

Computing Educators Oral History Project

An Interview with *Tracy Camp*

Conducted Tuesday, May 29, 2007

In Golden, Colorado, USA

Interview conducted by Barbara Boucher Owens

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1 [0:00]

2 **Barbara Boucher Owens:** This is an interview with Tracy Camp from Colorado School of
3 Mines, conducted by Barbara Boucher Owens. This interview is being recorded on the
4 29th of May, 2007, at Golden, Colorado, in the United States. It's part of the Computing
5 Educators Oral History Project. Now did we give and pronounce your name correctly?
6

7 Tracy Camp: Yes, you did.
8

9 **B:** Good. All right, we're going to start way back when. All right?
10

11 T: OK.
12

13 **B:** We're going to start with your parents. Did either of your parents have college degrees?
14

15 T: No. Neither one. My father has an eighth grade education, actually. And so for him, having a
16 daughter that not only graduated from college, but went all the way to a Ph.D. was an
17 immense pride for him.
18

19 **B: Were either of them in any kind of computer-related or math-related fields, like science**
20 **or engineering?**

21
22 T: No, my dad was blue collar, definitely blue collar. His parents — his father died when my
23 dad was very young and then his mom went blind. And he had nine sisters; he was the only
24 male. So basically he fended for himself from about the time he was 12 or 13, which is why
25 he had to leave school and get a job and, you know, take care of himself. So he's a mechanic.
26 He was a carpenter for several years. He worked on swimming pools for several years. But
27 no, nothing computer-related. But he does have a very analytical, logical mind, which I think
28 I inherited that from him.

29
30 And then my mom has a high school education, considered going to college but decided
31 getting married and having kids would be more fun, I guess. And she was a secretary and
32 then slowly moved up the ladder and became the office manager for the company she worked
33 at.

34

35 **B: Were you a good student?**

36
37 T: Yeah, I was always a good student until senior year of high school. I kind of fell apart when I
38 came of age or ... you know. I don't know exactly what happened, but I was a pretty good
39 student up until that point. And then took a year of kind of being a rebel and not doing the
40 right thing. And then got my act back together and went on to college.

41
42 **B: Well, in high school did you take courses in math and science that prepared you for**
43 **studying engineering?**

44
45 T: So, I was always a math whiz. I got that logical brain from ... mainly from my dad, I think.
46 Always a math whiz and so took all the way up to calculus when I was in the public school
47 system. I skipped a grade of math from seventh grade, I think was the year I skipped a grade
48 of math. And so certainly the math helped me quite a bit. I took one computer course when I
49 was in high school. We had a mainframe computer with punch cards and other things. So I
50 did take that course. And I actually failed the course because it was ... it was a course first
51 thing in the morning, this was my senior year, and I just couldn't seem to get to school on
52 time. So I think that's kind of funny that my first computing course I failed. It didn't,
53 obviously, have anything to do with the skills of computing; it was the fact that I was late
54 every day to class.

55
56 **B: Well, did you have siblings who went on to college and professional careers?**

57
58 T: I have one brother, who is a year older than I am, and he could not stand to be in school. And
59 so he did manage to get a high school education, but then went out into the work world. So
60 he and I are very close and we're similar in many ways, but as far as following the education
61 path, we're very different.

62
63 **B: What kind of career has he had?**

64

65 T: Well, he started working in a blue-collar type company, for a steel mill. But then my parents
66 actually started their own swimming pool company that has grown and grown and grown.
67 And my brother now is about to take that over. It's ... I think last year their sales was \$5
68 million or something like that. It's a huge company, now, that my dad started — I actually
69 helped him start one summer, years ago, and then worked there for several years during my
70 summer vacations during school. And it slowly has grown and my brother has taken it over.
71 Yeah! So that's what he does. He leads this big company.

72

73 **B: Cool! Was there somebody in your early life that was a shaping influence, like a teacher**
74 **or someone that served as a mentor?**

75 [4:55]

76 T: I had several teachers. I think that's true of many women in male-dominated fields is, you
77 have to have some people that offer you that extra encouragement to continue and I can name
78 several.

79

80 I remember my sixth-grade teacher was a huge influence because he was the one who took
81 myself and a couple other students aside and let us just go on with math instead of just
82 following the ... you know, the traditional path. So he was an influence.

83

84 I remember a teacher in high school, another math teacher — both males — who were a huge
85 influence to continue ... encouraging me to continue with math and moving forward with
86 math.

87

88 And then, as far as from my family, my Uncle Dave was a huge encouragement as well,
89 because he was one person in my life who actually had a college degree. Nobody else I knew
90 had a college degree. So he was my role model of just knowing someone personally that had
91 a college degree. That made me think, "Well, maybe I could do that as well!"

92

93 [And of course, I had unbelievable encouragement from both my parents that I could go to
94 college and get a college degree.]

95

96 **B: So you went to college, but how did you choose your undergraduate institution?**

97

98 T: So my first undergraduate institution was a party school, because I — my senior year, I kind
99 of messed up and wasn't thinking the long term and chose my first school because that's
100 where my best friend was going. It was the only school I applied to. And I got in.

101

102 **B: Which was?**

103

104 T: It was Ferris State University in Big Rapids, Michigan. I went there a year and realized that I
105 was ready to work and learn some things that I didn't already know. And so Ferris wasn't
106 quite for me.

107

108 And so there was a faculty member there, a math faculty member, male — again — who
109 suggested I apply to Kalamazoo College. And my initial reaction to that was, "There's no
110 way Kalamazoo College will accept me!" — 'cause that's a small prestigious liberal arts

111 school in Michigan, a private school, and I thought there was no way they would accept me.
112 My mom said, “Well we won’t know unless you apply.” And I was like, “Well Mom, I think
113 we’re throwing our application fee away.” And we didn’t have a lot of money when I was
114 growing up. It was — you know, we lived week-to-week. My dad actually worked two jobs a
115 lot of my childhood just to ... we didn’t have a lot of money. So to me, you know, spending
116 whatever the application fee was, \$15 or \$20, to me just seemed enormous. But my mom
117 insisted, “No, let’s apply and see what happens.” And I got in and went for a visit and saw a
118 lot of very dedicated, hard-working students and thought, “Yes, this place looks like maybe I
119 could fit here.”

120

121 **B: Hmm. Well, tell us a little bit about your undergraduate experience. I mean, it**
122 **obviously was a good fit.**

123

124 T: Mmm hmm.

125

126 **B: Were there key events or people that you want to bring up, subjects ...?**

127

128 T: So there were a couple of professors there that I remember quite fondly and I actually went
129 back to Kalamazoo College a few years ago and gave a couple of presentations. And the
130 faculty members there — Carpenter was the last name of one and Rajnak was the other —
131 they told me that they talked about me a lot when I was at Kalamazoo College because
132 apparently they saw that I really blossomed while I was there. I came in as a student who
133 really didn’t know what she wanted and didn’t really feel as if she fitted in there. But the
134 academic plan that they have at K-College is pretty unique and I think it helps students learn
135 about the world. So some of the things that you do at K-College — at least when I went
136 there, I understand the plan has changed now — but when I went there, during your
137 sophomore year, you did a career development. So you went away for the spring semester
138 and did a career development at a company. And then you went to school during the summer
139 — K-College was a twelve-month-a-year school. So your sophomore year, you did a career
140 development. In your junior year, you did a foreign study. So I spent ... let’s see, my
141 sophomore year I spent in Flint, Michigan, at General Motors Institute. And then during my
142 junior year I went to France, to Strasbourg, France, for six months. And then in your senior
143 year, you did a senior project for a semester. So again you were off-campus for a semester,
144 doing this senior project. And that project actually was with my parents’ new business,
145 working with them to get that going.

146

147 [10:00]
148 And I remember when I started at K-College, I thought that there was no way I was going to
149 do a foreign study. I was there to take classes, get my education, and then move on. And a
150 foreign study just didn’t seem to fit in that plan. It just seemed to be a ... you know ... a frill,
151 I guess. But didn’t really seem to be a part of the hard-core academics. But when I look back,
152 those six months in France are six of my most wonderful months of my life. That foreign
153 study was just wonderful. Going to a foreign language and taking classes in French. I had
154 French art and French history and French literature and French language and French, French,
155 French. And I ... looking back, I think I learned more about the United States living overseas
156 than I had in my, you know, 20 years here in the United States. So it was an amazing
experience that I treasure. So today, students ... I am always encouraging students to do a

157 foreign study. You learn a lot more about the world. There's a lot more to the world than just
158 the pages in a book for a particular course. And I think a foreign study helps capture that.

159

160 **B: So you decided something was ... influenced you to go on to graduate school.**

161

162 T: Right. So Kalamazoo College did not have a computer science program, nor a computer
163 science degree. They had a mathematical program that had some computing classes. So my
164 undergraduate education is actually in mathematics. And during my senior year, when I took
165 their math comprehension exam and when I looked at my career options — which basically
166 seemed to be actuary type of positions — I thought that I wanted to do something different.
167 And computing was a draw for me because of the logic. I'm a very logical person, so
168 computer science was a huge draw for that. So I thought, "Well, I don't really want to be a
169 mathematician when I grow up, so I am going to go on and get a Master's in computer
170 science and get trained in a different field, and then get a job." That was my plan.

171

172 So I went to Michigan State University, their Master's program at Michigan State. And the
173 nice thing about that particular program was they had a couple classes that were for students
174 like me, that were focused on the details that I hadn't picked up in my undergraduate
175 education. So I had, I think, two classes that did not count towards my Master's degree, that I
176 needed to get up-to-speed with the other students who had undergrad degrees in computing.

177

178 **B: So had you had any computing at Kalamazoo?**

179

180 T: At Kalamazoo College I think I had three classes [in computing]. I think I had Pascal, I had a
181 data structure class, and then I had a numerical computation-type class. And that's all I recall.
182 Many of their math classes had programming projects associated with them, but those were
183 the only "official" computer science classes that I recall taking.

184

185 **B: Was that Michigan State [program] a Master's thesis?**

186

187 T: A Master's non-thesis.

188

189 **B: Then what happened next?**

190

191 T: So then when I was finishing my Master's, thinking about industry, the job market in 1987
192 wasn't all that great. And [my parents got it into their heads that I ought to get a Ph.D. I
193 thought both of them were crazy]. But [my dad] thought — to him, you know, never having
194 education as an opportunity, to him, seeing me go all the way was just huge. So he really
195 wanted me to do that. And so the job market wasn't all that great. And my parents — I kid,
196 but I think it's partly true — they bribed me to go get a Ph.D. They bought me a Trans Am
197 and said, "You can have this car if you go on to get a Ph.D." Or you go to ... it wasn't to go
198 on to earn a PhD; it was to go to a university in a Ph.D. program. So at the time my plan was
199 to take the car and go for a year and then see what other opportunities might come my way,
200 was my plan. But a year went into two years. And then two-and-a-half years. And then,
201 pretty much, I was like, "Well, man, I'm so close, I might as well just finish." Getting a ...
202 earning a Ph.D. and becoming a professor was never in my long-term plan.

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B: Well, tell me about how you chose the institution for your Ph.D.

T: So I wanted to leave Michigan ...

B: With your Trans Am?

[15:10]

T: With my Trans Am, yes. [both chuckle] Definitely took the car with me. So I wanted to leave Michigan because I had lived there my whole life, besides the six months in France, and I knew there were a lot of other, you know, things to see. But I wanted to go to a small school. I enjoyed the environment at Kalamazoo College — which only has a couple thousand students — way more than the environment at Michigan State — which had 55,000 or 35,000 [students] or ... a number too large to even comprehend. So Ph.D. in computer science, small school, there were not a lot of choices. College of William and Mary is one of them that I applied to. And I was accepted and was offered a teaching assistantship. And so off I went!

B: Well, did ... I haven't heard of any female mentors at Kalamazoo?

T: Nope. There were no female mathematicians when I was there.

B: How about colleagues, students? Was there a cohort that was interested in computing, or were you ...?

T: There were a couple of males. But the only female math student that I was friendly with, actually, she was not that interested in computing. So, yeah, I was kind of alone ... a loner.

B: Then, what happened at William and Mary? What was that experience like?

T: Yeah. So, at Michigan State, I should add, since we are on this subject: there were not a lot of female faculty at Michigan State, either. And the people that I hung out with were all men.

B: Did you notice that?

T: I liked it. [laughter] I was very "popular." Yes, I did notice that and I wish there had been more women. But I think that ... my brother and I, when I was growing up (he was only a year older than me), and so he always had boys around. So I felt very comfortable in a boy environment. My brother was ... is much more popular, I think, than I will ever be. And so I was just always "one of the guys." And so I always felt comfortable with that. So I noticed it, but it didn't put me off. And looking ... as I was growing up, I mean, my mom was awesome in encouraging me on to school and what not. But when I consider all my role models ... You know, so many of them throughout my education were male. And even at William and Mary there were not ... there was a female instructor, but not a female faculty member.

B: And how about colleagues?

249 T: So there were some female students at William and Mary. So that was nice. And, in fact, one
250 of my really good friends developed at William and Mary, Laurie King, whom you know,
251 Barbara.

252
253 **B: Sure!**

254
255 T: Yeah! She and I met shortly after I got there. She was already there when I arrived and we
256 became pretty tight. She's a fabulous person. And so ... but besides her, again, it was a lot of
257 ... I had a lot of guy friends, not a lot of women.

258
259 **B: Well, then, talk about the faculty that influenced you or the ideas that influenced you at**
260 **William and Mary. What do you think was — when you look back on it —shaped your**
261 **later choices?**

262
263 T: To become a professor?

264
265 **B: Whatever. Yeah.**

266
267 T: So there were many faculty members that I think had a huge impact on me. Well, two in
268 particular that had an impact on me when I was at William and Mary. One is Keith Miller,
269 whom you also know; he's been a mentor of mine for years. And he was a faculty member at
270 William and Mary when I first joined there. And then the other one was my advisor, Phil
271 Kearns. And I chose Phil as my advisor pretty much because he was the coolest faculty
272 member there. I don't think I had these long-term plans of being where I am today. It was
273 just I kind of ...

274
275 **B: What kind of courses stimulated you?**

276
277 T: So I liked the systems courses. During my Master's my focus was on AI — which I think a
278 lot of women were drawn to the AI field. And so my focus during my Master's was on AI.
279 And then when I went to William and Mary, the thought was I would do a Ph.D. in AI. But I
280 didn't really hit it off with the AI faculty member. And I was very interested in the systems
281 courses. I think, again, a lot of it is because it's so logical. I mean, I'm such a logical — my
282 whole being is logic. Even our kids — we raise them with love and logic. You know, so
283 that's just who I am.

284 **[20:28]**

285 **B: So you're finishing up at William and Mary.**

286
287 T: Well, I do want to just remark on one thing that happened when I was at William and Mary
288 that I think had a huge influence on where I am today — is I heard about the Systems list
289 when I was at William and Mary. And it was a pretty new list. I joined in ... I think I joined
290 in 1991 or 1992. And I think it only had been around for less than a year. And that proved to
291 be a huge ... a huge influence on my life, being part of that list and being part of a women-
292 in-computing community. And realizing all of a sudden, "Wow! I've been surrounded by
293 men!" but hadn't really given that much thought.

294

295 **B: Hmm!**

296

297 T: I mean, I felt comfortable in the environment, so that certainly didn't bother me at all. But I
298 didn't really give it a lot of thought, of "Why are there not more women here?" And "What
299 can we do to get more women here?" I didn't ask those questions until I joined the Sisters
300 list and started hearing other people ask those questions. Then realizing, "You know what,
301 this is ridiculous!" It would have been nice to have more women through all these years of
302 education.

303

304 **B: So you finished your Ph.D. Your dad ...**

305

306 T: Yes! So they were thrilled, they were thrilled. And so then the logical step was to go into
307 academics. With a Ph.D. the choices were a research lab or a university. My advisor advised
308 me — I mean I wasn't thrilled about research; I enjoyed it, but it wasn't a driving passion of
309 mine — but he advised me, and I think it was good advice, to try to get a position at a
310 research institution. Because if I decided a research institution wasn't for me, I could always
311 then look at other teaching institutions. But it's really hard to go the other way down that
312 path.

313

314 And so I applied to several places, I think over fifty, because the job market in 1993, for
315 finding faculty positions, was very tough ... tight. So I applied to a lot of places and went on
316 ... I think four interviews — when the offer from the University of Alabama came. And
317 here's where I got really bad advice — so I'm not going to say who gave me this advice —
318 but someone said to me, "Oh! Well, you should take it, 'cause it's unlikely you'll get another
319 offer from a research institution." So I took the offer and within two weeks I had to turn
320 down ten other interview offers of places I would have enjoyed visiting, and looking at, and
321 considering. So that turned out to be, yeah, unfortunately, one piece of advice that I really
322 wish I had not taken. But ... yeah! So I went to the University of Alabama for a few years
323 there.

324

325 **B: What were the good things about being there?**

326

327 T: The good things were ... there was a female faculty member there. That was nice. William
328 and Mary actually hired a female faculty member as I was leaving. And today, actually,
329 William and Mary has a lot of female faculty members. So that's nice; so they've turned
330 around from their all-male environment. So Alabama had a female faculty member there. My
331 husband and I really enjoyed the sports at Alabama.

332

333 **B: The husband ... when did the husband come into this picture?**

334

335 T: Well, he wasn't quite my husband then. But he finished his Master's degree at William and
336 Mary and then moved down to Tuscaloosa, Alabama, with me. And he was actually an
337 instructor in the department for a couple of years. Then he decided to get a Ph.D., so he went
338 to Georgia Tech. So we did a year, you know, commuting — it's three hours, so that wasn't
339 so bad, a three hour drive. But then he decided he didn't really want my job [laughs], and so
340 getting a Ph.D. didn't seem to be what he needed in his future. And he wanted to get into

341 industry and check out some computing-type jobs in industry. And Tuscaloosa, Alabama,
342 didn't have a lot of opportunities. And so we came to the Denver area.

343 [25:20]

344 So the sports at Alabama, that was like a highlight of our time at Alabama. Roll, Tide, roll!
345 We went and saw the women's basketball team, the women's gymnastics, the male ... their
346 baseball team. We had season tickets to a lot of the sporting events. That was by far the
347 highlight on a personal note. But as far as professionally, I think I did well there. I earned a
348 [NSF] CAREER award while I was there, which was nice.

349

350 **B: Well, I see from your resumé that you're very prolific in research, in service to the**
351 **academic community. Did that start at Alabama?**

352

353 T: Now, I actually gave a talk recently. I was asked to give a keynote talk at a conference, a
354 women in computing conference. And they asked me to talk about how I do all that I do,
355 because I do have my foot in two fields. I have my technical research program, which is in
356 ad hoc networking, and then I have my women in computing efforts that I do. And I do a lot
357 of service for both communities; and I do research in both communities; I have grants in both
358 communities, so ...

359

360 **B: Did that start at Alabama, or when did it start?**

361

362 T: It did start, but I wasn't that successful initially. I mean, I did write the "Incredible Shrinking
363 Pipeline" paper, which became a paper that has been very well cited. I don't think that ...
364 you know, I wasn't the first person to note that we had this drop in percentage of women in
365 computing. I think I was the first person to give it a cool title. And I truly believe that's one
366 of the reasons why I get cited so much for that, is because I gave it a good title, a title that my
367 husband helped me create. Because my husband, I remember, he said, "Wasn't there a movie
368 about the incredible shrinking woman?" And I went, "Incredible shrinking pipeline, that's
369 it!!" You always have to have a good title. Good titles are so important. So I did write that
370 paper when I was at Alabama. And I was involved in Systers. And I was asked to be the co-
371 chair of ACM-W, so I did have my feet in both fields. But at the time I think I was more
372 successful in my women-in-computing efforts than I was in my technical efforts.

373

374 I really struggled initially technically. I was the only networking faculty member at Alabama
375 at the time. I didn't have a mentor to help me learn how to write research proposals. My
376 advisor had never helped show me how to do that and I floundered for several years. Almost
377 to the point where when ... at one year I actually did apply to several teaching institutions,
378 thinking that maybe this research stuff wasn't for me. And I obviously ... certainly did not
379 have much confidence, which I would like to talk about at some point during this interview.
380 And ... seriously, almost considered ... yeah, almost considered giving up on the technical
381 aspects. And then NSF gave me this tiny little \$17,000 research planning grant award. You
382 know, dollar-wise, it was insignificant. Confidence level — it was huge! It was huge to get
383 this tiny little award! And so the next year when I applied for a CAREER grant (this was my
384 fifth year in applying, I'd been rejected the previous four — which they no longer allow, I
385 might add), in my fifth year, I completely switched topics and threw out everything I had
386 done before and did something completely new. And it worked. And I was awarded the

387 CAREER award. And suddenly realized that I had been trying to do research that I had no
388 passion for. And I moved on to a new field that I got very excited about, that would, I
389 thought, you know, could potentially have an impact on the world. My previous research did
390 not have much impact at all, and so the passion wasn't there. My advisor, if I dare quote him,
391 called that type of research "intellectual masturbation" — without a lot of impact. And my ...
392 the passion for me was just not there. So switching research topics was a huge step in the
393 right direction, because I became passionate about my research and I became very successful
394 at it. But it took me a long time to get to that point.

395 [30:11]

396 **B: So you were still at the University of Alabama when you got this CAREER grant.**

397

398 T: Yes. I received the CAREER award the year before I left.

399

400 **B: And so that made you more saleable as you looked at your next opportunities?**

401

402 T: Yes, I think it did. I think it did. And when I went looking for a job, there were very ... at the
403 time the faculty market was really, really good to be moving. This was in 1998. You know,
404 we went from 500 applications down to 75. So it was a very good time to be looking for a
405 faculty position. And so I only applied to three universities and then ending up saying "No"
406 to one interview offer. So I was very, very selective. And what I was looking for was a
407 university that had a Ph.D. in computer science and that was a small university. My soul is
408 just a better fit with the small university than the larger. Because I went to small K-College,
409 large Michigan State, small William and Mary, large Alabama, and now I am here at the
410 Colorado School of Mines, a small university again. My husband and I miss the sports
411 immensely.

412

413 **B: I was going to say, the sports.**

414

415 T: Our sports team ... yes, our sports team is nothing to write home about, so we do miss the
416 sports. But other than that I prefer being at a smaller university. So yes, so I was very
417 selective in where I applied and fortunately I was offered this position. And it was a good fit
418 for my husband, because we had Denver and the IT market. And so I actually received the
419 offer and accepted it within 24 hours.

420

421 **B: Wow!**

422

423 T: It wasn't something I gave a lot of thought to. Yeah.

424

425 But anyway, back to your original question. When I created this keynote for this talk in
426 Australia, I mapped out my career and over, you know, twelve years of my career, I was able
427 to ... I had a chart showing the difference between my successes my first six years versus my
428 successes my second six years. And it's ... I mean, it's just mind-boggling. I did not ... I had
429 to learn how to be successful. And it took me six years to do it.

430

431 And that's one thing that ... I try and mentor our junior faculty, because I think I really
432 struggled because I didn't have mentors as a young faculty member. And that really hurt me.

433 And so, that's one of my goals today, is I have a mentoring plan with several junior faculty
434 members. So they don't have to go through the same trial-and-error process that I went
435 through.

436

437 **B: Do you want to speak a little bit more about the confidence? You were talking about**
438 **that ...**

439

440 T: Yes. This is something else I talked about in my keynote that I learned about recently and
441 boy, did it hit home. It's called the Imposter Syndrome. Have you have heard of the Imposter
442 Syndrome?

443

444 **B: Yes, I have.**

445

446 T: Oh, my gosh! I was so thrilled when I first heard about it! I just learned about it a couple of
447 years ago. And ... it just struck home for me. Tremendously. I am definitely an imposter at
448 this job. I've been an imposter my whole life. And when you look at the checklist of, you
449 know, who are potential imposters, I can check many of them. I'm a first generation
450 professional, you know, my parents were blue-collar. I'm in a field that is heavily dominated
451 by men. So there's many that I can check. So I'm a huge imposter. I remember when I was
452 accepted to Kalamazoo College and actually went to Kalamazoo College, a little voice inside
453 my head said that I was a test case. You know, "Let's take this idiot girl from the backwoods,
454 you know, and put her in this environment that was very intellectually stimulating with a lot
455 of smart people and let's see what happens!" [laughs] So I really felt ... and I knew
456 intellectually, obviously, that this wasn't the case. They don't have these types of scientific
457 studies to see what you can do in that type of situation. But a little voice told, you know,
458 would sometimes raise up and say, "You know, well, you don't really belong here. And
459 you're just a test case!" Which is very silly, but that's how I felt when I was there.

460

461 And I've carried that with me my whole life. I definitely feel like an imposter. So learning
462 about the Imposter Syndrome was huge ... was HUGE. And so now I tell everybody that I
463 possibly can about the Imposter Syndrome. Whenever I give a talk that's related to women in
464 computing or successes or whatever, I try and fit in the Imposter Syndrome and usually ask
465 for a hand show and then always, you know, 75% of the room raises their hand. So I think
466 it's really good to know about the Imposter Syndrome because then you can start dealing
467 with it and, you know, learning to be more confident.

468 [35:22]

469 So, yes, confidence has always been something I've had to struggle with. I'm not nearly as
470 successful as my record indicates. [both laugh]

471

472 **B: So you haven't been quite successful in getting rid of this Imposter Syndrome.**

473

474 T: Yes, I know, it's still there. It's still there.

475

476 **B: You talked a bit about your mentoring philosophy and the importance of mentoring.**
477 **And somewhat research — that you need a passion for research. How about your**
478 **teaching philosophy?**

479

480 T: Yes. So it turns out that I love to teach. I didn't ... when I was in the Ph.D. program, I
481 thought the last thing that I would want to do is be a teacher. I didn't have that driving urge
482 that some people have to be a teacher. But I actually really do love the job. I really do love
483 the job. So my teaching philosophy is: I spend a lot of time on my classes to try and make
484 them interesting, to try and show them the big picture and the little details. My classes are
485 very collaborative type classes; I don't stand up at the board and lecture for 50 minutes or
486 however long your class is. We do a lot of group work and the students have to respond to
487 numerous questions throughout the lecture, after, you know, they work in groups and talk to
488 their partners and what not.

489

490 So ... yeah, I don't think that I'm the best teacher. I haven't put all my focus on teaching,
491 because I also have the research that I really love to do. But in general, I'm better than the
492 average teacher, so ...

493

494 **B: What have been your favorite courses to teach? And you indicated ... like that might**
495 **change.**

496

497 T: Yeah, so I have been ... when I was at Alabama, and even for my first — how many years
498 have I been here at Mines? My first six years at Mines — the only classes I taught were
499 senior-level classes or graduate-level classes. So I didn't teach any lower-level classes. Partly
500 that was due to we just didn't have the resources here at CSM, at my university, to have
501 faculty teaching lower-level, just didn't have enough faculty to do that. We've known for
502 years that we wanted to have a faculty member take a look at our first introductory
503 computing ... you know, programming course. We've wanted to do that for years. And so
504 during my sabbatical, I realized that I wanted to do something different and it seemed like a
505 good fit to go down there and try and make a change, especially with the drop in student
506 enrollments ... anything we can do to try and improve our enrollment.

507

508 **B: So you mentioned “down there” ...**

509

510 T: “Down there” in the lower level.

511

512 **B: The lower level.**

513

514 T: Lower level, yeah. So it's a fun class to teach. It's a very different class to teach. You know,
515 you learn what concepts really trip students up, concepts that I have always in the past
516 assumed my students knew in the upper level ... you quickly learn about what is difficult for
517 these students. So that's been very fun.

518

519 **B: Do you have any favorite stories about that?**

520

521 T: Favorite stories? Well, I guess I've only been teaching this class two semesters now, so I'm
522 still a newbie at it. I certainly like ... I can think of several students that have come to me and
523 said that that course has made them interested in considering computer science as a career
524 option, or as a major or a minor. So I can think of six students off the top of my head that

525 have come to me outside of class to talk about majoring or minoring in computing. And I
526 treasure those memories because part of the reason why I love my job so much is you can
527 have such an impact on someone's life, encouraging them to do this or that or the research or
528 the papers, or whatever — the grant proposals, whatever. I treasure those memories that
529 remind me that the reason why I'm in this job is because of the impact you can have on
530 people's lives. And ... I mean, I think back to some of the faculty members who had such a
531 huge impact on my life and now knowing that there are some people out there that when they
532 think back, they think of me. And that's pretty cool. That's pretty cool.

533 [40:25]

534 **B: Well, another part of your life — you mentioned that you were active in ACM-W, that**
535 **Systems moved you to that. What other professional organizations are you a prime**
536 **mover in, or helped your career, or helped you think about ... ?**

537
538 T: So my main research organization is SIGMOBILE, ACM's Special Interest Group on Mobile
539 Computing and Systems. And I'm the treasurer of that group currently. So I'm pretty active
540 in SIGMOBILE, taking care of the budget and the in-cooperation requests. It's amazing how
541 many "in cooperation" requests we get for SIGMOBILE. It's just amazing. So I'm pretty
542 heavily involved in that community as well. So, again, I have my foot in two communities. I
543 do service work for my technical research and I do service work for the women-in-computing
544 efforts.

545
546 **B: And is it a symbiotic relationship, in that this professional work aids your career as well**
547 **as ... ?**

548
549 T: That was actually a question they asked me to address in this keynote address in Australia,
550 was how ... how the two either help or hurt each other. And I think that they ... having my
551 foot in two communities has hurt me in the fact that I work a lot. And fortunately, I have a lot
552 of energy and I love my job, but I work a lot more than many of the men that surround me. A
553 lot more. So that, I think, [is] unfortunate, especially now that I have young children. But I
554 haven't figured out how to back off on either of the communities. I can't give up one ... I
555 can't give up either, in my opinion, so I don't know how to back off on that.

556
557 **B: You're leading right into the next question that I have. It's what were the major**
558 **challenges that you've had in balancing your personal, professional lives?**

559
560 T: I do have some tips on that, Barbara, which we can get to.

561
562 **B: All right!**

563
564 T: But going back to the pros, I think the two communities have helped me. Because when I
565 write a technical research proposal I always have a piece in that proposal that has to do with
566 women in computing. Always. I always fit it in. And with NSF's broader impact criteria and
567 their evaluation, I always score very high on that, because I'm not ... I'm not just using the
568 words. I read so many proposals of "and we will recruit women and minorities." And I'm
569 thinking, "Why? You haven't done it in the past, what makes you think you're going to do it
570 now? How are you going to do it?" But I actually have a lot of efforts in that area, so I'm

571 taken seriously. So I think that my research proposals ... I have helped get some of my
572 research proposals funded because of the women-in-computing piece associated with it. But I
573 also think the other way. I think some of the women-in-computing efforts that I do, I think
574 my research has helped me ... I think I'm taken seriously, because I have this very strong
575 research program that ... so I think the two have helped each other. And my research
576 proposals bring in some money to help with my women-in-computing efforts, you know. So I
577 think the two have helped each other.

578
579 But the biggest challenge is, as you mentioned, is the time, because you have service in both
580 areas, you have to keep up with the literature in both areas, networking in both areas, travel
581 to the conferences associated with both areas. I mean, it's almost as if you have two jobs.

582
583 **B: I'm also hearing a third one, because if you're going to focus on introductory**
584 **computing, that's another issue.**

585
586 T: That's a whole 'nother issue, I know.

587
588 **B: Another area.**

589
590 T: And I actually was involved in SIGCSE way back in the mid-1990s and I gave that up,
591 realizing I couldn't do three communities, so you're right. You're totally right.

592
593 **B: So do you want to talk about juggling the family with the career?**

594 [44:44]

595 T: Right, so here's my new ... this is ... again, I feel like I'm giving my keynote address,
596 because they also had asked me to talk about how you overcome these challenges. And for
597 me, there are several things that I think have really helped me. One is my husband got me a
598 book called *How to Say No Without Feeling Guilty*. And I wish they had a Cliff Notes
599 version of the book, because there's a lot of ... you have to wade through a lot of crap to get
600 the diamonds, in my opinion. But one of the two things that I took away from the book is that
601 when I get asked to do something professionally, the person who is asking me just wants to
602 have a job done. They don't care who does the job, they just want the job done and they want
603 it done well. So if you can give them somebody else who can do the job and do the job well,
604 then there's not going to be any hard feelings — because all they want is their job done!
605 They don't care if you do it, just as long as someone does it. So I'm able to say "No" to a lot
606 of professional requests much easier now. Because I say "No" with a suggestion of who can
607 do the job and do it well. And sometimes I'll give two or three suggestions, just in case they
608 get a "No" from someone on their next request. So I have found that helps me to say "No"
609 professionally a bit more.

610
611 But also the book talked about social requests, you know, social invitations. We have such
612 little free time in this world that you really ought to step back and think about the social
613 invitation and whether that invitation or that event will give you energy. If it will draw
614 energy, then don't go. And all you have to do is, "Wow, that sounds like a lot of fun;
615 unfortunately, I already have plans." You don't have to explain what your plans are; your
616 plans could be to take your kids to the park. Who cares? You have plans! Your plans could

617 be to take a hot, bubbly bath. So that, I think ... both those tips have helped me to say “No” a
618 little easier. My husband gave me that book a while ago.

619
620 The second thing that helped me was I heard about this woman who wrote a book on the four
621 Ds. I don’t know if you’ve heard of this: Delay, Delegate, Diminish, or Delete. And she said
622 that in everything that you have on your to do list, if you need to find some time, you ought
623 to try and figure out one of these D’s to use. Delete: maybe it’s not all that important; maybe
624 you can delete it and it’ll be okay. Delay it: you know, maybe it doesn’t need to be done this
625 week; let’s push it back for a couple of weeks. Diminish it: maybe you don’t have to do the
626 A+ job on it, maybe you can get away with the B- and that’s good enough. Or Delegate. And
627 I’m a queen of delegation. I delegate a lot of stuff to my students, which helps me be even
628 more productive. So, yeah, so I live by those four Ds.

629
630 **B: You were telling me something about your workday schedule, how you allocated time.**
631 **Do you want to talk about that? That you have days for yourself and how you manage**
632 **the week?**

633
634 T: Yeah, so one thing that I learned a long time ago from some presentation by someone really
635 smart — I get a lot of the tips how I live our life through our top women in our field. I don’t
636 know if you’ve seen many people like Jan Cuny and Mary Lou Soffa and Janie Irwin and
637 Anne Condon ... You listen, I’ve heard many of them talk several times and live my life by
638 their very, very smart advice. And so one piece of advice I took away from one of these
639 lectures was to be real organized (I’m real organized with my “to do” list) and then schedule
640 your time ... what you’re going to work on when for your week. So I have my very, very
641 large “to do” list. And then at the beginning of the week, I figure out what are highest
642 priorities for that week. And then those are the ones that I focus on for that week.

643
644 As far as scheduling my life: my husband and I just recently started, as of January, a new
645 schedule where I don’t ... Thursday is my day to be the stay-at-home mom and he works,
646 and then I work on Saturdays. So we do a six-day-a-week schedule. And I really like that
647 schedule, because Thursdays, then, I can be involved in all the kids’ activities. So every
648 Thursday morning I volunteer at one or the other of my children’s schools for a couple of
649 hours. And then I get to cart them to tennis practice or, you know, whatever those things. So I
650 really enjoy my Thursdays. That’s a new thing we started this year and it works well for our
651 family. And I also find that I can get more done on a Saturday than I can on a Thursday,
652 because there’s less people around the office. So often on Saturday I can go home by two
653 o’clock in the afternoon. I don’t have to put in that full day.

654 [50:41]

655 Another thing that I think that has worked well for me throughout my life is I don’t sleep that
656 much. So I can get a lot of work done before my kids even get out of bed. So I do that as
657 well.

658
659 **B: Do you have outside interests, outside of computing and women in computing and your**
660 **children?**

661

662 T: And my children? I have lots of interests. Do I have time to partake in any of them at the
663 present time? No! My kids are ... Emma is almost four, she's 3 and $\frac{3}{4}$, and my son just
664 turned 7. And at the present time, Mommy is really cool and they like spending time with
665 Mommy and so I'm there. Some day, they're not going to want me so much and then I can
666 get involved in the things that I really, you know, personally, enjoy doing on my own. But
667 right now, as long as my kids want me around, I'm going to be there.
668

669 **B: You're really leading into what my next question is. Because you are mid-career. I**
670 **would consider you to be a young to mid-career person. Where do you envision yourself**
671 **after having — you've had 12 to 13 years in the field — where do you see yourself 12 to**
672 **13 years from now?**
673

674 T: That's a good question and I've done a lot of thinking about that the last year and a half.
675 That's a really good question, Barbara, and unfortunately I don't have answers. I think that
676 ... one that thing I definitely ... I'm a full professor now as of just a few weeks ago ...
677

678 **B: Congratulations!**
679

680 T: Thank you. Thank you. And my husband said to me that, "You know, maybe it's time to get
681 off the treadmill and enjoy the view." Because I feel like I have just been racing up the
682 tenure-track ladder and then up to full professor. And getting lots of money. And having lots
683 of students. And writing lots of papers. And I feel like I've been in this race to succeed. And
684 so for the last year I've scaled back a little bit, trying to figure out, "Yeah, where do I want to
685 be?"
686

687 I actually think ... first of all, I'm switching research directions. Once again. I am going to
688 head into using sensor networks for the health community. So that's a pretty big switch, so
689 I'll be doing a lot of reading this summer. Again, what's driving me is I no longer have a
690 passion for my research that I've been doing. I don't see the impact that it will have on the
691 world anymore. And for me I have to have ... I have to see potential impact. And so anything
692 we can do in the health world, especially as our population is aging, and the whole baby
693 boomers are becoming senior citizens, I think that that could have a huge impact. So I am
694 switching my research career. I've already formed a couple of collaborations with people.
695 And I'm starting to think about what my first proposal will be.
696

697 And I am also going to do less ... I think that I will do less just trying to get the money and
698 more what do I want to work on. And so I think I am going to be doing more women in
699 computing and more education. I actually have two projects for middle school kids that I'm
700 getting involved in that I am kind of excited about, just doing something different. I'm doing
701 a really weird networking project at the Richard Tapia conference, at least I'm hoping to get
702 the funding to do this project. That will be kind of fun to help with the whole networking and
703 forming a strong community at Tapia. And if that goes well this fall, we'll do it at Grace
704 Hopper the next year.
705

706 Yesh, so my big thing now is I'm really thinking about the impact and the passion. And if I
707 can't see both, I'm not getting involved. And I have a couple of grants right now that were

708 more, I think, about ... some interest, but mainly about just bringing in the money. And I'm
709 no longer going to do that.

710 [55:13]

711 **B: And that kind of moves into the wrap-up part. And you've done it throughout the**
712 **interview, but I'll still ask it. If you're going to give advice to a young woman just**
713 **starting out, what would be the major thing that you would say or ...?**

714
715 T: Well, I think as far as getting into computing, it is a fabulous career to get into. There are so
716 many opportunities — there's lots of opportunities for women in computing and there's a lot
717 of companies out there that are very aware of how important it is to have a diverse
718 workforce. Computing professionals earn — I think it's 97 cents on the dollar — computing
719 women professionals — earn 97 cents on the dollar compared to the males, which is one of
720 the best fields. In general, I think women earn ... is it 70 something cents on the dollar,
721 whereas in computing it's like 97 [cents]. So we're almost equivalent. So ... I think the
722 reason why women do so well in this field is because computing is such a young field, you
723 know, that ... a lot of new wave thinking, in a sense. So there's not a lot of discrimination
724 there, which I think is good, in industry anyways. So there's tons of opportunities; there are
725 so many different types of jobs you can get involved in. And there is the opportunity to work
726 part-time if you want to put more of a focus on your family. There's an opportunity to work
727 part-time at a lot of companies. And I think that the coolest thing about computer science is if
728 you like to learn, you continually learn in computing. For me that's a huge draw, because I
729 love to learn.

730
731 **B: And how about going into computing education and into academia? What would you**
732 **say to women about academia as a career path in computing?**

733
734 T: I kind of stumbled into it. I love my job. I think I have the best job in the world. You know, I
735 get to work on what I want, when I want. I set my hours almost completely for myself. I can
736 work a lot one week, very little the next week. My daughter had surgery last week; I took
737 practically the whole week off without giving it a second thought. It's very flexible, the type
738 of job that we have. Yeah, I love my job. I get to travel. I get to meet interesting people. I
739 really love my job.

740
741 **B: Good! All right. Thank you. Is there one last closing story that you'd like to tell, so that**
742 **this would ... people would remember it?**

743
744 T: I think most women in male-dominated fields are there because of encouragement from
745 somebody, perhaps multiple people. In my case a lot of that encouragement came from male
746 professors. I think there are situations, though, there are times, where, you know, you might
747 be ... you might hear something, or be told something, that might make you consider not to
748 press forward. But I think that if — because there was a time when I didn't think this job was
749 for me at all — but I think that if you just keep moving forward you can find that job that you
750 really, really love. And if you currently have a job that you don't really, really love, well then
751 go look for a new job. There are so many jobs out there that you can find something that
752 really sparks your passion, that you enjoy tremendously, and don't quit until you find it. Give

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753 computing a try, because, yeah, I think for a lot of people, especially people with the logic,
754 mathematical interest, this is a great field to be in.

755

756 **B: All right! Well, thank you for your time, Tracy. As you can tell, anybody listening will**
757 **know how much you have on your plate and we really appreciate your giving the**
758 **project this time. Thanks.**

759

760 T: Sure. No problem.

761 [59:34]