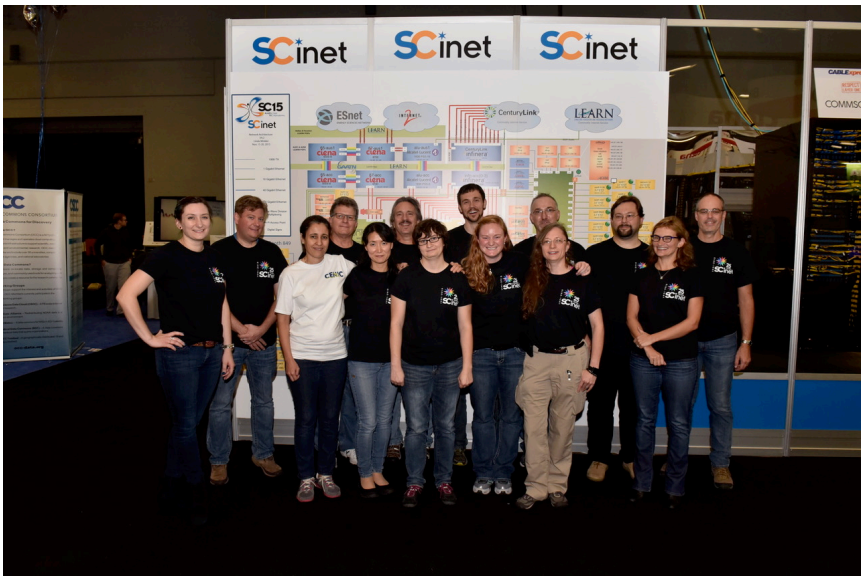
From Margin to Center: Reframing the History of Women in Computing and Information Technology through Oral Histories



An Oral History Interview with Debbie Fligor

Conducted by Bethany Anderson on June 30, 2017 in the Digital Computer Laboratory, University of Illinois at Urbana-Champaign

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Abstract: Raised in Carbondale, Illinois, Debbie Fligor received her bachelor of science degree in electrical engineering from the University of Illinois at Urbana-Champaign in 1991. During her time as a student, Fligor joined the Network Design Office in the Computing Services Office (formerly CITES and now Technology Services) and also worked in network administration for the School of Life Sciences. She continued working for the CSO/CCSO/CITES/Tech Services, and is currently Lead Network Engineer in Tech Services. In this this interview, Fligor describes her childhood and education, as well as her professional path that led her to network engineering.

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00:00:02
BA: Today is Friday, June 30, 2017, and I am Bethany Anderson from the University of Illinois Archives. I am here today with Debbie Fligor in the Digital Computer Laboratory at the University of Illinois at Urbana Champaign, to talk with her about her experience working in network engineering in what is now the Technology Services Unit on campus. This interview part of the ACM funded project, "From Margin to Center: Reframing the History of Women in Computing and Information Technology through Oral Histories." So first of all, thank you Debbie, for talking with me today. I wonder if you could, to start off with— just talk a bit about your background and your childhood, [stammers] and where did you grow up—grow up?

00:00:42
DF: I grew up in Carbondale, Illinois. Where the SIU campus is. My dad was a grade school principal and my mom was an accountant and worked from our home part of the time and in offices part of the time. And so, I grew up surrounded by computers. My dad was very into computers. I probably started playing around on computers in fourth grade. Unlike a lot of my peers, in the seventies, I was actually using computers when I was a kid. Then I had a lot of interest in electronics and things like that because my dad was into Ham radio. That probably influenced a lot of where my career went.

00:01:23
BA: Great. Yeah, that leads me to my next question which you've already covered a bit but— so what hobbies, or interests, or subjects, did you—attracted your interests at school, or when you were a kid? And might have paved the way

towards your decision to pursue a technical career? So, it sounds like Ham radio, and working with computers with your dad was part of that, for sure?

00:01:43
DF: Oh, definitely that was part of it. I had an interest in science fiction and fantasy, gaming and things that that also tend to go along with some of the technical fields. Spent a lot of time playing on computers, writing computer programs. And my dad actually had three or four computers by the time I was in middle school and my sister and I would help him teach computer classes. He'd, he'd bring students into our house and we'd, we'd actually assist him teaching basic computer programming to kids.

00:02:16
BA: Oh, wow. So, how old were you when you first started to learn to program?

00:02:20
DF: Oh. Ten or eleven.

00:02:25
BA: And what did you like about working with computers and Ham radio? What was it that— why did you like engaging in that work?

00:02:34
DF: The computers were fun. I mean, it—typing something in and then having it do something was pretty novel at that time. You didn't get to see stuff like, you know, today I think people are pretty, "Eh. Whatever." But in the '70s, that was just crazy unusual.

00:02:51
BA: Mm-hmm.

00:02:52
DF: And it was really neat to be able to type some stuff and then have it draw

pictures on the screen. Which is what we did a lot of for beginning programming.

00:02:59
DF: Was making pictures of things.

00:03:01
DF: And then getting to play a game with you or something like that. We had some early games that we loaded into the computer on tape. It predates floppy drives. And yeah, we'd play those games and that was really neat. And then we actually learned how to write our own games and that was really intriguing as well. And so those were definitely part of what was neat, and captured our interests was writing our own videogames. The Ham radio was a lot—My dad was doing it. And [stammers] it was a way to hang out with him and do interesting things together.

00:03:32
BA: Mm-hmm. Alright. So, moving along. If I could ask you about high school, were there any math or science or computer classes that attracted your attention and interests when you were in high school?

00:03:48
DF: I mean the math classes were interesting but only because they were interesting math. There, there was nothing special about them and I needed them to go to college. I was never that into math. The computer class they offered was—I took it because they had it but it was kind of a joke. It was doing stuff that I had been doing for a long time.

00:04:05
BA: Oh. [laugh] Yeah.

00:04:06
DF: It was a little bit interesting because once they realized I actually knew how to program, they gave me some other stuff to do and let me do a little bit more advanced things. But—

00:04:15
BA: [overlapping] Mm-hmm.

00:04:16
DF: That wasn't— the high school options for computers weren't that interesting, yet. I think they're more than they used to be.

00:04:22
BA: Yeah. Did you take any classes that allowed you to work with electronics? Did they offer anything like that in high school?

00:04:30
DF: No. Not where I went to school.

00:04:31
BA: Okay.

00:04:32
DF: The closest thing to that was physics and we learned how, you know, what a resistor was. [laugh]

00:04:35
BA: Mm-hmm. Yeah. Did you have any particular high school teachers who were supportive —in your work and, [stammers] you know, especially in computing or—

00:04:46
DF: No. Not really. There—that was more of an extracurricular thing at home.

00:04:50
DF: It was— I had some teachers in middle school that were supportive. But not— mostly by letting me have time to use the computers during recess. But as opposed to, going outside and playing.

00:05:01
BA: Mm-hmm. Mm-hmm. Alright. So, after you graduated high school where did you attend university?

00:05:11
DF: Here at the University of Illinois at Urbana Champaign. I had come up here to go to school and one of the things I was really looking forward to was my folks had said that for graduation I could have my own computer. And then we came up for the introduction thing and they, they spent the entire time explaining why I wouldn't need my own computer because they had all these great computer labs.

00:05:32
BA: Oh. [laugh]

00:05:32
DF: So, my mom and dad didn't buy me my own computer. They said, "Go use these spiffy new computer labs."

00:05:36
BA: Yeah. [laugh]

00:05:37
DF: Which it turned out to have, you know, limited hours and things like that and it was a couple months later that I went home and visited and brought back one of my dad's oldest computers so that I would have something—

00:05:46
BA: [overlapping] Oh.

00:05:47
DF: To write my papers on in my dorm room.

00:05:48
BA: Yeah.

00:05:48
DF: But the computer labs turned out to be really useful because in the spring of my freshman year, I got a job working at the computer labs.

00:05:56
BA: Oh. Okay

00:05:56
DF: And that's probably really what pushed me into the computers and networking where I ended up. It's because that was with the unit CSO which is what evolved into Technology Services and I've basically worked for them ever since my freshman year.

00:06:08
BA: [overlapping] Mm-hmm. And—Oh, right. Sorry. And what does CSO stand for? Could you remind us?

00:06:14
DF: Computing Services Office.

00:06:15
BA: Okay. Great. Thank you.

00:06:17
DF: Yeah.

00:06:18
BA: So, when you came to the University of Illinois, what did you decide would be your major?

00:06:24
DF: I was majoring in aerospace engineering.

00:06:26
BA: Okay. And when you were pursuing your, [clears throat] your degree in aerospace engineering, were there any particular courses you found—memorable or instrumental, especially for your career in computing and information technology?

00:06:43
DF: Well, the memorable thing was our fresh—our fresh [sic] semester, we had to take an introduction class and we had to choose between aerospace or astro-engineering and that people who took astro-designed airplanes. We spent the entire semester calculating orbits. Without having had calculus. And I was bored out of my mind.

00:07:00
BA: Oh. [laugh]

00:07:00
DF: [overlapping] And so, when I talked to advisor he said, "Well, then switch." And he was a professor of electrical engineering and I knew I liked electronics from the Ham radio stuff. So, I transferred out at the end of my first semester from aerospace engineering to electrical engineering.

00:07:11
BA: Oh. Okay.

00:07:12
DF: And then did electrical engineering for the rest of my degree. And so, there I did programming, circuits, all kinds of interesting things like that.

00:07:20
BA: Mm-hmm. Mm-hmm. So, it was that first class that really sort of propelled you to really make that switch then?

00:07:23
DF: [overlapping] Yes.

00:07:25
BA: [stammers] To something that would be better suited for your interests, yeah?

00:07:27
DF: Yeah, because you [stammers] at this campus at least, you can switch anytime your freshman year and that doesn't—isn't held against you because all the intro classes are very similar. But then you can't switch again until you're a junior and then you have to apply as if you are a transfer student. So, it was kind of a jump now, or, or forever stick with aerospace engineering. And then it turns out that I probably would have liked aerospace engineering after all.

00:07:47
BA: Oh. [laugh]

00:07:49
DF: But I had fun with electrical engineering as well.

00:07:50
BA: Mm-hmm. Did you have any electrical engineering professors who were really supporting and engaging for you?

00:07:59
DF: I did. I had a couple that were—Steve Franke was, just a really interesting guy and really supported me looking into RF type stuff (radio frequency). And very helpful with that. He's also, a Ham. And then my advisor was also a Ham

and he was the president, or the faculty sponsor for the Ham radio club here at the university.

00:08:27
DF: And I spent a lot of time working with the Ham Radio Club and met a lot of other technical people that way.

00:08:32
BA: Okay. So, what other kinds of students were involved in the Ham Radio Club here? Were there especially other women students—

00:08:41
DF: [overlapping] No.

00:08:41
BA: Who were part of that? No? Okay.

00:08:43
DF: Pretty much me.

00:08:43
BA: Okay. How many students were part of the club? At least, you know, probably fluctuated over time, but generally speaking?

00:08:50
DF: Back in the '80s, ten to twenty usually.

00:08:53
BA: Okay.

00:08:53
DF: And every once in a while, I think by my senior year, there was one other

girl that was a regular member of the club but it was definitely much like the electrical engineering classes. There was one or two other girls in a 30 or 40 seat room, typically.

00:09:07
BA: Mm-hmm. Okay. Alright. So, you'd mentioned that your freshman year, you got a job working in CSO, which is now Tech Services and you were doing some work on repairing PCs and printers and so forth. So, what got you interested in that kind of work, initially?

00:09:34
DF: My first job was basically, a lab sitter. We just sat and made sure the computers worked, the printers had paper, traded floppy disks for IDs and then back again so people could get the software they needed to run.

00:09:43
BA: Mm-hmm.

00:09:44
DF: And I met some of the people that were doing the terminal repair work. And it sounded more interesting. I mean, [stammers] sitting there was fun. You got to work on your homework and you got to play videogames when you were b— you know, done with your homework and you know, in between what people needed.

00:09:59
DF: But it was also not particularly involved and a little bit boring at times.

00:10:03
BA: Yeah.

00:10:03
DF: And so, I applied to go work with the terminal repair people. And I continued to work a few shifts at the labs but also went to terminal repair. And

as students, we mostly were the fetch and carry, you know, if somebody reported a broken computer, we'd go the department and pick it up and bring it back. But the full-time technicians also taught some of us the basics of you know, some of the really most common things that happen that were also very easy to fix.

00:10:25
DF [cont.]: And so, I knew how to take apart Macs and make the floppy drives work again. Get out the stuck floppy drives. Or you know, floppies out of them; things like that. And so, that was you know, I personally found that much more engaging than sitting in a room handing people floppy disks for their IDs. And then swapping them back again.

00:10:42
BA: Yeah. So how long did you work in terminal repair for?

00:10:47
DF: Oh, I lose track of how many years I did which thing. So I started in the labs in January of '88 and by sometime in 1990, I was working in the Network Design Office. So, part of in between there was terminal repair for—

00:11:01
BA: [overlapping] Okay.

00:11:02
DF: A year or so. So, probably '89. Yeah, so—

00:11:05
BA: Okay. Two years or so, you worked in that? Yeah?

00:11:08
DF: [overlapping] Yeah. [stammers] A year and a half to two years in the labs and then maybe part of a year in terminal repair and then one of the jobs I was on for terminal repair, we were running thin-Ethernet cable in a lab for setting up

one of the networks where they were [stammers] changing over one of the labs from the old dumb terminals that hooked up to the mainframes to like IBM ATs. And we were hooking in Ethernet cables for it and I met some of the people working in the network design office; some of the fulltime staff there. And, was just chatting with them and they said, "Hey! You want to come work for us?"

00:11:42
DF [cont.]: And that was my first job doing networking as I came over. And apparently, he wasn't hire allowed to hire me but the guy who was actually hiring students talked to me and while he'd been hiring mostly guys from his fraternity, he was like, "Well, okay; if you want a job you can have it." [laugh]

00:11:57
BA: [laugh] So, were you one of the only student employees who was working in network design at the time, or were there—or how many other students were there?

00:12:03
DF: I think there was three of us.

00:12:05
BA: There were three of you. Okay. Yeah.

00:12:06
DF: And our job was mostly to go out and you know, document things. And you know, once the jacks had been hooked up, plug a computer in and see if they worked.

00:12:13
BA: [overlapping] Mm-hmm.

00:12:14
DF: It wasn't particularly interesting work at first. And the, you know, the more knowledge and interest I showed, the more interesting things they gave me to

do. I ended up helping design some cables, and working on some databases to keep track of some of the jacks and the testing and things like that.

00:12:29
BA: Yeah. So, did it seem like it was sort of an apprenticeship to you, in a—in a way? Would you say that, or?

00:12:35
DF: Definitely because I was interested, they let it be that.

00:12:36
BA: Yeah.

00:12:37
DF: The students who weren't that interested in that, they went and plugged computers into jacks and made sure they worked.

00:12:43
BA: Yeah.

00:12:43
DF: There wasn't really a testing program or testing gear back then. So, support networks were really new.

00:12:49
BA: Mm-hmm.

00:12:50
DF: So, there wasn't the kinds of—these days you can walk around with a tester and just test that they're working and we didn't have stuff like that back then.

00:12:54
BA: Mm-hmm. Mm-hmm. So just to back up for a minute; so, when you first started working in the lab—

00:13:02
DF: Mm-hmm.

00:13:03
BA: And then doing repairs on computers and PCs or printers on campus and other types of equipment, you said that that was a really formative experience for you and that really propelled you toward pursuing a more technical career, potentially?

00:13:22
DF: [stammers] I think it was as much an accident as anything else.

00:13:24
BA: Yeah.

0:13:25
DF: I mean, I was expecting a technical career because I started in aerospace engineering and switched to electrical engineering.

00:13:28
BA: [overlapping] Right.

00:13:29
DF: But I had, I had expected to get my degree and leave.

00:13:34
DF: And then working in CSO was interesting and fun and the network design stuff was really interesting. And then, my senior year, I started dating a guy who was working here.

00:13:43
DF: And so, then I was kind of looking for jobs here and the way the Network Design Office was set up, they had some funding and they were going to hire a new designer every year until they had four designers. And when I started, they had two and they were just hiring a third when I was a student and so, they had kind of heavily implied that they expected to be able to hire me when I finished. And then something changed on the funding, which always happens at universities.

00:14:05
DF [cont.]: But they worked really hard to help me get a job still in the unit. And so, I spent a couple years working half time for CSO doing computer support and half time for the School of Life Sciences doing network administration, which that turned out to be really useful because it gave me the chance to see the network from the point of view of the departments and then learn about the network. And but, since I had liked networking and wanted to stay here in town then when a job opened up in the Network Design Office, when the guy [stammers] who had originally hired me as a student was leaving, I applied for his job and was one of the finalists and then got that job. But you know, [stammers] it was kind of all just an accident.

00:14:42
BA: Mm-mm. Mm-hmm. And so, this is about 1990, correct? When you got your permanent position in—

00:14:50
DF: Um—

00:14:51
BA: Network Design?

00:14:51
DF: In Network Design—

00:14:52
BA: [overlapping] Yeah.

00:14:53
DF: I got my position more like '93. Because I—

00:14:55
BA: '93. Okay.

00:14:56
DF: Because I finished in the fall of '92.

00:14:57
BA: Okay.

00:14:58
DF: And so, I was part-time with the two departments, split between them, until later on in for like all of '92 and end of '93.

00:15:07
BA: Okay. So, you graduated in 1992, then?

00:15:09
DF: Mm. Fall of '91.

00:15:11
BA: Fall of '91. Okay. Alright. Okay. So, [stammers] what were your initial job responsibilities when you were hired full-time?

00:15:23
DF: Well, the first thing I had to do was, was go from knowing a little bit about networks to actually how to do all of the implementing of networks.

00:15:30
BA: Mm-hmm.

00:15:31
DF: And so, the first few months was just going around with the existing design staff and seeing what they did and how to do it.

00:15:38
BA: Mm-hmm.

00:15:39
DF: And you know, basically shadowing them as they did other things and start helping do the documentation and helping write up what they were doing. And then I got my first project that I was working and you know, had to do all the different steps myself. Networks these days are really common. Networks back then were not. There were maybe ten or fifteen buildings on campus that had in them. And we'd been funded as a unit to—

00:16:01
BA: [overlapping] Mm-hmm.

00:16:02
DF: To go out and network the first hundred buildings. You know, bring that number up to 100. And so, one of the interesting things about that time is I was—one of the designs I remember as being the earliest was to put a network in a building where the first thing I had to do was convince them that they actually wanted a network.

00:16:17
BA: Mm-hmm.

00:16:19
DF: They, they had no—they you know, like, "Well, we've got this one little system that lets these handful of people access the business computers and why

would we need a network for anything else? Why would any other—why would anyone else ever want to connect their computer in a network? What good would that do for us?"

00:16:32
BA: Okay.

00:16:33
DF: And so, I— first I had to convince them that they wanted this thing—

00:16:36
BA: Yeah.

00:16:37
DF: And then that was a building that was very old; built in a lot of different sections and with very little space and very decorative. And so, coming, coming up with a design to how to put the network in the building was also a challenge. And the early building designs, that was—we spent as much time figuring those kinds of things out as we did what technology to put in them.

00:16:59
BA: Mm-hmm. So, could you describe an example of, you know, maybe one particular building that was difficult to design the network for and like, why, why was it a challenge? If you had to describe it for the lay person? [laugh]

00:17:15
DF: [overlapping] Well there's different kinds of challenges. I mean, some of the buildings were architecturally challenging and the one I was just speaking about turns out to be because it was built as part of the post-World War II big building projects. But that means you know, it wasn't designed with the idea that you even needed very much power; much less places to run phone cables and places to run network equipment.

00:17:37
BA: Yeah.

00:17:38
DF: And it was stuffed full of asbestos.

00:17:39
BA: Oh.

00:17:40
DF: In places that were sealed off, and you know, users—

00:17:42
BA: Right.

00:17:43
DF: [overlapping] But so, getting in those spaces to run the cables and things like that made it difficult and expensive.

00:17:46
BA: Yeah.

00:17:47
DF: And so, coming up with a design that met the requirements because there's technical requirements about how far away the network equipment can be from the computer that plugs into it. If it's too far away, it doesn't work right. So, we had to have the places, the network equipment, were close enough to where the computers were going to be.

00:18:02
BA: Oh. Okay.

00:18:03
DF: And then get the cables between all those areas back to a central location and then hook it out. And it was, you know, first we had to convince—it was hard because we had to convince the people it was worth it. And they didn't want to give us space to put the network equipment because they didn't understand why this was worth it to them.

00:18:19
BA: Yeah.

00:18:20
DF: And then it was technically difficult to put the equipment in and run the cables.

00:18:25
BA: [overlapping] Mm-hmm.

00:18:26
DF: Because of the architecture of the building. The actual equipment to make the network work was really easy because it was a very—you know, they weren't doing anything particularly difficult.

00:18:35
DF: They barely, you know, they didn't really even want the network so we weren't worried about them stressing it out too hard.

00:18:39
BA: Yeah.

00:18:40
DF: You know, the other more challenging buildings were where we were going in and what they wanted to do exceeded the capabilities of the hardware of the time.

00:18:46
BA: Yeah.

00:18:47
DF: Those are a different kind of challenge.

00:18:48
BA: Right. Right. Yeah. So, how long did it take to network these? The first 100 buildings that you received funding for?

00:18:59
DF: Oh wow. It was multi—like five, five or six-year project. I mean it took quite a while.

00:19:05
BA: [overlapping] Mm-hmm. Did you see any perceptions from people start to change? You know, once they realized what this was, how this was, I don't know if making their lives better or you know—[laugh]…more access?

00:19:18
DF: [overlapping] Well, one of the things to remember in the early '90s, we didn't have the World Wide Web yet. And email was pretty unusual. So, there were a few people in most buildings that thought this was neat or useful because they had worked with email or they were collaborating with other people.

00:19:31
BA: [overlapping] Yeah.

00:19:33
DF: And some of the business office people, because it gave them a way to get to the business and the payroll computers and things like that. You know, so you definitely saw over time the change in attitude and why they wanted it.

00:19:45
DF: [overlapping] And how much they cared about it. The most interested in the early '90s were researchers.

00:19:49
BA: Mm-hmm. Yeah.

00:19:50
DF: And faculty. You know, people who were, who are already working on computers that were stand alone and suddenly had a way to get the datasets between their computers. Those were the most interested people and then by the—by the mid to late '90s, it was very common place. You know, [stammers] everybody was—you know, every faculty expected to have email and stuff like to— and turn in grades, and things like that. Start, starting to do those kinds of things over the computer.

00:20:13
BA: Mm-hmm. Mm-hmm. So, how long did you do in-building networking? For how long would you say?

00:20:22
DF: I want to say 'til sometime in 1999.

00:20:26
BA: Okay. And then in 1999, how did your position evolve and your work responsibilities?

00:20:35
DF: In 1999, there was a position open in what we called, "the Backbone Group" back then. It's what we call Network Engineering now. We [stammers] we've, to a large degree, always differentiated between designing the networks in the buildings on campus and the network that connects the buildings together and out to the internet. They're, they're different scale and they have very different needs.

00:20:53
DF [cont.]: One supports a lot of end users and one supports a lot of traffic but not, pretty much no end users. And so, there was a spot open on the Backbone Group and I had been interested in learning more about the kinds of technologies we used there that we didn't at the time use in the buildings nearly as much. And so, I was the most—I think was the [stammers] only person that was actually interested and so it wasn't a big deal to, to get a chance to switch into that team.

00:21:18
BA: Mm-hmm.

00:21:19
DF: And start applying what I knew from the buildings to how it worked on the backbone part of the network and then starting to learn the pieces that we didn't use in the buildings that were new to me for the backbone group. And then, so I— and then I've been in that group ever since.

00:21:33
BA: Mm-hmm. So, what do you like about being more in the quote-unquote backbone group [laugh] and how does that differ from the in-building work that you did before?

00:21:45
DF: [overlapping] The in-building work was really interesting and challenging in the '90s and early 2000s because the technology was constantly evolving.

00:21:52
BA: Yeah.

00:21:52
DF: And now the technology that you need in buildings, with the exception of certain very high-end research stuff, stagnant is not quite the right word but it's not evolving particularly fast. And because, the equipment has reached the needs of your average office person.

00:22:07
BA: Mm-hmm.

00:22:08
DF: You know, the average faculty office or business office person's needs are very well met between the wireless and wired options that we have now so we're not spending a lot of time looking at neat, new, interesting technologies. But aggregating all that stuff together and then making it more efficient and making it work and supporting the large amount of research traffic is still really—that's where [stammers] the new technologies are occurring first and where they're most useful. And learning about those things and how they go together, and how to, how to use neat, new, interesting things and getting chance to work with neat, new, interesting things, is very much still a part of being in the backbone and net—and the network engineering area where we—where we hook it all together, we send it out to the internet—

00:22:50
DF [cont.]: The—how much we send to the internet has changed you know,[stammers] drastically— In you know, the twenty years. It goes up by something like 41% every year.

00:22:58
BA: Wow. Yeah.

00:23:00
DF: And so while any one desktop network connection is still very similar to what it was, we have so many more and then so many device—so many wireless devices that students bring to campus. And things like that, that the aggregate of what of we're doing is constantly growing even though any individual's performance doesn't change a whole lot.

00:23:16
BA: Mm-hmm. So, as we've become an increasingly networked world— [laugh]

00:23:22
DF: Very much.

00:23:24
BA: So, to speak, how has that affected [stammers] your, your job in network engineering in particular as we've, you know, [stammers] the internet is now a constant part of everyone's life? We're, you know, we're all always connected, how does that—how has that, you know, changed your line of work specifically?

00:23:46
DF: Oh, there's a couple major things. One is, when we were working on things in the '90s and even as late as the early 2000s, we kind of had a list of times we were allowed to work on the network and we didn't have to tell anybody if we were going to take things down.

00:23:57
BA: Yeah. [laugh]

00:23:58
DF: You know, if it, if it was between those hours of 5:30 and 7:30 in the morning and we needed to reboot something to clear something or upgrade code or something and it was going to be a short outage, like under twenty minutes short, then we could just do it. You know, those were published maintenance windows and everybody expected that the network might drop out from under them at any time in those windows.

00:24:17
DF [cont.]: And today, everybody expects the network to work as much as the power or the telephone system. So, we can't just do that; even for small changes. We schedule them ahead of time and let people know. You know, even it was going to be two minutes. We still have to tell them before we do it, you know? So, there's a whole lot difference in how we interact with the customers. And because of how important, and how—what their expectations are of how the network works—And then, what kinds of services we deliver has changed very much. You know, both the speeds and the style. The wired network has mostly just gotten faster.

00:24:55
DF [cont.]: But one of the things I did in the late '90s, early 2000s was researching into wireless and I helped deploy some of the first wireless networks on campus in the early 2000s. And the difference between what we were doing in two—between 2000 and 2006 or 2007 when I got out of doing out of wireless and what we're going now is just incredible. Both incredible in terms of how many customers we serve, how fast the connections are, and how much more reliable it is than it was in 2000. You never expected wireless to stay up, in like 2001 or 2002. It was fun if it worked.

00:25:30
BA: [laugh] Yeah.

00:25:31
DF: But you really didn't count on it. And now people rely on it just as much as anything else.

00:25:34
BA: Yeah. Yeah. Definitely. So, since you joined the Backbone Group in 1999 and through the 2000s, can you talk about some of the specific projects that you worked on during this time? Anything that comes to mind?

00:25:54
DF: Well, the wireless is definitely one of the bigger ones.

00:25:56
BA: Yeah.

00:25:57
DF: Fairly, you know, fairly early in my career in the Backbone Group because I started doing research in that, actually before I even left the Network Design Office, I was looking at some of the options for that. And then, I did design and implement the test networks. You know, a couple buildings where we just tried things out and then picked out hardware and deployed the first actual production networks. You know, with other people, but it was my—it was my

design and my plans. And then when we did our first vendor change in 2005, I brought in the different vendors and you know, worked with them to do testing. And then picked Meru was our vendor literally until last year.

00:26:32
DF [cont.]: You know, they had a nice long run of when—Now, the last two or three years that probably— probably should have been moving away from them. Their support wasn't as good and there were some other things going wrong but—

00:26:41
BA: Yeah.

00:26:41
DF: They were what really looked like the most best choice for, for what we wanted to provide to campus in 2005. And then I was, working on that project when we first [stammers] deployed the first few buildings then I switch—handed that off to somebody else to run after that. So definitely that. That stands out to me as one of the biggest projects I've worked on, because getting—you know, going from no wireless on campus to wireless on campus was big.

00:27:08
BA: [overlapping] Yeah. A big deal. Yeah.

00:27:10
DF: The—one of the more recent ones; we refresh the gear every few years; depending on funding and a lot of other things. Sometimes it's three years, sometimes it's five years, sometimes it's seven years. Both in terms of you know, whether it's still performing as we need it, and where the funding is. But the gear that runs the backbone, we replaced in 2014 and I ran that project. And I think that's the first time I had run the project of replacing the entire backbone.

00:27:39
DF [cont.]: You know, so, what features do we have now? Which of those do we need to keep? What features do we want for the next five to seven years? You

know, what—what's the crystal ball say people are going to care about seven years down the road? That's a fun one.

00:27:50
BA: [laugh] Yeah.

00:27:51
DF: [overlapping] And then talking to the vendors, saying, you know, that was one of the first times we tried really hard to tell them, "This is what we want to accomplish. How would you do it?" We've spent a lot of years being the experts. Often more than the vendors. You know, because—

00:28:06
BA: Yeah.

00:28:07
DF: We have people dedicated to this that have many, many years of doing it. And so, for the first ever, we said, "Here's our problem. How would you solve it?" And the fun thing was that all four vendors came back solving it basically the same way we thought we wanted to.

00:28:17
BA: Yeah. [laugh]

00:28:18
DF: So, "Okay. We're on the right track!" You know and then deciding which vendor would be the finalist and we actually went out on site to two—the two vendors we thought were the most likely. And did proof of concepts with those vendors.

00:28:33
BA: Oh. Okay.

00:28:34
DF: So that's one of the more recent really big projects I've done.

00:28:36
BA: [overlapping] Mm-hmm. Mm-hmm.

00:28:37
DF: Because that's—that's like an eighteen-month project and with a lot of disruption to the entire campus because as much as we'd like to, if we have to swap out the thing that all the buildings connect to, your building goes down.

00:28:46
BA: Right. Yeah. [laugh] Great. Okay. So, I'm just going to switch for a minute to talk a bit more about the context of your work in what is now Tech Services; and ask you a couple questions about that. So, when you—kind of backing up a bit, when you first started working in the CSO and then that became CITES—

00:29:14
DF: Mm-hmm.

00:29:15
BA: And then it's now Tech Services. Were there other women who work with you and if so, what kinds of work were they engaged in?

00:29:24
DF: When I first started in my undergrad time—The person in charge of all the computer labs was a woman and the students staffing the labs were pretty much equal. Because they were, they weren't necessarily technical students. You don't have to be in technology to hand floppy disks and they actually found hiring people from the— non-technical ones, you tended to get more personable people.

00:29:48
BA: Mm-hmm. [laugh] Yeah.

00:29:49
DF: [overlapping] That interacted a little bit better with the customers. And so that was definitely a very probably even, or maybe even more women than men. Then in terminal repair, there was one woman that was a technician; and I was the only female student employee.

00:30:04
BA: [overlapping] Mm-hmm.

00:30:06
DF: But there was only four student employees.

00:30:08
BA: Yeah.

00:30:08
DF: And there was only three technicians.

00:30:09
BA: Right.

00:30:10
DF: So, it wasn't a very big pool.

00:30:12
BA: Sure.

00:30:13
DF: When I went on over to networking, the head of all of networking was a woman and three people reported to her and one of those was a woman and then that woman ran the network design office. And as they hired network designers, there was two men and a woman when I started as a student and then when one of those left and I replaced it, there was two women and a man. And

we worked with a lot of other parts of what later became CITES, the telecommunications office was separate when we were CSO, CITES's name changed when we merged with Telecom.

00:30:44
DF [cont.]: And one of the people who had been inter—interfacing with us came over and started doing network design from there and so, then we had three women doing network design. And so that group was heavily women for quite a few years. There was some men, some women but there was always one or two out of four or five. And then, over time, [stammers] you know, I was in a lot of these hiring committees that it, it switched. It was slowly more guys than there were women. And there just weren't resumes, you know, there weren't applications. And when there was one, we always considered them pretty seriously. But you know, [stammers] I've been on a bunch of hiring committees in the last four or five years and it's unusual to get even one female applicant.

00:31:31
BA: And when did you start seeing that happen? Where you saw less female applicants and the numbers started to kind of shift?

00:31:40
DF: Oh, it's—

00:31:41
BA: …approximately.

00:31:42
DF: I'm not sure I was paying attention enough back then to be able to label it in terms of years.

00:31:43
BA: [overlapping] [laugh] Oh.

00:31:47
DF: Certainly, by the mid-2000s it was trending that way, but I would, I would be hard-pressed to say when it started.

00:31:53
BA: Okay. So, about in the 2000s. But it wasn't in the '90s, it was more in the 2000s, you would say?

00:31:58
DF: Oh, yeah. The—

00:31:59
BA: Yeah.

00:32:00
DF: In the, in the '90s, and the [stammers] 2000s, you know, the Backbone Group evolved was—The biggest we were in that era was four and it was two men and two women in the Backbone Group.

00:32:07
BA: [overlapping] Mm-hmm.

00:32:09
DF: And the Design Office still had two or three women and a couple men in it. So, it was definitely very mixed. Our support people that went out in the field, the original support people were just for the big backbone network and it was even; one man and one woman. And then, the next two people were guys and the team was only four for a really long time. Now the people that hired into that tended to be more men. And I honestly don't know where that dynamic came from.

00:32:34
BA: Right. Yeah.

00:32:37
DF: But it's very slowly transitioned. And, boy, I'd, I'd be hard-pressed to tell you when.

00:32:43
BA: Yeah. And so, the composition of network engineering now; could you talk about the gender dynamics of, of that now? And how many men and women are present?

00:32:55
DF: [overlapping] Sure. So, right now our official manager is also now the interim director for all of infrastructure. She's, she's the one that everybody in Network Engineering reports to and she was a former team member when, when we all worked for someone else. So, technically she's still part of Network Engineering but she doesn't do any of the day to day work anymore. She did a little bit when she was a manager and once she ended up being director—

00:33:16
BA: Mm-hmm.

00:33:17
DF: She doesn't have time for day to day work. So, that leaves six of us. Right? I've got to count in my head. Six of us left in Network Engineering and I'm the only woman. There are four of us that are network engineers that do day to day network engineering stuff. Working on routings, and switching, and design, and that kind of things. A person who's technically trained on all that stuff but has a strong focus on more of a software component and running network services like the DNS and DHCP servers which are critical parts of making the network work but aren't the routers and the switches. And then one person that's full-time writing tools as a full-time programmer. And of that, I'm the only woman.

00:33:55
BA: Okay. So, have there been opportunities for advancement in your position here?

00:34:05
DF: The structure of advancement in CSO and CITES was strongly limited by the way academic professionals were hired into technical spots at the time. It wasn't limited by the administrative staff here. We had the title of "Research Programmer" and you could get to a "Senior Research Programmer" or a "Principal Research Programmer" and that was it. Plain, senior, or principal. And so, there was regular merit raises, and regular review raises, but there weren't very many options for title change. A few years ago, I want to say, somewhere in the 2000s, we really started reworking titles and trying to get better ones that fit more what we did. So, now we have like "Network Associates" and "Senior Network Associate" and "Network Engineer," "Senior Network Engineer," "Lead Network Engineer." And so, there—there's a lot more option for progression.

00:34:50
DF [cont.]: But based on where I was in my career, I was a principal research programmer and so that transitioned into the very highest network engineering position. So, I've been a lead network engineer since 2010. And they were talking about extending the technical track to like two or three levels of architect, like "Learning Architect" and you know, how to—how to de—you know, see the big picture and not just the network. But they haven't actually defined those positions.

00:35:12
BA: [overlapping] Mm-hmm.

00:35:13
DF: So, at the moment, unless I want to become a manager, there are no more titles I can get but as far as actually getting a chance to learn new things and advance what I know, that—Everybody's been supportive of that. That part has always been independent of what your title is and I have great support from my management on those kinds of things.

00:35:32
BA: Mm-hmm. So, it sounds like that the sort of HR framework that's put in place for the types of positions people can occupy is, it's changed a bit over time but it's still kind of limited between these—these few levels that you can progress through. Right, yeah?

00:35:47
DF: It—it's a lot better. It's now got six or seven levels in it instead of three. That really does give people a chance to both show what their knowledge is and in the current fiscal climate, it's harder to give big raises.

00:36:02
BA: Yeah.

00:36:03
DF: [overlapping] Just as your every year cost of living slash merit raise and so, they— The fact that there's seven title changes, that gives them seven, you know, six more chances to bump the pay up.

00:36:12
BA: Mm-hmm. Mm-hmm.

00:36:13
DF: And in the '90s and 2000s, it was a lot. Anything before 2008, it was easier to just say, "Oh, you know what? You're underpaid compared to people out in the industry that do what you do. You work really hard. Here. Let me fix your salary." It didn't happen a lot but it did happen. And that almost never happens anymore. So, the difference between six titles, you know, six titles you can go up to instead of two more from your hiring title really makes a difference for a chance for people to get raises, because the only other way to get raises is to leave.

00:36:42
BA: Yeah.

00:36:42
DF: And so, that definitely helps. It would be nice if we had a couple more, but it's—

00:36:48
BA: Yeah.

00:36:49
DF: It's not as bad as it was.

00:36:50
BA: Yeah. Yeah. So, you'd mentioned that there were other opportunities to advance though.

00:36:55
DF: Mm-hmm.

00:36:56
BA: That management here has been very supportive of, for you.

00:37:00
DF: Yep.

00:37:00
BA: Can you talk a bit about more of those experiences that you've had [stammers] or opportunities you'd have to, to advance your, your knowledge?

00:37:11
DF: Yeah, the management here has been very supportive pretty much throughout my entire career. You know, there's some years where fiscally things aren't as easy as others but they've always been supporting of going to business relevant, or relevant conferences. Especially the more technical ones. And so, I regularly go to conferences, I regularly get training. Sometimes it's online training, these days especially now that that's easy to get.

00:37:35
DF [cont.]: And very good. I'm in the middle of a series of workshops with the IT

Leadership Program here on campus. And so, not only are they paying for me to attend them, they're giving me multiple days off to go to all day workshops and do this extra homework and things like that. And that's the one I'm in the middle of right now. But they definitely really try hard to give us time for learning, training, and, facilitate getting out to those things.

00:38:00
BA: Mm-hmm. Mm-hmm. So, could you talk a bit about any colleagues or friends, or administrators here in Tech Services or Network Engineering who have been really influential to you in your career, in particular?

00:38:20
DF: Probably the two people most influential in my career Beth Scheid; she was the gal that was managing the Network Design Office when I first started as a student. And she went from the Network Design Office to be co-, I forget how they titled them. But basically, co-running all of networking with Mike Gardener for many years and then has since then run various parts of either networking, infrastructure, or both and now works in the CIO's Office as an assistant or associate CIO. And just as a woman in a—she's not non-technical, but she doesn't actually do the designs herself. You know, she, she has a technical degree and a technical background.

00:39:02
BA: Yeah.

00:39:03
DF: But you know, she doesn't, she never went into buildings and did network design after like the first year—

00:39:07
BA: Yeah.

00:39:08
DF: [overlapping] Of, of doing that kind of stuff. But just, encouraging and supportive of whatever I wanted to do. And then, just showing that, you know,

she was—there were other women in tech, CITES and CSO. Most of them, after her original boss left, weren't at a director level. You know, there, there was the original director of networking, was a woman and then, but after that, most of the directors were men for quite a few years. And seeing her go up [stammers] in that, and being at the director level, and since then we've hired quite a few directors that are women. Currently, two or three people at that level in the different parts of technology services are women, out of like four or five. But just always being there in that technical supportive role; she definitely had a big influence on—

00:39:57
BA: [overlapping] Mm-hmm.

00:39:38
DF: You know, my career and just, the supportiveness for that. And then the guy who managed the Backbone Group for many, many years, Charley Kline.

00:40:07
BA: Mm. Mm-hmm.

00:40:08
DF: You know, very supportive technically. He didn't— his management style was pretty much let us do whatever we wanted, but he was great support technically. You know, he, he was a very technical person and encouraged all of us to specialize and excel and follow the paths that were most interesting for us technically. And then supported us, you know, in making that work for the campus. And just kind of let us do what we wanted to do within the parameters of making the network work.

00:40:44
BA: Right. [laugh] Yeah.

00:40:45
DF: [overlapping] And you know, moving in the right direction. But—

00:40:47
BA: So, if you have any questions that were more of a technical nature, he was the person you could go to in a sense, if, or, to clarify or—

00:40:56
DF: Oh, absolutely.

00:40:56
BA: [overlapping] Yeah. Yeah.

00:40:56
DF: When I joined the Backbone Group, I'm trying to remember. Different people left and came in at different times. I think there were just the two of us for a number of years and he did the routing part that I hadn't learned yet—that we didn't use in the buildings and I knew the layer two part. Well, when I joined and you know, learned the backbone part of layer two a d for the next two or three years, it was just the two of us.

00:41:18
DF [cont.]: And so, I learn—almost everything I learned about layer three was while I worked for him. Either from him directly or from him pointing me at resources, or sending me off to classes and things.

00:41:27
BA: Yeah. So, do you think, you know, seeing people like Beth Scheid [stammers] in advanced management positions, and you mentioned there were a few other women who were at the director level. Do you think that that made a difference for other women who were entering work either in what is now Tech Services or Network Engineering? Do you think it had an influence in any way to see that there are women in advanced roles, basically? To look up to or—

00:41:56
DF: Oh, I definitely think it helps.

00:41:58
BA: Yeah.

00:41:59
DF: I think if you're coming in at a lower level, you know, seeing that there are women there. You know, makes, makes you feel like you can do that too. I mean that definitely has been true for me. And, I would expect it's true for a lot of people. And you know, some of the women that come in, not so much at an entry level position but you know, they've already been in the industry for a number of years, they probably get a little bit still out of that, but not as much as, you know—

00:42:26
BA: Yeah. Alright, so, if an anthropologist were watching you [laugh], and was trying, just watching you do your daily work, how would you—how would that anthropologist describe what you do? So, what are the sorts of materials and software and hardware that you interact with on a daily basis?

00:42:52
DF: I think the anthropologist would have trouble telling what I did.

00:42:54
BA: [laugh]

00:42:55
DF: Because I sit in front of a computer and from the computer I log into different equipment. Or I get on the web and I research something. Or I sit down and, these days, I spent a lot more time, you know, writing documentation or researching concepts and writing up position papers or things like that. But I sit in front of a computer. I can, you know, if he could see through the wires and what I was doing—

00:43:20
BA: Yeah.

00:43:21
DF: I connect to routers and switches and VPN hardware and adjust the configs and check on the users and log into the ticketing system and see what users are having what problems and email them and ask, you know, try and help them fix their problems. It's—and answer a lot of email.

00:43:39
BA: Yeah. [laugh] Email has become more of a daily part of work life.

00:43:43
DF: Oh. Email's easily half an hour to an hour, at least, a day.

00:43:46
BA: Yeah.

00:43:48
DF: Part of its, we have a lot of automated things that tell us over email how things are going. You know, is everything okay? Has there been any changes? And just skimming, you know, there's plenty of them that I just file in case of a problem. But there's others that I actually skim at least lightly through before I file them so I have some rough idea of what's going on with this system or that system.

00:44:07
DF [cont.]: And doing that; and then reading the mailing lists for the technical topics, you know, [stammers] what's up with IPV-6? What's up with you know, [stammers] is there anything interesting on Internet 2? Or this group or that group? Just skimming through all that is easily you know, 45 minutes to an hour a day.

00:44:23
BA: Mm-hmm. Mm-hmm. Yeah. So, may I ask if you, you've had any children while you've been working here at the University?

00:44:33
DF: Yes. You may. And I have two children.

00:44:35
BA: [overlapping] [laugh] Mm-hmm.

00:44:36
DF: And since I've been working since I was an undergrad, it's probably not a surprise that I had them while I was employed here.

00:44:45
BA: And did the University make any kind of accommodations or anything equivalent to maternity leave or childcare or some time off of work when you had children or shortly thereafter?

00:44:57
DF: Yeah, the University policy's actually fairly good. It's not as good as you know, some places in the world, but maternity and paternity leave is six weeks and I, even though my husband was employed here at the time, for both kids, we each got six weeks off. We didn't have to— that was without having to dig into our vacation time or anything like that. It was six weeks before we had to start taking vacation and so that worked out really nicely.

00:45:25
DF [cont.]: And then, the department was really supportive of—for my older son, he actually came to work with us sometimes when, when he was tiny, you know, like a few months old. Basically [stammers] at the point they're still mostly just eating and sleeping and not doing anything else. And it's not so easy to put them in childcare if, if mostly what you're doing is nursing them. And so, you know, he'd come with me to work, went with my husband a couple days, we'd work from home a couple days. They gave me videoconferencing equipment to take

home to make it easy to dial in remotely. I had at the time, a coworker who was working in our group from Chicago; so, we'd already set that kind of stuff up. And so, it wasn't in our group, it wasn't unusual but in the early 2000s, it was for a lot of the rest of—What was then CITES. And then, actually, we may have been CCSO then. I can never remember when the names change.

00:46:17
BA: Yeah. [laugh]

00:46:18
DF: We've had so many of them.

00:46:22
BA: Yeah.

00:46:23
DF: But the support was really good. And for when my husband took him, or things like that, there was always the option to pump breastmilk and if my, they—Everybody was fine with my just doing it in my office but if my officemate needed to have people come in or needed to go in or out or whatever, there was a two-room bathroom, where—with a basically, an outer room that's got a couch and a curtain and things like that set up so that—

00:46:46
BA: [overlapping] Okay.

00:46:47
DF: So that you could sit there and pump and pull the curtain so you had privacy.

00:46:50
BA: So, there was essentially a sort of lactation room that was set up and, if it was needed, yeah?

00:46:54
DF: Yeah. I mean it could be used by anybody for anything, you know— If, whatever you needed, you know, if you had a headache and needed to lay down or anything like that. But they—I'm pretty sure the curtain got added at some point for the people that needed to—Ahead of me that were having babies and pumping breastmilk. I was not the first.

00:47:11
BA: Yeah. And so, for how long did you, you know, sometimes work from home and sometimes bring your child into work and how long did that last for?

00:47:21
DF: Ah. For—oh, boy. Um, I'm trying to remember. For a few months, and then, well, we worked at, you know, we found somebody to watch him after that.

00:47:30
BA: Yeah.

00:47:31
DF: Once he's mobile, that's a whole different ball game.

00:47:33
BA: Yeah. [laugh]

00:41:34
DF: And that was totally different. And then we were going to do that with our second son, it had worked pretty well with our first son and we found out kind of the hard way, that there's actually a University regulation that says you can't have your kids at work, nobody in our unit had known or enforced.

00:47:48
BA: [overlapping] Oh. Yeah.

00:47:48
DF: One of the two. Because we weren't the first person to regularly bring small infants in with us. But so, for the second one, when we found out about that and whoever had told—you know, complained all the way straight up to campus HR, they didn't even ask department HR. You know, my, boss's boss at the time, which was Beth, you know, basically said, "Okay. Well, see you on video conference, back in about you know, three months."

00:48:14
BA: [overlapping] Mm-hmm.

00:48:14
DF: So, they basically sent me off to work from home for that amount of time.

00:48:18
BA: Yeah.

00:48:18
DF: My husband and I still took turns a little bit so I'd come in occasionally and spend the whole day at work so I could be in person for some of the meetings and things that go a little better that way.

00:48:25
BA: Yeah.

00:48:26
DF: But they were very supportive.

00:48:27
BA: Yeah. That's great. Yeah. So, I wanted to ask you, also about, if you could reflect on your experiences in Tech Services and its various iterations over the years, [laugh] are there ways in which being a woman in computing and in information technology has changed to today?

00:48:54
DF: Huh. That's—that's kind of a tough question.

00:48:58
BA: You know, besides you know, the numbers have changed over time but has there any—but yeah, anything about the environment, being a woman in this particular environment, that has changed, or not?

00:49:12
DF: Well, I think it's been true that there's always been people that didn't care that you were a woman and just if you knew your stuff, you were respected. And if you didn't, you weren't and it didn't matter what your gender was. And I think that's still true. I can't say I've really ever felt like the fact that I was a woman made a difference to very many people here. I can think of one or two over many, many years. And I don't think that's any more true or less true now than it was. The biggest difference I can think of is that with so many more women in the higher levels, there's, you know, more women regularly in director positions and assistant and associate director positions that I think it just—Boy, I'm not sure how to say what's kind of floating around in my head.

00:50:10
BA: That's okay. Take your time. Yeah.

00:50:16
DF: I won't say it feels more supportive, because I don't, I never felt it was not supportive. I think it feels more expected that women, women were more unusual in certain areas. You know, I said networking had a lot of women in it. And it did. But overall, in computing services? There weren't. There were, there were, you know, you'd go down the doors, it'd be guy, guy, guy, girl, guy, guy, guy, girl. So, there were [stammers] there were always some in the programmers, the consultants, the support people.

00:50:46
BA: Yeah.

00:50:46
DF: But there weren't lots and lots. And now, there's still not lots but it feels like there's more. And I'm not sure if that's really true, or I just perceive it be—or you see them more.

00:50:59
BA: Yeah.

00:51:00
DF: Because they're at higher positions.

00:51:01
BA: Mm-hmm. Mm-hmm. So, they're more visible in a sense, yeah. Or you would notice them more often. So, do you think network engineering is a bit unique as a unit within Tech Services in that regard, that it seemed to have more women, you think? Or, at least, historically, in your time here?

00:51:23
DF: The original Network Design Office [stammers] and original Small Networking Group from the early '90s, I think had a higher percentage of women for the group than if you looked at the group of programmers, or if you looked at the group of consultants, which are you know, what we'd call now, it would be the Help Desk staff. You know, they were the people that answer the phone and help people with technical questions. And back then, they were much more technical than they are now about programming or how to run things.

00:51:51
DF [cont.]: Now there's a lot of questions about, "How do I reset my password?" Which is very important but doesn't tend to be as technical. And within that group of networking, I think there was a higher percentage of women back then. Certainly within networking now, we've got twenty-ish people and if you don't count Mary, who's now the interim director, there's only two of us across all of networking that are women. And so, we aren't a big percentage of networking anymore; like we used to be.

00:52:19
BA: Yeah.

00:52:20
DF: But I think that is reflected across the board in the tech fields.

00:52:23
BA: Yeah.

00:52:24
DF: Or at least the computer networking tech field.

00:52:26
BA: Here at the University, you would say, yeah?

00:52:28
DF: Yeah, not just at the University, but even beyond that.

00:52:31
BA: [overlapping] Mm-hmm.

00:52:32
DF: Women aren't as big a percentage as they were for a while.

00:52:35
BA: Yeah.

00:52:36
DF: Um—I guess—When I work with the other parts of Technology Services, I'm respected. And I always remember being respected, but I was always a technical person and I'd spent a lot of years in electrical engineering classes and hobbies like Ham radio, where I was one of very few women and was used to being in an

environment where everyone else was a guy. And it didn't, for whatever reason, it didn't faze me very much. And so, I never had problems with it and I know that's not true for other people. And so I don't know if their experience would be different.

00:53:14
BA: Mm-hmm. So, when you go to conferences, for example, and it's, and from your other interactions with a larger network engineering profession that, expands beyond the University, what is, if—what is your sense of how the context here compares to the larger context of the profession if you could, you know, speak about that? Or not?

00:53:48
DF: It's hit or miss which conferences and things I make it out to, so I would say, some of the stuff I've made it out to women are reasonably well represented. They're not half but they're like at least a quarter to— or, a third at, you know, of the people at a conference. And then, as the, as a technical attendee as opposed to you know, coming along as a spouse or something like that.

00:54:11
BA: Right.

00:54:12
DF: And then there's other things I do like online communities and stuff like that. You know, that, I think of mailing lists, and I think of, in terms of who posts regularly? Now, I don't know how many women are reading but not posting. But there's not very many women posting the main names and a group I've worked with the last couple of years, which is SCinet, which does the network for [stammers] Super Computing, it's one of the biggest high-speed networks. It's a lot of fun to help build and set up and it only runs for a week and then you tear it down and you do it again the next year.

00:54:42
BA: [laugh]

00:54:43
DF: They started a program a couple of years ago to bring more women in because they'd realize how few women there were, actually.

00:54:51
BA: [overlapping] Mm-hmm.

00:54:52
DF: Making to, to there. And they wanted that representation there. And part of it is funding because it's really expensive to go, because you spend three—two to three weeks. On site, someplace else. So expensive in your time and expensive literally, in budget, because your, your sponsoring unit, whoever you work for pays for you to go.

00:55:09
BA: Yeah.

00:55:10
DF: They have to cover your hotel and your airfare. And so, you get in for free but they don't cover your living expenses while you're there.

00:55:18
BA: Oh. Okay.

00:55:19
DF: And so that makes it, you know, you have to be high enough up in your organization to convince them to spend you know, 6000 bucks on you just for that year. Right. Then, that's challenging almost everywhere.

00:55:32
BA: Yeah.

00:55:33
DF: Especially in higher ed. And so, they weren't getting a lot of women and they certainly weren't getting women early in their careers because nobody that early in their career could get that kind of justification through to their management and so they, they started funding actually bringing them in. They'll pay for the entire cost of having them come. And I got to do that a couple of years ago, and that made a huge difference and I met so many more people. You know, just really broadened the network; because I knew a lot of the people in my area of the country. You know, that does—that do networking around here. I've met them over the last, you know, 20 plus years but I'd not really met people nationally.

00:56:09
BA: Oh. Okay.

00:56:10
DF: [overlapping] Except in a few small, very specific topics. And so, meeting people nationally and internationally actually that do the same thing I do and are just as interested in it and find it just as fascinating has broadened my peer group tremendously. And [stammers] now, I'm fairly along in my career, but they didn't have a lot of funding and they were really or they, they had some funding and they didn't have a lot of applicant pool and they were worried about slotting people into the different technical groups and how well that would work out. So, they were kind of conservative that first year but they've done it— they're doing it for the third time this fall. And they're bringing in younger women, as well. And getting them in there, and it worked out really well.

00:56:47
BA: Hmm. Mm-hmm.

00:56:48
DF: And it's— now, that group is much more diverse than it was. But it—the trend, I don't think is—I mean, I think they're working very hard at it and I think it's [stammers] helping them out but overall, it's not as good as it could be.

00:56:59
BA: Mm-hmm. Mm-hmm. Yeah. Are there any groups here on campus that are focused specifically on women in tech that provide a sort of forum to discuss issues that affect women who work in computing or information technology?

00:57:16
DF: There is a Women in Technology group, it's only a couple years old. They try to meet once a month. They, they move the times around, so I can make it sometimes and not others.

00:57:24
BA: [overlapping] Mm-hmm. Yeah. [laugh]

00:57:25
DF: But they are talking about that kind of stuff. They're giving a place to express frustration, get ideas from each other, how to work through things, and set up a mentoring program. So, people who have been doing this for a while can work with people that haven't. They have both peer coaching as well as mentoring so you know, where you can kind of help each other out versus somebody that's actually been doing it awhile; take somebody that hasn't been doing it and you know, kind of show them the ropes a little bit.

00:57:48
BA: Yeah.

00:57:49
DF: And I think they've quite a success with that. In the last couple years. And then within Technology Services, is—we're probably over half the IT professionals on campus. [stammers] And we actually have a women's group that we have quarterly meetings for a very similar thing. You know, basically over lunch once a quarter. And then the running of that group changed hands recently. The person who's running it now has actually worked to bring in speakers more often than that.

00:58:18
BA: Okay.

00:58:18
DF: [overlapping] So, while we have the quarterly meetings, she's bringing in topics of interest to women. Somebody to talk, or a video to watch, or something like that a little more often, as well.

00:58:26
BA: [overlapping] Okay. And what kind of speakers does she bring in?

00:58:31
DF: Oh, the one I went to most recently was a lady that works in admin—I'm terrible because this a couple months ago. She works over at one of the local hospitals.

00:58:44
DF: But she—she's in a leadership position there and she talked about getting to that leadership position.

00:58:50
BA: [overlapping] Mm-hmm.

00:58:51
DF: And what it takes to be in a leadership position and you know, so, it wasn't necessarily an IT kind of talk but it was about being a woman in a leadership position in a male dominated area.

00:59:01
BA: Mm-hmm. Mm-hmm. Yeah. So, the talks focus on leadership and other sorts of management issues that might affect women, would you say?

00:59:14
DF: Yeah. There haven't been a lot of the talks, that's kind of newer, but—

00:59:16
BA: Yeah.

00:59:16
DF: It definitely is a thing—things that directly affect women.

00:59:19
BA: Mm-hmm. Mm-hmm. Yeah. Okay. And then, [stammers] just to ask you a speculative question; so why, do you think, a group like WIT emerged over the Women in Technology group, emerged over the past few years?

00:59:40
DF: I think there's a growing awareness of the need to get—to be supportive of any minority in order to have them be represented at the percentage they exist; [stammers]for lack of a, better way to phrase it, women make up half the population but they don't make up anywhere near half the people in technology. And women can contribute a lot. And men can contribute a lot but everybody contributes differently. In the [stammers] there's been a bigger understanding or an admittance that bringing different perspectives is important. The perspective of a woman versus the perspective of a man.

01:00:23
BA: [overlapping] Mm-hmm.

01:00:24
DF: Or of race or of—Any of the other different differences you can think of. That having those representative—brings more to the table. And because there's more awareness of that, people are trying to do more with it. And I think a lot of it is one or two people said, "Hey, you know, we've noticed this is an issue and we have a little bit of time, so let's see what we can do about this." You know, basically it them as a, "I've got the time. I've got the interest. And I really want to try and make this better."

01:00:55
BA: Mm-hmm. Mm-hmm. Yeah. That's great. Well, those were the main questions that I had for you. But I wanted to ask you if there were any other topics or questions that I might have asked you about in more detail or, or about at all? That you can think of?

01:01:14
DF: Hm. I'm trying to think of anything. We covered so much in that.

00:01:23
BA: Yeah. [laugh] Yeah. We jumped around a bit too so, yeah, if there's anything that I didn't cover that you thought would be good to highlight— can do that.

01:01:35
DF: Nothing's coming to mind, I mean—

01:01:37
BA: Okay.

01:02:38
DF: We've got career, family, support for women. We didn't really talk about money.

01:01:46
BA: Okay. Alright. Let's talk about money. [laugh]

01:01:48
DF: [overlapping] [laugh] I would say, I think I have been on the receiving end of some of the best equity pay that women get. The salaries are published for the University and so, it's kind of easy to see if there's big disparities in different ways. And there's definitely, over the years, been some people paid and other people not paid more. But I don't—Of the people I've looked at, it wasn't gender biased. And I know I was very, very lucky in the pre-2008 time. You know, when there was still occasionally money available.

01:02:27
BA: Yeah. [laugh]

01:02:28
DF: I had a couple—two different things happen over the years that put me in a very good position. One was a colleague that I'd worked with for years who we'd hired in after he finished his degree and I did, you know, he came in knowing how to program but not knowing anything about networking and I did a lot of the training for him. He left and got a job in industry. And our director knew his skillset and he knew that it, [stammers] or you know, she knew that it matched my skillset pretty spot on for the networking part. My programming is not nearly as good as the other guy's. But when he left for the job for industry, he was willing or able to actually tell her what he got hired for; which is unusual. Industry salaries are often not disclosed.

01:03:08
BA: Yeah.

01:03:09
DF: And because of where things were financially, she actually was able to go make the case to management that, "We're losing people. We need to pay them what industry pays them." Which is also not very common in higher ed.; a lot of times we just can't afford to do that.

01:03:21
BA: Yeah.

01:03:22
DF: And they came through with a pay raise.

01:03:24
BA: Oh, wow. Yeah.

01:03:25
DF: [overlapping] An equity pay raise for me to come very close to what he was in industry.

01:03:28
BA: [overlapping] Wow.

01:03:28
DF: At the time. I think he got more raises after that, but—

01:03:31
BA: [laugh] Yeah.

01:03:32
DF: But so, that was, you know, when there was money available things like that actually happened. And there, you know, as far as I know, there was no, like gender disparity. Based on that, it, was you know, this was a guy; he went out and he got a salary and they tried really hard to put me at the same salary he did. You know, the biggest problem we've had with pay is, early in my time here, it was easy to hire people and hard to fire them. So, they hired them at a low pay rate. If you'd worked out really well after a year, they usually bumped you up to a more industry standard rate. But it had been very hard to let people go so that [stammers] if you didn't work out, they still couldn't really get rid of you easily.

01:04:09
DF [cont.]: And so, they hired you in pretty low. And not too long after I hired on, that changed and it was hard to suddenly jump people up. And I think I was one of those last few that—it took me a couple of years because of the half time thing with other departments and stuff, but they did get me up to close to where I'd, where I had expected to be starting. And— but it happened that there were a couple of years where they hired people in low and then weren't able to jump them. And that caused some problems but I don't think that was gender related.

01:04:35
BA: [overlapping] Mm. Yeah.

01:04:35
DF: Because that, that was an across the board issue.

01:04:38
BA: Oh. Okay. Yeah.

01:04:40
DF: And then I had a similar thing where [stammers] You know, I'd mentioned that that for a while the Backbone Group was a team of two. And the guy I was working for was seriously looking at leaving. He was—his wife at the time wanted to move to one of the coasts. And so, he was very, very seriously looking at leaving. And I wasn't actually looking at leaving, but I wasn't specifically stuck on staying here. I didn't have the kind of time investment that I do at this point. And so, one of the things they looked at was, "If he's leaving, we absolutely need you to stay for continuity."

01:05:08
DF [cont.]: [overlapping] And they knew that my salary had, had slipped based on you know, simple cost of living raises versus compared to industry. So, they came through with another big jump that got me closer to what people doing what I do make in industry at that point as well.

01:05:19
BA: Yeah.

01:05:20
DF: To—to try and entice me to not look around even.

01:05:23
BA: Yeah. [laugh]

01:05:23
DF: Because he was planning on leaving. Now it turns out, he didn't leave. But I still—I got to keep my raise.

01:05:27
BA: [overlapping] [laugh] Yeah. [laugh]

01:05:29
DF: And you know I don't know if other women have had issue with [stammers] salary equity; but I've never felt that because I was a woman, I wasn't making what everybody else was.

01:05:38
BA: [overlapping] Yeah, for you personally. Yeah.

01:05:40
DF: For me, personally, at least, I make more than pretty much else that I know that's not a director and [stammers] and it was because of those two things happened early in my career. And the little tiny raises are better if your salary—if the base salary they're applied to are big. But I'm, you know, I don't always go around and look at everybody and make comparisons but I know at least, for my own personal history, and I would expect anybody else that worked for the same directors I worked for—

01:06:05
BA: Yeah.

01:06:06
DF: Were also treated equitably.

End of interview