotes? Things that we haven't discussed?

DR: Not really. I remember their building that sort of cantilevered out over the, towards the water. It was a beautiful building. Nice individual rooms that various artists would do their works.

MEH: Did you have your own little study in the building?

DR: No, as a matter of fact, I'm doing a lot of painting now and I have a – I just finished – Well, after learning engineering and co-founding TEMcor and doing all the geodesic domes and all the work we've done very successfully, I retired and went back to – My original interest was art, and I wanted to be an artist. So diverting to aircraft engineering was quite a diversion, but I've been very

thankful to Bucky for that experience because, again, he helped me find jobs and directed me in the right direction, so that was very helpful. But I'm now back to the idea of painting and I've just finished writing a book – science fiction I guess would call it, a book with my paintings, and I'm looking for a publisher of that. Planned – I have some forty-two paintings with poetry that I'm going to assemble and have published. So, I've returned to my root, so to speak, of art. Aside from that, Bucky has been very much of a humanitarian, and which I felt very close to because of my experiences as a merchant seaman. I feel it's so important for us to help solve mankind's problems, and there are immense problems. I have several approaches and what I call "autonomous village," autonomous co-op village – not really a co-op. It's a condominium – I guess would be a better description – that could be used for some of the developing countries. The rest of the world, the developing countries, depend on us to find solutions to their problems. If the developed world – , the United States, Japan, Europe – , if we were to falter and fail, humanity would be sunk. They could not survive in anything but the most primitive form. So, it is up to us to find, and help them find, solutions, and working with them. So, this is one of the things, my goals of trying to bring about some solutions and have just come up with a new design for a windmill that I think will be very helpful. I have some solutions in housing concepts, and I think that the world is in desperate need for solutions, and I hope to have some input in that direction.

MEH: Okay, let's go back a little bit.

DR: To Black Mountain College.

MEH: No, no, no. I think – Like I say, I'm asking you to remember things that happened fifty years ago. However, let's leave Black Mountain and you touched on a couple of things you did afterwards but I'm not sure I have the sequence straight. That was the summer of 1949, and when you left Black Mountain, where did you go?

DR: After Black Mountain I went back to Chicago for awhile.

MEH: Well now were you at the Institute of De –

DR: No, it was after – I graduated from the Institute of Design. Then went to Black Mountain College for the summer. Then went back to Chicago and started doing some of the independent research and in contact with Bucky at M.I.T. Then after I joined him at M.I.T., and one of the fellows I remember was a fellow by the name of Yost and I met him many years later, became an architect. But anyway, then I joined Bucky at Long Island.

MEH: Let's go back to M.I.T. First, let's go back to Chicago. I just want to touch on some names and some things. Do you remember in Chicago a Warren Outten and Mary Phelan?

DR: No.

MEH: They had been at Black Mountain in '48, and knew Fuller there. I didn't know if that was a connection. What about – When you were at M.I.T. – I was talking to a student, Carroll Williams, and he was talking about having worked in the '50s in some group in Boston on domes, related to something Bucky was doing. Does that ring a bell at all?

DR: No. I was not – No.

MEH: I'm just trying to see if these connections come together. Okay, so you went to M.I.T. Were you studying then, or just working as Bucky's assistant?

DR: No, just as his assistant.

MEH: And what was he teaching?

DR: Architecture.

MEH: Okay. So, what did you do then? Is that when you did the airplanes?

DR: No. Then Bucky and I went back to Long Island. At that time I made a wire dome of – a wire dome that was about ten feet in diameter of an equilateral triangle dome, or nearly equilateral triangle – a geodesic dome. I made a frame, a metal frame, a jig. I took that into the city, into New York, into Greenwich Village, and found someone that made shade covers and various sculptures out of wire. I convinced them to take their wire and put it on my frame and spot weld these into a series of triangles. Then I carried – I can't remember how I managed. I didn't have a car at the time – how I managed to get all those wire panels and made a ten or fifteen foot diameter dome back to Long Island, but somehow I must have carried them on the subway. But anyway I did take them back. We assembled it out at Long Island. I think it was at – where was that now? Anne Fuller's cousin, I believe, had a place out in Long Island so we assembled it there and made some photographs. Perhaps you've seen them. But in any case, from there I went back to Chicago after my mother passed away. Subsequently got a job as an engineer with Convair. Transferred to San Diego where I met my wife, Irene. I married her after nine weeks courting. We're just going to be celebrating our fiftieth anniversary in November. I have

two daughters and four grand – One granddaughter, four great-granddaughters. All daughters in our family. So anyway – From there I helped Bucky with getting approval for the dome for Ford. Then he suggested I work for Kaiser Aluminum, and he recommended I go to Kaiser Aluminum. I did that and got a job back in New York with Kaiser Aluminum. I was a design engineer, and they transferred us to Chicago and then to Oakland and then back to Chicago. But while in Oakland, I was asked to work with college students on a small – oh it was about thirty feet in diameter – aviary dome for the Oakland Park Zoo, for their zoo in the park. Which we did. The students had it built, and it was erected, and Henry Kaiser saw that. It was just a birdcage, essentially, and Henry Kaiser said to my boss, "I want to build a geodesic dome in Hawaii for a convention center." So, I was assigned that project to design and build that dome. I designed it, and subcontracted people in North Carolina – the name – anyway. People in North Carolina. So, they made a couple panels, structural panels, in aluminum, and we went there to see a test. I designed the test, and we went there to see a load test of putting bricks on this subassembly, and it performed very well. That allowed us to get our permit. Then the dome was partially fabricated in California, then shipped to Hawaii and erected there in record time – five days. It worked out beautifully. Everything fit.

MEH: Is it still there?

DR: It was just removed about a year ago. As a matter of fact, I went to Hawaii and talked to them. They were just going to remove it, and I talked about it being a historical monument. I told them, "Well why don't you just disassemble it?"

because they wanted the space for a high-rise hotel. I said, "Why don't you disassemble it, and we'll re-erect it for you up on top of your hotel, as a crown and save it." I guess, the architect didn't like that idea. But anyway, it has been removed. So, I was involved in many domes constructed around the world. In fact my brother, Bob, went to Moscow to erect the dome we designed and fabricated in Moscow, Russia.

MEH: Now let me clarify something here. When you say "we", were you doing this independently?

DR: No, this was us – all employed by Kaiser Aluminum as a design engineer. My brother, Bob, was working with Kaiser Aluminum at that time in Chicago, while I was in Oakland, California. So, they transferred us back to Chicago to head up that program. Bob was assigned to go to Moscow to erect the dome, Kaiser Dome, that I designed in Moscow. Bucky was there and met some of the people who photographed – That's where Nixon had his discussion with Khrushchev and became – I think it was called the Kitchen Discussion. My brother Bob had some very interesting stories of working in Russia.

MEH: I can imagine. Go ahead.

DR: So, then after that, I erected a number of domes around the country, many of them for colleges, a type of geodesic dome. One of the companies that was licensed by Kaiser Aluminum to erect domes was a company called R.C. Mahone. I got tired of being transferred back and forth, and I wanted to go back to California from Chicago, so I joined R.C. Mahone West and met the Vice President in Charge, a fellow by the name of Mitchell – Walter Mitchell – and

Roger Rogers, and we worked together. I was Kaiser – I left Kaiser, joined R.C. Mahone, and R.C. Mahone liquidated so the three of us formed TEMcor, and that was thirty-six years ago.

MEH: And tell me just what is TEMcor?

DR: TEMcor is Torrance Engineering Manufacturing Corporation. So we design, engineer, and manufacture domes and related structures, and they're erected all over the world. I don't know, there must be probably thirty or forty thousand around the world now. The most recent are the largest aluminum domes in the world, erecting them quite regularly. Just finished erecting ten of them, four hundred feet in diameter, in Taiwan. The largest is still in Long Beach, 415 feet in diameter. But we're working now on some close to a thousand feet. I still do some consulting work for TEMcor, although I'm retired now, six, seven years.

MEH: So, of the people who were at Black Mountain –

DR: Well, before I leave the TEMcor, soon after forming TEMcor I asked Bucky if he would be on our Board of Directors, and so he was on our Board of Directors until he passed away. We've been close in many respects, through all those years.

MEH: Probably of the people from that group at the Institute of Design, you're probably the most long-lived relationship.

DR: I think so.

MEH: Now of the other people, your brother Donald –

DR: Robert.

MEH: Robert, right. Your brother, Robert Donald. Did he continue constructing domes? Is that basically – What did he do?

DR: No. After TEMcor was formed, Kaiser got out of the dome business completely, and so TEMcor was the only one making domes. So my brother worked at other projects with Kaiser Aluminum until he passed away.

MEH: Now the other people, the Lindsay brothers –

DR: There was only one that I met.

MEH: There was Alan and Jeffrey.

DR: Oh, yes, Alan.

MEH: There were two.

DR: Oh yes, I forgot his –

MEH: And one of them has died. I don't know –

DR: Jeffrey died.

MEH: Jeffrey died several years ago, quite a few years ago.

DR: Yes. Yes.

MEH: Right, now he did work with some domes, didn't he?

DR: Yes. He moved to Los Angeles and got married there, and I visited him a couple times. He had a nice place up in the mountains above Hollywood. He proposed some very large domes and showed me some of the designs, but he became very – after that became very secretive, so he didn't – Although I've never used any of his designs – we work on our own systems – years later – and our company was in Torrance – I heard, after he died, that he had a small I

company in Torrance. I didn't know that. Working at housing. I have no idea – None of the details, but that's the last I heard of him.

MEH: I think all of you being inspired by Bucky had wonderful ideals with respect to housing and such things. I seem to remember when I talked to him – this was in the early '70s – I remember it was just on the telephone, and I remember again he was very secretive about what he was doing.

DR: Yes.

MEH: He said that he had some housing plan that was going to solve the world's problems, essentially.

DR: Oh, really. Yes.

MEH: So, the ideal was there, I think, instilled in all of you.

DR: I have a paper in my briefcase, you might be interested in reading that, about the housing.

MEH: Okay, now let's go back a little bit more. I sort of want to clean up all the people who were there that summer. So there were two sets of brothers, Jeffrey and Alan Lindsay. Do you know anything about Alan Lindsay?

DR: Nothing. I don't remember his being there.

MEH: He was. He was in Montreal. I have no idea – He was the one that I tried to get in touch with a couple of years. The number is still listed but I got a machine and he didn't respond. So there were the two Lindsay brothers. There were the two Richter brothers. There was Martinez, and I can't remember his – it wasn't Emanuel. Ysidore Martinez. Do you have any idea what he did after leaving the college?

DR: As a matter of fact, I met him briefly about four years ago, and he is in southern California. I was giving a talk at that college in San Diego, and he showed up there. We met and talked a little while. He said he has been working on many different things, mostly in the engineering of health artifacts, and I believe he said he worked on artificial heart and some other things. He was very proud of the accomplishments. We didn't have much time to talk but that's the last I've heard of him in just that short period of time. Of course, at such conferences it's hard to have any discussions of any depth.

MEH: Okay, it's good to know that maybe I can find Martinez.

DR: Yes, he should be around.

MEH: Of other people, what about Nakagawa? Did you have any contact with him after – ?

DR: No. I had no contact with him after Black Mountain College.

MEH: What about the Godfreys, Mary and Eugene Godfrey?

DR: Yeah. I don't know where they're at. I've lost track of them, really.

MEH: You didn't work with them on domes after the college –

DR: They were there at Black Mountain College. I don't remember them being at-- in the classes, though. They might have been in my brother's class.

MEH: If I remember correctly, and I could be very wrong, for awhile they had a company out here and did like playground domes, you know, something like that. That's something I can check out.

DR: There's another fellow that's out here that – what's his name now – who's doing playground domes. Of course, there could be a lot of people doing that.

MEH: Was he from that group?

DR: No.

MEH: Yeah, they would have been doing this very early, like back in the fifties and early sixties.

DR: No. He was not out there, this person I was trying to think of.

MEH: Those are the people I think of immediately in the Institute of Design group that came down. I think there were twelve of you, and that's why you were known as The Disciples, so I may have forgotten someone.

DR: Yeah.

MEH: Looking back, clearly Buckminster Fuller has been the –

DR: Oh, I was just thinking – I wonder if we could recognize some of the people in that photograph. [BREAK IN RECORDING]

[END OF RECORDING ON TAPE 1; TAPE 2 BEGINS]

DR: – her name.

MEH: At Black Mountain?

DR: At Black Mountain, a friend of Jeff Lindsay. He used to call her "Baby," so I don't know what her real name was. [LAUGHS] I don't know if she was – I don't recognize her from Black Mountain College – or from Institute of Design.

MEH: Tell me, do you think that Black Mountain College had any influence on you in terms of your later work or attitudes or whatever?

DR: I think only, just being free to try anything.

MEH: You really did feel that at the college?

DR: Yes. Yes.

MEH: Did you feel that at the Institute of Design?

DR: Not so much. No. No, that was more structured. I guess in the art classes, perhaps. There was less structure there. I took one class in painting, and I didn't enjoy that. It was not my favorite subject – although I like painting. I was not that much into abstract art. I learned to appreciate that a little more later on in life, but I still enjoy Surrealist perhaps more, or realt (?) painting.

MEH: Do you remember a photographer Hazel Larsen Archer?

DR: No.

MEH: What about – do you have any memories of going to a local beer joint, Ma Peeks?

DR: [LAUGHS] No.

MEH: Do you have any memories of snakes at Black Mountain College?

DR: No, but I remember black widow spiders.

MEH: Really. Was that your first encounter with the black widows?

DR: Oh, yes, yes. Oh, we have a lot of them out here. It's very prevalent in California.

MEH: What about – There was a drama production that was done that summer. Do you remember that at all?

DR: No.

MEH: I'm really trying now – I'm going fishing now, fishing for memories. Let me see. Did you go swimming anywhere at Black Mountain?

DR: No.

MEH: This is really a Yes and No session. What do you think basically, philosophically, was Buckminster Fuller's influence on your life?

DR: Gee, that's hard to say. Well, I think probably to think freer. Before meeting him, I thought of housing and I thought of modular houses and rectangular things, so he put another dimension to reality. So, that has been a major difference. Major. Other than the effect of his, being so close and influencing what I did and where I did it, and just been almost like a father to me.

MEH: Any other thoughts before we turn this off?

DR: No, I don't think so, except for one thing. My mother was very clairvoyant, and when I was quite young, she said I would meet a man in college that would influence me. Didn't realize, remember, that until many years later – and that certainly came to pass.

MEH: Sure did. Actually, in the back of my mind was another question that I lost. Oh, tell me about the film. You were saying that you had a camera? Was this eight millimeter?

DR: No, it was not films, pictures. I do have a camera, and it had some eight millimeter, but they were not films that I took. That's why I don't know what's on them. But I do have some films. I'm not sure even now where I got those films. I can look at them again and see if there's any indication, or maybe I could even open up and look and see if I can see, just looking through –

MEH: Just looking through the light without putting them on a projector –

DR: Light, yeah. Yeah, see if I can identify anything. I could do that.

MEH: Good. Now the photographs that you have here, did you have a camera? Did somebody else make those [OVERTALK].

DR: No, those are – That was my camera. I took those, yeah.

MEH: Do you still have the negatives?

DR: Probably. The problem is finding them.

MEH: If there could be other prints on the roll, if you have the negatives – you know, if you made the photographs. It would be interesting to see if you made other photographs there that are not part of this group.

DR: Yeah.

MEH: Yeah, this material really should go with Buckminster Fuller's things at Stanford. Probably a lot of other material.

DR: Yeah. Well, a lot of things I have are just correspondence back and forth, and he would send ideas to me and I would do the same in reverse.

MEH: That's significant.

DR: Yeah. Well, I'd like to have a copy of this –

[END OF TRANSCRIPT. END OF INTERVIEW]