Finding Aid to The HistoryMakers® Video Oral History with Shirley Ann Jackson

Overview of the Collection

Repository: The HistoryMakers® 1900 S. Michigan Avenue Chicago, Illinois 60616
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Creator: Shirley Ann Jackson

Title: The HistoryMakers® Video Oral History Interview with Shirley Ann Jackson,

Dates: September 22, 2006, November 4, 2006

Bulk Dates: 2006, 2006

Physical Description: 27 Betacam SP videocassettes (7:28:08).

Abstract: Physicist and university president Shirley Ann Jackson (1946 - ) became the first woman to receive her Ph.D. in physics from MIT in 1973. She chaired the Nuclear Regulatory Commission for four years and was named president of Rensselaer Polytechnic Institute in 1999. Jackson was interviewed by The HistoryMakers® on September 22, 2006, November 4, 2006, in Rensselaer, New York, Rensselaer, New York. This collection is comprised of the original video footage of the interview.

Identification: A2006_102

Language: The interview and records are in English.

Biographical Note by The HistoryMakers®

Renowned physicist and university president Shirley Ann Jackson was born on August 5, 1946, in Washington, D.C., to George Hiter Jackson and Beatrice Cosby Jackson. When Jackson was a child, her mother would read her the biography of Benjamin Banneker, an African American scientist and mathematician who helped build Washington, D.C., and her father encouraged her interest in science by assisting her with projects for school. The Space Race of the late-1950s would also have an impact on Jackson as a child, spurring her interest in scientific investigation.

Jackson attended Roosevelt High School in Washington, D.C., where she took accelerated math and science classes. Jackson graduated as valedictorian in 1964 and encouraged by the assistant principal for boys at her high school, she applied to the Massachusetts Institute of Technology (MIT). Jackson was among the first African American students to attend MIT, and in her undergraduate class she was one of only two women.

In 1973, Jackson graduated from MIT with her Ph.D. degree in theoretical elementary particle physics, the first woman to receive a Ph.D. in physics in MIT’s history. Jackson worked on her thesis, entitled The Study of a Multi peripheral Model with Continued Cross-Channel Unitarity, under the direction of James Young, the first African American tenured full professor in the physics department at MIT. In 1975, the thesis was published in "Annals of Physics."

After receiving her degree, Jackson was hired as a research associate in theoretical physics at the Fermi National Accelerator Laboratory, or Fermilab. While at Fermilab, Jackson studied medium to large subatomic particles, specifically hadrons, a subatomic particle with a strong nuclear force. Throughout the 1970s, Jackson would work...
in this area on Landau theories of charge density waves in one- and two-dimensions, as well as Tang-Mills gauge theories and neutrino reactions.

In 1974, after two years with the Fermilab, Jackson served as visiting science associate at the European Organization for Nuclear Research in Switzerland, and worked on theories of strongly interacting elementary particles. In 1975, Jackson returned to Fermilab, and was simultaneously elected to the MIT Corporation’s Board of Trustees. In 1976, Jackson began working on the technical staff for Bell Telephone laboratories in theoretical physics. Her research focused on the electronic properties of ceramic materials in hopes that they could act as superconductors of electric currents. While at Bell laboratories, Jackson met her future husband, physicist Morris A. Washington. That same year, she was appointed professor of physics at Rutgers University. In 1980, Jackson became the president of the National Society of Black Physicists and in 1985, she began serving as a member of the New Jersey Commission on Science and Technology.

In 1991, Jackson served as a professor at Rutgers while working for AT&T Bell Laboratories in Murray Hill, New Jersey. In 1995, Jackson was appointed by President Clinton to the chair of the Nuclear Regulatory Commission. In 1997, Jackson led the formation of the International Nuclear Regulators Association. In 1998, Jackson was inducted into the National Women’s Hall of Fame; the following year, she became the eighteenth president of Rensselaer Polytechnic Institute. Jackson remains an advocate for women and minorities in the sciences and, since 2001, has brought needed attention to the "Quiet Crisis" of America’s predicted inability to innovate in the face of a looming scientific workforce shortage.

Shirley Ann Jackson was interviewed by "The HistoryMakers" on September 22, 2006.

Scope and Content

This life oral history interview with Shirley Ann Jackson was conducted by Julieanna L. Richardson on September 22, 2006, November 4, 2006, in Rensselaer, New York, and was recorded on 27 Betacam SP videocassettes. Physicist and university president Shirley Ann Jackson (1946 - ) became the first woman to receive her Ph.D. in physics from MIT in 1973. She chaired the Nuclear Regulatory Commission for four years and was named president of Rensselaer Polytechnic Institute in 1999.

Restrictions

Restrictions on Access

Restrictions may be applied on a case-by-case basis at the discretion of The HistoryMakers®.

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Related Material

Information about the administrative functions involved in scheduling, researching, and producing the interview, as well as correspondence with the interview subject is stored electronically both on The HistoryMakers® server and in two databases maintained by The HistoryMakers®, though this information is not included in this finding aid.
Controlled Access Terms

This interview collection is indexed under the following controlled access subject terms.

Persons:

Jackson, Shirley Ann, 1946-

Richardson, Julieanna L. (Interviewer)

Burghelea, Neculai (Videographer)

Subjects:

African Americans--Interviews
Jackson, Shirley Ann, 1946--Interviews

African American college presidents--New York (State)--Troy--Interviews

Women college presidents--New York (State)--Troy--Interviews

African American women physicists--Interviews

African American women college teachers--New Jersey--Interviews

Physics—Study and teaching (Higher).

Organizations:

HistoryMakers (Video oral history collection)

The HistoryMakers® African American Video Oral History Collection

Rensselaer Polytechnic Institute

HistoryMakers® Category:

ScienceMakers

EducationMakers

CivicMakers

Administrative Information
Custodial History

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Preferred Citation


Processing Information

This interview collection was processed and encoded on 8/11/2011 by The HistoryMakers® staff. The finding aid was created adhering to the following standards: DACS, AACR2, and the Oral History Cataloging Manual (Matters 1995).

Other Finding Aid

A Microsoft Access contact database and a FileMaker Pro tracking database, both maintained by The HistoryMakers®, keep track of the administrative functions involved in scheduling, researching, and producing the interview.

Detailed Description of the Collection

Series I: Original Interview Footage, September 22, 2006, November 4, 2006

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_001_001, TRT: 0:30:27 2006/09/22

Shirley Ann Jackson slates the interview and shares her favorites. She then discusses the background of her father, George Hiter Jackson. Jackson’s father was a quiet but hard-working man who served in the United States Army during the invasion of Normandy in World War II. He later worked as a postal worker and taxi driver. Jackson’s mother, Beatrice Cosby Jackson, grew up as the youngest of seven children. She completed high school and taught for a short period of time before she met and married Jackson’s father. Jackson is the second of four children. She recalls her childhood in Washington, D.C., describing her elementary school experiences in segregated schools, prior to the case of Brown v. Board of Education in 1954. She also shares vivid descriptions of her childhood home on Farragut Street, N.W. in Washington, D.C., and the structured nature of regular routines in her home.

Segregation in education--Washington (D.C.)

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_001_002, TRT: 0:29:52 2006/09/22

Shirley Jackson discusses how her mother, Beatrice Cosby Jackson, worked in a home for mentally handicapped children in Laurel, Maryland. Jackson then talks about her childhood home environment, neighborhood, and elementary
Finding Aid to The HistoryMakers® Video Oral History with Shirley Ann Jackson

school in detail. Jackson describes her parents as soft-spoken, but encouraging. She then recalls the transition to her neighborhood school, Barnard Elementary School, after the ruling of Brown v. Board of Education in 1954. Jackson consistently did well in school, but remembers the change in competition amongst her peers at Barnard, the majority of whom were white and came from well-educated middle class backgrounds. After performing well on an “I.Q.” test in sixth grade, Jackson was placed on her school’s honors track. As a youth, Jackson enjoyed spending time at the library, but she was also social. She formed a group with some of the other African American girls in her class called “Teens of Personality,” or “TOPS.”

Washington (D.C.)--Social life and customs.
African American high school students
African Americans--Washington (D.C)--Social life and customs
School integration--Washington (D.C.)

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_001_003, TRT: 0:30:11 2006/09/22

Shirley Ann Jackson traces her education from elementary school to high school and comments on the changing demographics of her school from segregation to integration and back to a system of de-facto re-segregation. She discusses her teachers and her fondness for some of her teachers. By the time she was a senior in high school, Jackson took college-level classes as part of the honors program, and she graduated as valedictorian of Roosevelt High School in 1964. She recalls her love of math and her interest in studying bumblebees during the summer. She then describes her perspectives on the social climate, noting the measures her parents took to keep their family safe. She remembers the March on Washington in 1963 and listening to Rev. Dr. Martin Luther King’s speech. Jackson closes this section of the interview discussing her college application process and her choice to study at Massachusetts Institute of Technology.

African American High School Students
Massachusetts Institute of Technology--Admissions
School integration--Washington (D.C.)

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_001_004, TRT: 0:29:20 2006/09/22

Shirley Jackson returns to the topic of integrating Barnard Elementary School in Washington, D.C., and her respect for her black female teachers. Jackson then discusses receiving two competitive scholarships and her transition to college life at Massachusetts Institute of Technology. In her entering class of nine hundred students, there were only forty-three women and five African Americans. Jackson and Jenny Rudd were the only two African American women in their class. Jackson recalls living in the same room in McCormack Hall throughout her time at MIT. She remained distant from her peers at MIT, but found a social outlet in pledging for the Iota Chapter of the sorority, Delta Sigma Theta Sorority. The sorority drew members from schools across New England. Jackson also found an outlet in volunteering at the Boston City Hospital, working with children with serious diseases and deformities.

Delta Sigma Theta Public Service Sorority--Membership
Education Integration--Washington (D.C.)
Massachusetts Institute of Technology--Social life and customs
Shirley Ann Jackson recalls her college years at Massachusetts Institute of Technology. She was admitted in 1963, and describes working in the laboratory of John Wolfe, where she learned how to formulate gold iron alloys for studies in Ferromagnetism. Due to the unwelcoming campus atmosphere, Jackson had difficulty in motivating herself to attend class on Mondays during the second half of her sophomore year. Jackson continued to do well in her classes, however, and declared her concentration in electrical engineering. During the summer after her sophomore year, Jackson returned home to work for Martin Marietta Corporation, one of the organizations that had given her a four-year college scholarship. Jackson had negative experiences and left the position one month into the summer, opting to work for the superintendent of schools. Jackson recalls Jerry Friedman and Tony French as two of her physics professors.

Massachusetts Institute of Technology--Students.
Martin Marietta Corporation--Employees.
Ferromagnetism--Mathematics.
Electrical engineering--Study and teaching.

Shirley Ann Jackson talks about some of the black faculty at MIT. She became the president of the Iota Chapter of the sorority, Delta Sigma Theta Sorority during her junior year at MIT. Jackson then discusses her application to graduate school and with the assassination of Rev. Dr. Martin Luther King, Jr., her decision to stay at MIT to continue her graduate studies and work to improve the quality of education for minorities at MIT. With some of the other black students on campus, Jackson created the black student union and was later a part of the Task Force on Educational Opportunity.

Massachusetts Institute of Technology--Faculty
King, Martin Luther,--Jr.,--1929-1968--Assassination
Delta Sigma Theta Public Service Sorority--Elections
Civil rights movement
Mentoring in education--United States.

Shirley Jackson discusses her involvement with the Delta Sigma Theta Sorority during her college years at Massachusetts Institute of Technology. She served as president of the organization during her junior and senior years and recalls how her pledge class had to essentially rebuild the organization after a large group of seniors graduated. She then describes the experience of moving from the segregated yet sheltered environment of her neighborhood in Washington, D.C. to the unfriendly and often hostile environment of Boston, Massachusetts. After discussing her motivation for continuing her education in light of such adversity, Jackson talks about her summer employment and undergraduate research topics.

Delta Sigma Theta Public Service Sorority
Race relations—Massachusetts—Boston
Massachusetts Institute of Technology
Shirley Jackson discusses how she earned her B.S. degree in both physics and materials science in 1968. She opted to stay at Massachusetts Institute of Technology (MIT) with hopes of improving the quality of education for minorities and women. Jackson ultimately studied theoretical elementary particle physics for graduate school. She discusses the topics of her graduate research under her advisor, James Young. Jackson also discusses how she continued to build a network of support for minorities at Massachusetts Institute of Technology. Jackson was co-founder of the black student union, a member of the Task Force on Educational Opportunity, and a continuous participant and supporter of Project Interphase, a summer program created to support minorities in their transition to college life at MIT.

Massachusetts Institute of Technology
Washington (D.C.)
Physics--Study and teaching (Higher).
Mentoring.
Student activities--Massachusetts--Cambridge.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_002_009, TRT: 0:30:30 2006/11/04

Shirley Jackson describes her professional career after receiving of her Ph.D. from Massachusetts Institute of Technology in 1973. She worked with Fermi Lab for a couple years, and she received a fellowship from the Ford Foundation to work at the European Center for Nuclear Research in 1975. After discussing her desire to change the direction of her career to focus on solid state physics, Jackson recalls how she was hired by Bell Laboratories in 1976. She details her research and explains its practical applications in modern technology.

AT & T Bell Laboratories--Employees.
Semiconductors--Technological innovations
American Physical Society.
Employment--Physicist
Fermilab TM
European Council for Nuclear Research

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_002_010, TRT: 0:29:54 2006/11/04

Shirley Jackson discusses the relevance of her research work and its applications to modern technology. She then talks about meeting her husband, an experimental physicist, and starting a family while they were both working at Bell Laboratories. Jackson gave birth to her son, Alan, in 1981. Jackson then describes her path to becoming involved in science, technology and public policy. Her first advisory position was as a member of the board of New Jersey Resources from 1982 to 1995. Jackson was also involved with many of the support programs for minorities and women at Bell Laboratories. She served in executive capacities in both the American Physical Society and the American Institute of Physics. She later served on the board of the New Jersey Commission on Science and Technology, the board for the Public Service Enterprise Group, and as head of the board of the Nuclear Oversight Committee.

AT & T Bell Laboratories--Employees.
American Institute of Physics
Shirley Jackson discusses her role on the advisory boards of New Jersey Resources, Public Service Enterprise and the Nuclear Oversight Committee, the Institute of Nuclear Power Operations, Core States and Sealed Air Company. Jackson became a consultant for Bell Laboratories and a professor at Rutgers University prior to being appointed chair of the Nuclear Regulatory Commission (NRC) under the administration of President William Clinton. She was confronted with a number of issues during her tenure including the Government Results and Performance Act, the safety of material in nuclear operations in former Soviet States, the principle of design basis documentation for the construction and upkeep of nuclear power plants, and the application renewal process for older nuclear power plants.

Shirley Jackson discusses her work with the Nuclear Regulatory Commission (NRC). Jackson created the International Nuclear Regulators Association (INRA) in 1997 and served as its chair for the following two years. Through the INRA, the United States and other western countries worked with nuclear power plants in the former Soviet States to improve their safety standards and regulations. Jackson also researched the issues involved with closing the Millstone power plant in Connecticut and in implementing the license renewal program for nuclear power plants. Jackson also worked closely with Russia and South Africa during her tenure. She closes this section of this interview by describing her appointment and the lengthy security clearance process to become a commissioner of the Nuclear Regulatory Commission in 1995.

Shirley Jackson discusses her appointment to the Nuclear Regulatory Commission and her strategies for managing the activities of the NRC in light of monthly hearings before Congress. In 1998, Jackson was asked by President Clinton to serve another term as chairman of the Nuclear Regulatory Commission (NRC), but she was also contacted about serving as president of Rensselaer Polytechnic Institute (RPI). Jackson opted for the latter, explaining that she had accomplished much of what she had set out to accomplish as chairman of the NRC. Jackson briefly talks about the history of RPI before discussing her goals for the direction of RPI. Within a year after the plans were approved by the board of trustees, the school received a $360 million unrestricted gift commitment. Since the beginning of Jackson’s tenure as president, RPI has also expanded its research into biotechnology and the life
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shirley ann jackson

sciences.
Clinton, Bill, 1946-
Biden, Robert Hunter, 1970-
Nuclear Regulatory Commission (U.S.)
Rensselaer Polytechnic Institute.--Employees
Educational fund raising.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_002_014, TRT: 0:30:48 2006/11/04

Shirley Jackson discusses the success of Rensselaer Polytechnic Institute (RPI) in six academic areas, including biotechnology, nano-technology, and the arts. RPI has also worked to improve undergraduate education. Jackson served as president of the American Association for the Advancement of Science in 2000. During her tenure, she spoke on an issue she named the “Quiet Crisis,” or the declining population of qualified American researchers and scientists. She argues that a greater effort is needed to attract minorities and women to the fields of science and engineering. Jackson also shares her perspectives on energy security, citing the need for improved technology and innovation. She ends the interview by reflecting on her legacy, hoping that her work with various institutions will allow them to address some of the issues of the twenty-first century.

African American college presidents
African American Physicists--Legacy
Aging--Workforce
Rensselaer Polytechnic Institute--Employees
Science--Study and teaching (Higher).

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP001, TRT: 0:00:41 2011/08/08

The other thing we used to do was to race go carts. And we used to race them in the alley because, again, we weren’t going down the middle of the street. But we would race, and, but we would cross the street because we would go from one alley, across the street, down another one until we had no more downhill slope. And my father [George Hiter Jackson] used to help us design our go-carts, and so we just, we used to love that. And I really liked it, and getting into what it would take to make the go-cart faster and so my sister, Gloria and I, in particular, used to like this, doing these go-cart races.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP002, TRT: 0:01:23 2011/08/08

And, but it wasn’t all work and no play because a group of us formed the, a group of African American young ladies, we formed a club, the TOP’s. It stood for the Teens of Personality. Who came up with that name? I don’t remember. It might have been Marilyn, a woman named Marilyn Stewart. We had thought about Girls of Personality, but as you know, that parallels a political party. So we decided that the TOP’s were better, besides, we said we were tops. So the Teens of Personality seemed to work. And we even had our own little uniform, little dress code, which we would wear, all of us on Fridays. We had green pleated skirts, white blouses and little white leaved blazers and we had these little hats, little cloth turn-up hats that were green, that had T-O-P on them (laughter). And so that’s what we wore on Fridays.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP003, TRT: 0:03:56 2011/08/10
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Ah, we used to have these things, they’re basically like weeds, called hollyhocks in our backyard. And so I used to watch the bees fly into the flower, and I would be watching them, you know, sampling. And I wanted to study them more closely, but they would fly away, of course. And so I decided that I wanted to capture them. I never was enamored about having an insect collection because, other than maybe the ability to do the anatomy, these were dead things. And I wanted to study them as live creatures. And so because of the nature of the hollyhock flower, it was easy to close the petals and pluck the flower and drop it into a mason jar or a mayonnaise jar and punch holes in it. And so I was just interested in questions, and I’m still like that, questions that said, that tried to answer what would happen if there was a different diet and if one had an artificially produced diet, meaning sugar and so on, would that make these bees behave differently. If I put in the bumble bees with yellow jackets and wasps, who would emerge, and would they behave differently? And if I kept them in the dark or in a cool place, what would happen versus being in the light and a warmer place. So I used to keep them, you know, under our, I mentioned that we would go into the basement from the yard and go a half level down. And then to go up on the main floor of the house through the back porch, one had to go a half level up. So that meant that there was a distance under the back porch that was a crawl space. And so when I started collecting the bees, I knew we weren’t gonna keep them in the house as such. So what I did was the space under the porch was actually cemented over, and I washed it, I used to wash it every week with a hose. And I would, there were boards under the back porch that provided like shelves, shelves, shelving. And so I would keep the jars on these shelves under the back porch, and then I could sit there on the concrete and do my thing, look at them, examine them, write things up about them based on what I had fed them the day before. And then I would take them out and put them in the sunshine for a while and put them out for varying numbers of hours and look at what would happen to them. Now, the tricky part was transferring, you know, to, if I had a wasp in one jar to get it into a jar with a bumble bee, and sometimes they would fly away and--but I had to be careful. But I liked, I would sit under that porch with these bees for a long time. I always tried to let them go though, before they died. So I had a kind of internal clock relative to, after having studied them for a while, relative to how long it would be before they would sort of slow down in this artificial environment.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP004, TRT: 0:01:36 2011/08/10

Well, there’re a couple of things. One is, I lived in “the” women’s dorm. I lived in a single, and I think that was probably deliberate. And I lived right across the hall from the rest facility. And I lived in the same room the whole time I was an undergrad. Right, Room 405 in McCormack Hall. And, and I would say from the beginning, there was a kind of distance. I mean there were a couple of women who were sort of friendly, but actually, many of them, particularly in my class, were not. And, but I registered for class. People didn’t say much. And then when I started going to class, people didn’t sit around me. Nobody would sit next to me in class, sometimes behind me. But if they could avoid it, not in front of me either. Now, when I kind of saw this pattern, then I used to always sit in the middle seat of the second row. The reason is because the seats went up and typically the professor would lecture on a raised kind of platform. And then I could look him more in the eye. And so that was my beginning experience that people wouldn’t sit next to me in class, wouldn’t talk to me really.

Video Oral History Interview with Shirley Ann Jackson, Section
But that first year, if I went to the dining room and sat at a table, if it was empty, it tended to stay empty. And if other women were there, they would tend to get up and leave. And then I’ve, I’ve told people the story of the first physics problem set, I had been working on it for a period of time, was working my way through the problem. And then I got up to go to the rest room. So when I went out into the hall, I see all these women on my floor out there working on these problem sets. And so I went in and did my things and washed my hands, went back to my room. And I gathered up my papers and went out and said, may I join you? And one of them looked up and says, “go away”. And I said, 'well, I’ve, I’ve done half the problems, and I think the answers are right, and I think I know how to do the other half.' Another one, “Did you, didn’t you hear her? She said go away.” So I went back to my room, and actually cried for about half hour, forty-five minutes. But then I decided I had to finish my physics problem set and so I went back to the problems. And I was still sniffling, but I, you know, finished going through them. And so this kind of thing tended to go on. So after a while I kind of gave up on trying to get people to work with me or sit next to me because I figured it just wasn’t working. So I had to work on my own.

And in those days, one had to do a bachelor’s thesis, an actual thesis to get a bachelor’s degree at MIT. So I did my work on super conductives, super conductivity. In fact, it was called 'Tunneling Density of States and Super Conducting Niobium Titanium Alloys.' And so I actually had to make up the samples and put the gold leads on them and attach these wires to do these tunneling measurements which was a quantum mechanical tunneling of current that you can’t understand unless you know the quantum mechanics. And that’s when my early work that I had done early on in materials science and engineering helped me. But the actual study was a physics study, looking at the electronic properties of these super conducting alloys. So by that time, I was pretty firmly committed to doing solid state physics which has since migrated to being condensed matter physics.

And, but then I was going to visit Penn on a particular day in April of 1968. And I was being driven back to the airport by a sorority sister whom I had met. And it came on the radio that [Dr.] Martin Luther King [Jr.] had been shot in Memphis [Tennessee], and we almost wrecked the car. And then it came on shortly thereafter that he had died. And so when that happened, that’s when my early work that I had done early on in materials science and engineering helped me. But the actual study was a physics study, looking at the electronic properties of these super conducting alloys. So by that time, I was pretty firmly committed to doing solid state physics which has since migrated to being condensed matter physics.
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Video Oral History Interview with Shirley Ann Jackson, Section
A2006_102_Jackson_Shirley_06_MED_WEBCLIP008, TRT: 0:01:32 2011/08/10

So the irony was, I lived through a segregated period but at a certain level, there was a high comfort factor because of a fairly quiet and sincere that my parents had created by virtue of where they moved and how we lived and the nature of the times. And when we went to the movies, and we only went to certain theaters that blacks went to, and so we were kind of living this duality, this dual lifestyle. And we knew there were parts of Washington that we quote, unquote “shouldn’t go into” because blacks weren’t welcome there. So we, in many ways, you could say lived a fairly circumscribed life, but within it, we did a lot of things. Within it, we had really great education. Within it, you know, we spent a lot of time with our parents. Within it, you know, I was very active in our church. I actually sang in the choir. I sang soprano. You couldn’t tell that today. And I would go to choir practices on Saturday and we had junior church for the young people. And so we would give our own sermons and bible lessons and so on. So it was an interesting life.

Video Oral History Interview with Shirley Ann Jackson, Section
A2006_102_Jackson_Shirley_06_MED_WEBCLIP009, TRT: 0:02:40 2011/08/10

So now we fast forward to MIT [Massachusetts Institute of Technology, Cambridge, Massachusetts]. And going into the Boston [Massachusetts] area, interestingly enough, I felt a lot more hostility. Now, maybe it was because of not, being rooted in a black community, but now I was out there with many whites, although I had gone to school when the schools were desegregated with a lot of white students in the latter part of elementary school and going into junior high school. But this kind of directness of racial confrontation, slurs, that kind of thing. And as I had started to talk about at an earlier stage, I did have some incidents I went through. One where the Deltas [Delta Sigma Theta] had a semi-formal event at a hotel in downtown Boston. And I was leaving the event with a soror, and we were looking to catch a cab. And some guys, white guys came by in a car and came around the corner. And they stopped and shouted some racial epithets and one of them spit out the window on me. And so I was quite upset. I was crying, and I started to run up the street after the car. It’s a good thing I didn’t catch them, I think. And then on another occasion, I actually visited a classmate, actually someone who was a year or two behind me, but who lived in south Boston. And I was leaving her home and someone shot at me, again, from a car, but I was near a subway station. So I ran down into the subway. And then a third time, I was visiting a soror, and we were walking to the store, but we had gone out the back of her apartment. And some white guys came down and started chasing us and threatening. It’s almost like keystone cops because then some black guys came out and her husband came out and jumped on these guys and so it was back and forth, but in the end, we weren’t injured. So I had those kind of experiences which ironically, I had never had in Washington, D.C. with all of its segregation and so forth.

Video Oral History Interview with Shirley Ann Jackson, Section
A2006_102_Jackson_Shirley_06_MED_WEBCLIP010, TRT: 0:01:57 2011/08/10

What is the difference between those two? Between--? elementary particle physics-- Theory. In theory, and--? Nuclear. Nuclear, right. Well, nuclear physics is just that. One is studying the properties of, you know, nuclear reactions and what happens with that. elementary particle physics, you can think of as going below and going deeper to look at the fundamental constituents of matter, not the, the, you know, the atom with the nucleus and the electrons around, the electron cloud, but actually looking at the fundamental constituents. Now, initially that focused on things like the protons and the
neutrons and so on. But then people discovered that these particles had their own constituents and so the reason it’s also called high energy physics is that to peel the layers, to go, probe more deeply, one has to inject higher energy to cause things to reveal themselves, to come apart and then to study how these particles interact. And so that’s what, that’s the sense in which elementary particle physics or high energy physics is an outgrowth of nuclear, but you’re probing more deeply and to go beyond just the nucleus to understand the fundamental constituents that make up the nucleus and then that make up those things that make up the nucleus, and, and try to understand how all this comes together to give us the particles and the phenomena that we observe. And so I kind of got hooked on that. And I did my Ph.D. in that field.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP011, TRT: 0:02:50 2011/08/10

People always wanna know, well, so how does what you do relate to my cell phone or my laptop or whatever? Well, your cell phone and your laptop has little, tiny integrated circuits, little transistors and things. And somebody has designed those based on an understanding of how electrons move through certain materials, how they move around in two dimensions, what affects their ability to cross a distance and so forth. When do they move, if you put electrical voltage on a circuit, etc. And then people like me are the ones who are then trying to contribute to that fundamental understanding of how things work at the most elemental level. And then it builds up in layers. And so I never designed a device, but what I did was to help with creating a body of knowledge about how systems behaved in two dimensions, in layers, and what their basic electronic and optical properties are. Then somebody else takes that kind of knowledge to say, well, if something behaves like this in a semiconductor or some other material, then what kind of device can I make out of it, a transistor or something else, a logic gate for a computer and so on. And then it builds up from there. But long before you get there, to these chips that go into these different electronic devices that we all play around with, somebody’s had to figure out the basic physics about how things operate in these chips. And that’s what people like me do.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP012, TRT: 0:01:12 2011/08/10

The NRC actually does more than oversee nuclear power plants. It’s nuclear power reactors. It’s research test and training reactors, which tend to be at lower power. It oversees fuel-cycle facilities, some aspects of uranium mining, uranium enrichment and fuel fabrication. It oversees the transportation, disposal, storage and disposal of nuclear wastes, meaning it oversees it in the sense of regulatory oversight. It delegates a lot of the oversight of low-level radioactive wastes to the states, but all of the high-activity, high-level radioactive wastes, including spent nuclear fuel, is directly overseen by the NRC. And it is the licensing agency, the licensing and export control agency for the U.S. government for the export of nuclear materials and nuclear technology for peaceful purposes. So it has a broad scope.

Video Oral History Interview with Shirley Ann Jackson, Section A2006_102_Jackson_Shirley_06_MED_WEBCLIP013, TRT: 0:02:15 2011/08/10

you know, in terms of affirmative steps people can take, we need to value those who do science and engineering, value those who have ability and interests in science and math. I think good, early, basic education is important and early success because people have good basic education. You have to excite them and invite them, right? You have to hold them up and then you have to sustain
them by creating the programs that will support their education all the way through advanced education. But you gotta begin at the beginning, which has to do with affirmatively holding up those who do it, not as icons, but respecting what people do. People have to learn the basics. You know, you can’t do calculus if you can’t do algebra, trigonometry and geometry. You cannot do those if you can’t add, subtract, multiple and divide, read and write. Those are the basics. And that’s one where I would start, coupled with exposing children early. I think we need a cadre of discipline-based teachers, teachers who actually have degrees in science and math and engineering to teach science and math in high schools and middle schools. I think we need programs to link young people with technologically based enterprises so they get that early exposure and so on. So these are some of the things that we have to do. A lot of them are embedded in the national academies and the report and the Council on Competitiveness Report.