

Computing Educators Oral History Project

An Interview with Frank Young

Conducted March 6, 2015

At Kansas City, Missouri, United States of America

Interview conducted by Barbara Boucher Owens

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Interview Context: This interview was conducted in the relative quiet of Frank's hotel room in the conference hotel. The interview took place immediately before the SIGCSE business meeting.

- 1 [0:00]
2 **B: This is an interview with Frank Young, [Professor] Emeritus from Rose-Hulman**
3 **Institute of Technology, conducted by Barbara Boucher Owens. This interview is being**
4 **recorded on March 6, 2015, at Kansas City, Missouri, USA. It is part of the Computing**
5 **Educators Oral History Project. Did I get that information correct?**
6
7 F: Yep.
8
9 **B: Alright! Great. Now, I usually start this interview way back. And I want to know**
10 **something about your parents, their education, their occupation. Were they in any**
11 **related fields?**
12
13 F: Yes, I can talk about that. Both my parents graduated from college. My mother was a major
14 in Physics and Mathematics at Goucher. Graduated in 1934.
15
16 My father ... none of his parents went to college, but he went to college. His younger brother
17 went to college and became a doctor. My father got a scholarship to go to Johns Hopkins for
18 the first two years and it was renewable but, of course, since he graduated in 1933 there was
19 a little problem with the renewal because the stock market went crash in 1929. But he got
20 people to actually renew this renewable scholarship and graduated from Johns Hopkins.

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21 Went to Johns Hopkins graduate school, courtesy of a relative, an aunt of his, in political
22 science.

23
24 [My father] had an idea for a thesis that he would discuss decision-making in groups — and
25 nowadays we'd say that's psychology — but at that point you had governing bodies that
26 were a certain number of people. He wanted to see what the best size for a governing board
27 was. That got rejected.

28
29 So he got a job with the unemployment board in Maryland. My mother worked for the
30 welfare department in Philadelphia. They had met when they were in college and for some
31 reason it hadn't clicked. But later on they met again and it did click. They got married in
32 1938. My father continued working for the unemployment people and working on the AAA,¹
33 I think it was, or some important act that got later declared unconstitutional by the Supreme
34 Court.

35
36 I came along, end of 1939. They were living in Towson, Maryland. My father says that ... at
37 some point he realized that if he got the job of his supervisor, which paid \$2,500 a year, that
38 he would be able to have another child, buy a house, go to Europe every other year, and
39 everything was going to be just great.

40
41 Then World War II came along. In the middle of World War II, he accepted a job with
42 Gallup Organization in Princeton, New Jersey. So that's where I grew up. He worked with
43 the Gallup Organization. They wanted him to get a deferment. By that time he'd had ... my
44 mother had had another child. My father said he wouldn't apply for the deferment, but by the
45 time that got settled out, people with two children were exempt. So that was no problem. He
46 worked for the Gallup Organization until 1948. Then he went to work in New York City for
47 Ted Bates and Company and then BBDO², and then the Advertising Research Foundation.
48 Did some work after the war as a preceptor at Princeton University.³

49
50 One thing that was true in the family was that education was very important. We had very
51 intellectual conversations at the dining room table. Education was considered absolutely
52 vital. All teachers were respected. My father was on the school board. In 1948, New Jersey
53 passed a new constitution and — courtesy of one member of the constitutional drafting
54 committee, who came from Englewood [New Jersey] — segregated schools were abolished
55 in New Jersey. My father's on the school board and the question is, "Are we going to abolish
56 segregated schools in Princeton, New Jersey?" Because they had segregated schools in

¹ AAA = the Agricultural Adjustment Act (AAA) of 1938, developed as basic price-support legislation and signed by President Franklin D. Roosevelt on February 16, 1938; focused on the need for long-term consideration of agricultural production and soil conservation as well as the prevention of potential drought periods.

² A worldwide advertising agency network; began in 1891; headquartered in New York City.

³ The preceptorial system was introduced at Princeton University by President Woodrow Wilson in 1905. The system is modeled on the tutorial systems at Oxford and Cambridge. Precepts are small discussion groups that meet weekly to further explore the readings and topics of a particular course. A preceptor leads each precept and could be the professor who teaches the course, another faculty member, or an advanced graduate student.

57 Princeton, New Jersey in 1948. And the initial vote, in a private meeting including the
58 Superintendent of Schools, was 8-2 against obeying the law. My father persuaded everybody
59 that obeying the law was a very good idea and so I went to integrated schools.

60 [5:06]

61 The Princeton Plan took these two schools, the black school and the white school, and
62 converted the black school to the junior high school and the white school to the kindergarten
63 through 5. So in sixth grade, I went to the former black school. The principal was a
64 marvelous guy — I loved him — Mr. Waxwood, Howard Waxwood. My teacher for math
65 and science was Mrs. Harris. I made the decision to teach — on the college level — math and
66 science in sixth grade. Never changed. Mrs. Harris was an absolutely fantastic teacher and
67 she ... she *cared* about her students. That was true of all of the students who had been at that
68 black school and was the reason why that integration was so wonderful for the white students
69 and so horrible for the black students. Because the black students got absolutely atrocious
70 bigoted teachers in the white schools. The band director in the high school — there was
71 never any black student in the band and it wasn't because of lack of opportunity or skill. It
72 was because he was a bigot. It's unfortunate.

73
74 So I grew up in a town where African-Americans were segregated to a certain area of town.
75 There were professionals in the community and they were well received by certain members
76 of the community. I mean, we had ... there was a lawyer in town, a black lawyer. I know he
77 came over to the house for various things. My parents would ... they treated everybody fairly
78 and equally. I'm sure that there were things that they did that were inappropriate, but
79 compared to the general tone in the town, it was very progressive. We grew up in an
80 environment where it was totally inappropriate to denigrate anybody because of their race,
81 because of their religion, because of their background. And that stuck with me. It was an
82 important part of my life.

83

84 **B: You mention that there were ... I didn't count the number of babies besides Frank.
85 Frank was the first baby?**

86

87 F: I was the first baby and then along came [Clifton] in 1943 and Janice in ... 1945 or 1946 and
88 Jimmy in 1947. And since I was three and a half years older than the next one, and also the
89 oldest child, there were many respects in which I was unable to relate to my peers but I was
90 able to relate to adults.

91

92 In the family, all of us were treated like adults. People in the community that my father
93 worked with or my mother worked with, at the dining room table we would all refer to them
94 by their first names, but we knew when we talked to them it was Mr. So-and-so and Mrs. So-
95 and-so. We didn't have any relatives in the town, but there was Aunt Katherine and Uncle
96 Tom and Grandma Frailey — sort of manufactured relatives that served that purpose. The
97 closest relatives were in Philadelphia — which 50 miles away was a long haul those days —
98 and Baltimore — which at 250 was an even longer haul. So we saw relatives fairly
99 infrequently. My mother had a brother and a sister; the sister was in Baltimore and then in
100 Roanoke; the brother was in the Philadelphia area. My father just had one sibling, younger
101 brother who was a pediatrician in the Baltimore area.

102

103 **B: So what paths did your sister and your brothers take?**

104

105 F: Clifton, the second child, went to Haverford, the same thing that I did. Wanted to go to Reed,
106 but my parents thought that sending him so far away was a bad idea. And they were probably
107 right. But he, then, had to follow after me at Haverford and that was awkward. He then
108 wanted to get ... wanted to teach history but then never got admitted to anything. So he got a
109 Masters in Chemistry and then went out to Reed and got an MAT in History. Married
110 somebody out there and then got a Ph.D. in Chemistry from Tufts. Then went to work at one
111 institution — didn't get tenure. Went to work in another institution — didn't get tenure.
112 Another institution — didn't get tenure. Divorced along the way. One child. He committed
113 suicide in 1996. Awkward situation. That was one of the two estates I had to settle. But his
114 daughter, who has a very nice partner, is doing well and they have two children.

115 [10:37]

116 Janice, the female member of the family ... she got her Ph.D. in three years. She graduated
117 from Goucher with a degree in Biology. Went to Northwestern. Got her Ph.D. in three years.
118 She always says that, "Well, you were the smartest person in the family." Hogwash.

119

120 The next child, Jimmy, ...

121

122 **B: What's she doing?**

123

124 F: She taught at McHenry Community College. She taught at Keuka College and then went to
125 McHenry because her husband was in the Chicago area. She taught at McHenry Community
126 College for many years and is now retired.

127

128 Jimmy went to DePauw — and that's with a "w" — and flunked out at one point, but then
129 got two degrees a year later or something, a weird situation. Then taught high school
130 mathematics for several years. He decided he really wanted to be a lawyer because he had
131 been the union representative for the teachers. So he persuaded the people at the IU⁴ law
132 school that he deserved a seat. I think the reason was that the person that he talked to on the
133 admissions committee was in union law. So they got into an interesting conversation about
134 that. He's practiced law in Greencastle ever since and still is practicing law. He has never
135 become rich and probably will never become rich.

136

137 But the four children essentially had four doctorate degrees. Growing up the way we did,
138 education was the thing you did. I mean, there was never any question that everybody was
139 going to go to grad school — except at one point. My father moved to the Ford Motor
140 Company and then lost that job after about 13 months. He and Lee Iacocca didn't get along.
141 And so he ... my sister remembers him saying that if there is a choice, if there's a lack of
142 money, that he would choose to send the boys to graduate school or to college and not the
143 girl. She has always not liked that very much. I look at that and I say, "Well, you don't say
144 such things, but life involves making extremely difficult choices and sometimes people get
145 hurt by those choices. But if you can't do everything, you've got to make a decision as to
146 what you're going to do." I think that's the way my father behaved. I think his mistake was in

⁴ Indiana University

147 saying that to his daughter as a hypothetical when it wasn't real yet. If it was real then you
148 could explain it using different language.

149

150 **B: [chuckles] So the ... what a story about your family! When you were ... you decided**
151 **that you were going on to graduate school in about sixth grade. Tell me about high**
152 **school. You told me about teachers in that junior high who really influenced you. Tell**
153 **me about your high school ... academically and socially.**

154

155 F: Socially, I was pretty miserable. It was a miserable environment, although I did ... I took
156 some shop classes and got to know people that I would not have otherwise known in the elite
157 academic group. But I was sort of full of myself and probably a difficult person to be around.
158 I enjoyed being the manager of the football team. But there were other things that were very
159 interesting.

160 [14:47]

161 My sister, who went to the same high school for a short period of time, did not like it because
162 every room that she was in had a plaque with my name on it. I won the award for the best
163 math student and the best science student — the male best math and science student — four
164 years in a row. I was the editor of the newspaper. I won the valuable contributions to the
165 extracurricular life of the school award in my junior year, which was a small group did that.
166 There were lots of things that made my brother's life miserable coming after me because I
167 had been the star.

168

169 I didn't graduate top in my class. I graduated seventh in my class through high school. The
170 six people who were ahead of me were all in the business program, which gave higher grades
171 than the academic program. When I decided ... when I was thinking about colleges — I'm
172 thinking about where I'm going to go — I looked at all sorts of catalogs, engineering schools,
173 whatever and I realized that engineering was not for me because engineers went out and did
174 the same thing for 50 years and then retired. And I wasn't interested in doing that. I was
175 really interested in mathematics. I wanted a school that had the right atmosphere and had the
176 right ethic.

177

178 I saw the Haverford catalog. We had become Quakers while I was in ... my parents and I had
179 signed the request to become members of the Society when I was in — I don't know — it
180 was when I was 12 or 13. I was attracted to Haverford because it was a Quaker school and I
181 applied to one college, Haverford. This is long before there was anything called early
182 admission. And was admitted and went there.

183

184 At the end of the first semester, I was in the top ten people in my class. Never again, because
185 all of the other people in my class were learning how to study and I, who had coasted through
186 high school, didn't need to know how to study — which was not the truth. I did very well in
187 mathematics and had a very unusual collection of courses.

188

189 At one point, I had to get the Dean to approve my course selection because the courses I was
190 going to select were three philosophy courses and three math courses, which was considered
191 an unusual combination. That was second semester of my sophomore year, when I had
192 decided that I was not going to continue taking chemistry, not going to continue taking

193 physics. At that point, I had more chemistry than anybody else ... as much chemistry as
194 anybody else in my class, as much physics as anybody else in my class, as much mathematics
195 as anybody else in my class, and as much philosophy as anybody else in my class. I decided
196 that second semester in my sophomore year was going to be math and philosophy.
197

198 I also did something very, very intelligent then. I had had a high school teacher — I had a
199 couple of very good high school teachers — one saved me from being a discipline problem in
200 the first year by giving me the fourth-year math textbook and saying, “You gotta read this.”
201 Another one, in my sophomore year, geometry, was willing to put up with me trying to prove
202 that the mechanical drawing method of making a pentagon — or an angle of 72 degrees or
203 whatever it was — that it was a rigorous method, which it isn’t.
204

205 In the junior year, I had a teacher who did one throwaway line in class. We got to the thing in
206 Algebra 2 where there were the eleven rules of a field. He said, “You know, there is a field
207 called Modern Algebra where you see what happens if not all of these are true.” I said,
208 “That’s interesting!” and thought nothing of it. But then when I got to Haverford, I decided
209 that I was really interested in that kind of algebra, I had seen a couple of examples. I decided
210 that I really wanted to take abstract algebra as a sophomore. Well, the abstract algebra course
211 was for juniors and seniors and it was offered alternate years and it was a two-semester long
212 course. This one insane young faculty member was willing to teach it as a directed
213 independent study to me and another student. So I did a complete year of abstract algebra in
214 half a year.

215 [19:53]

216 The question then is, after I’ve done this, what next? Well, obviously go and take the
217 graduate course in algebra. I went down to the University of Pennsylvania and took a course
218 down there because we had a cooperative program. Of course, by this point I’ve finished
219 most of my requirements, so I need ... the math courses that were being offered, I’d pretty
220 much exhausted most of them. The question is what do I do as a senior in college? I needed
221 to take Russian to graduate, but I had no other requirements. I talked with Cletus Oakley, my
222 advisor, and we arranged for me to take three courses down at the University of
223 Pennsylvania. At the end of my senior year — where I barely graduated because of Russian
224 — I had four courses ... four graduate courses at the University of Pennsylvania, including
225 the course that counted as the [Masters] thesis. I was in pretty good shape, so I was going to
226 keep on going on this math stuff.
227

228 I applied to the University of Pennsylvania, got in, got a teaching assistantship, and got
229 married that summer beforehand. I had met this very nice young lady during my senior year.
230 I had refused to take P.E. [physical education] courses at Haverford because the P.E.
231 department had flunked me in beginning ... in the examination to get into beginning tennis
232 instruction. I said, “If you’re flunking out of the examination for beginning tennis instruction,
233 this is not physical education, this is inter-varsity ... inter-collegiate athletics. What happened
234 to physical education? What happened to health?” I had some real problems with the way
235 they were doing things. So I did the arts and service courses instead. I actually did twice as
236 many — actually, more than twice as many — I did three times as many as I was allowed to
237 and get credit for.
238

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239 One of them was weekend work camp. You went to weekend work camp sponsored by the
240 Friends Social Order Committee in Philadelphia. You go there and you learn what poverty is
241 like. You help fix up somebody's apartment. You learn what the African-American churches
242 are like. You see what magistrate's court is on Sunday morning. I arrived at this weekend
243 work camp at the beginning of my senior year and there were these high school students, but
244 there were these two people who had graduated from college, two women. I made sure that I
245 sat down between them for dinner on Friday night and got to know one of them very well
246 because I had to introduce her. This other girl on the other side got to know me very well
247 because she had to introduce me. The one that I talked to the most — because that was my
248 job — she was already engaged. The other one, by the end of the weekend, I had a date with
249 her to go to the Philadelphia Orchestra and things went from there. I met her in early October
250 and by January we were talking about the fact that marriage was not on the timeline right
251 now, which, of course, is a disastrous thing to talk about.

252
253 By April we were sending in requests to the Meeting in her town and the Meeting in
254 Princeton to jointly be sponsors of the wedding. We were married in August because we had
255 to wait for Julie's aunt to come back from Europe. And then we're off to graduate school and
256 Julie's working for the American Friends Service Committee, earning twice what I was
257 earning as a teaching assistant. The first thing that happened was that she's pregnant. On
258 May 26, exactly nine months after we were married, we got a telegram from some very good
259 friends of my parents saying "Hurray, hurray, today's the day. Everything is now okay. Love,
260 Ralph and Mary." And 15 days later we sent out the note saying, "June 11th in he bounces,
261 weighing 7 pounds 10 ounces" and so forth. That was when Jonathan was born.

[24:48]

262 Well, I needed some way to bring extra money in, so I looked at the placement office at
263 Penn. There was a professor out at Ursinus who had a heart attack and I had to sub for him
264 for six weeks. It was a good experience even though I had to get up before four o'clock in the
265 morning to get out there in time for my first class. They offered me a job the next year
266 teaching three-quarters time, but I couldn't accept it because I would have to give up my
267 teaching assistantship at Penn and I wouldn't be able to pay the tuition.

268
269
270 I had made a resolution that I would never set foot on the Haverford campus until five years
271 after I graduated because there were all these students, graduates, who hung on unreasonably
272 long. I thought that was just immature of them. But the high speed trolley that brought me
273 back from Ursinus went from Norristown to 69th Street Terminal, stopped right at the bottom
274 of the campus, Haverford campus. So I got off one time and I went off to speak to Cletus
275 Oakley — he'd been my advisor for four years, I had a good relationship with him. I said,
276 "Cletus, I've got a problem. I've got this job offer and I can't accept it." And Cletus said,
277 "Wonderful!" I said, "What?!" He said, "We have a position. We'd like to offer it to you."
278 (They had a non-compete agreement with Ursinus, that they didn't ... steal people who had
279 received an offer.) I said, "Sounds good." He said, "You need to go talk to the president
280 about money." I went in and talked to Hugh Borton, who had become president at Haverford
281 the year that I went there and had been a personal friend of mine. So we arranged money. I
282 taught at Haverford for two years, teaching one course every term or teaching some sections
283 of a course that was taught in a different way. That was a great experience primarily because
284 I was dealing with difficult situations both at Penn and at Haverford.

285
286 At Penn, I did not look old enough to be a teacher and I solved that problem by wearing my
287 wedding suit, by wearing a nice dark suit. But at Haverford I had people who had been on
288 campus when I was a student and so there were some problems, but I got through it. Cletus,
289 the first examination, we were both teaching sections of a course. I had the eight o'clock; he
290 had the nine o'clock. And he said to me, "You write up the first exam." And I wrote up an
291 exam that covered every single jot and tittle of the textbook. It was impossible. Cletus looked
292 at it and he extracted six problems of varying difficulty that were a very excellent sample of
293 what needed to be tested and included some easy and some hard. He said, "I think this will
294 probably be sufficient." I said, "You mean you'll get grades between 60 and 100 on that?"
295 He said, "I think so." We did. I learned a lot from Cletus.

296
297 He retired after I had been there two years and Haverford was willing to offer me a position,
298 but I wanted to get a thesis finished. The faculty ... there were six people involved in
299 teaching math at that point and basically five left. The remaining person, who was chair; one
300 person didn't like it; one person wasn't granted tenure; and two part-timers decided life was
301 different elsewhere. A friend of mine ended up teaching there. Another friend did also. One
302 of them didn't have a Bachelor's degree; didn't have a high school diploma; didn't have
303 anything. So the people at Haverford said, "Could you pay the \$15 to get your Masters
304 degree from Penn?" And he did, so it was Joe whatever-his-name-was, M.A. Amazing
305 situation.

306
307 But after that that department kept churning. People would stay for a short period of time and
308 then leave. When the time came, I would get letters from the Provost saying, "Do you have
309 any recommendations of people to teach here?" Or when my son was ready to go to college, I
310 said, "You shouldn't go there." The math program there was just not a good program.

311 [29:50]

312 So that fourth year was the first year where I just had the teaching assistantship and writing
313 the thesis didn't quite work out. So I got a job teaching full-time at Temple.

314
315 At this point, we had another child ... born. We ... let me go back a little bit. Jonathan is
316 born. We're living in an apartment in Powelton Village. We don't have any money, even
317 though I'm doing part-time work at Haverford, we're scraping around. We had a budget that
318 said \$1 per person per day and that does not count the infant. Didn't have a car. It was
319 unpleasant.

320
321 One summer, the summer after the second year of graduate school, I was working two days a
322 week and Julie was working three days a week and we were taking care of the kid on the
323 days we weren't working. She's in talking with somebody she'd worked with before and
324 saying, "We don't have any money. We're scraping around and scraping the bottom of the
325 barrel." He said, "Well, there's this organization out in Germantown that has this historic
326 house. They're looking for somebody to live in the house. Why don't you call Mrs.
327 Rosenlund?" So we did and she said, "You know you're going to have to stay here every
328 night?" Yes. "And you're going to have to promise to stay here at least a year." Yes. We got
329 the job and so I took care of the grounds and Julie took people through the house. All we had
330 to pay was our long distance charges and our heating bill. We had somebody whom we

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331 brought from the apartment house where we were living who was living in one of the extra
332 bedrooms and he paid us enough to pay for the heating bill.

333
334 At that point, we figure we can have another child, so we had another child. Then, he's out.
335 After that child is a year old, we had a foster child. We had heard about a program from the
336 United Jewish Agency that placed teenage girls who had been kicked out of their homes
337 because they were pregnant in families that were willing to accept them. And we had a girl in
338 the apartment house where we were who was sitting out her pregnancy before placing her
339 child up for adoption. Julie had done a lot of counseling of her and we had done a lot of
340 support for her. We thought this was a great program, so we'd applied. They told us, "We
341 can never place an infant with you." I said, "Why?" They said, "Well, you wouldn't
342 understand the ritual." I said "You mean the Bris?" Blew their minds that we knew what they
343 were talking about. But we thought the program was good, so we said, "We'll go through the
344 process." We got approved and they never sent us any teenager but they did send us an
345 infant.

346
347 Okay. They sent us the infant in May and we were scheduled to go to Mississippi in 1966 to
348 teach at Tougaloo College, summer program. We had gotten somebody to sub for us during
349 the summer and so we ... things went fairly well. We had sort of hectic around the house
350 then ... actually, this was 1965 — I ... my times may be wrong — but we had Jonathan,
351 Richard, and then this infant. (It was 1965.) It's a disaster. My brother's graduating from
352 Haverford. We have all these little children. We invite my college roommate, who's back
353 with his new wife from England, and the parents of another graduate, who Julie met when
354 she was on a peace caravan in Ohio and Indiana. It's an utter disaster. We're overworked and
355 everything.

356 [34:50]

357 But we heard about this program of bringing children up from the South to have a decent
358 senior year in a northern school that would give them a decent education, they could get to
359 college. Primarily black children. We applied for it and they said, "Oh, it's too late, we've
360 already placed everybody. But next year." Then, in early August, we get a phone call saying,
361 "This isn't part of that program, but there's this young girl from Washington who has been
362 admitted to Friends Select School. We couldn't find a boarding school for her so we need a
363 family for her to live with." We said, "But we don't have any teenagers in the family." Okay.
364 So we went down to investigate it. We met her. We talked about the financial arrangements.
365 We said, "It would be nice to have \$5 a week for bus fare" — because we didn't have much
366 money — "but we can pay room and board until a more suitable family is found."

367
368 So Barbara lived with us for three years because a more suitable family was never found. She
369 had graduated the top of her class from the junior high school in Baltimore ... in
370 Washington, D.C. She had only attended school half the days because she and her brother did
371 child care for the younger children. She came up and started work at Friends Select and she
372 was behind. It took one term, nine weeks, before she was up on everything. Julie and I
373 tutored her. Julie in English and French and I tutored her in math and science. And she was
374 up with the ... she was one of the top three people in the class. Her College Board scores
375 don't show that because the College Board at that time — and still, in some ways — is

376 racially discriminatory. The people that she was competing with successfully would get 750s
377 and she got 525, 550.

378
379 After Barbara had been with us for two years, I went down to the agency in Philadelphia —
380 that was very near Temple where I was teaching — and went in, made an appointment for us
381 to come in. We went through the process for adoption because we figured we already had
382 two, that was enough. Besides we wanted girls and it was very difficult to predict if you were
383 going to have a girl if you did it the regular way. And I ... whenever we were leaving an
384 interview and the social worker would say, “Well, I’ll call you with another appointment,”
385 we’d said, “Why don’t we make the appointment right now?” The net result was that we got
386 Susanna at age five days the end of September. Very, very fast operation. And so we were
387 blessed with Susanna and it was a wonderful experience. Barbara helped us a lot. If Barbara
388 had not been living with us, it would have been difficult for us to know what it was we
389 needed to do.

390
391 Finally, I got the degree after changing thesis supervisors yet again and got a job offer from
392 Knox College. It was just a great offer, great school. Of course, I was paying ... I was ...

393
394 Okay, time out.

395
396 **B: [lots of chattering nearby] Yeah, let’s just time out till these girls are by and then we’ll**
397 **start it up again because they’re really loud.**

398
399 F: We’ll just wait. I could go out and yell at them ...

400
401 **B: No. They seem so happy.**

402
403 F: Okay, let’s just start up from here.

404
405 **B: Yeah. Yeah.**

406
407 F: Where was I? I was at ... oh! job offer Knox. I was still earning less than my graduates. They
408 would go out and earn \$12,000. At Temple, I was earning \$7,000 or \$8,000 and they could
409 get \$12,000.

410
411 **B: Let’s go back to your graduate experience because your family has completely**
412 **overshadowed the graduate education experience you had.**

413
414 F: It ... it *did*.

415 [39:57]

416 **B: And ... what do you remember about ... you changed advisors, so there’s something**
417 **you ... Was it because of topic? Because of person? Was somebody really influential as**
418 **you went through? Somebody supportive?**

419
420 F: Yeah. The person I ended up with as my thesis supervisor was very supportive. Primarily
421 because of my teaching ability. But I had never been prepared to do research. Penn, at that

422 time, did a lousy job of preparing their graduate students to do research. I had great problems
423 tackling a problem I didn't know anything about. That was an awkward situation.

424
425 Then I had a thesis supervisor that I loved, he just recently died, just a marvelous man who
426 was very, very supportive. But what he was doing and what I was thinking about were just ...
427 he was in an area of mathematics which I was not comfortable with. His way of thinking I
428 was not comfortable with. We got along well politically and philosophically. Socially. But I
429 really wasn't up to doing the work that he expected. But then last year, this thesis supervisor,
430 who had been very supportive of me from the very beginning — I'd been his TA, his
431 teaching assistant, in a course for several years when I started out — he posed a problem that
432 was a reasonable one. I made a reasonable attempt and I finished up.

433
434 When I got the job offer from Knox, they were anxious for me to come. Because when I went
435 for the interview, I had some questions about it. But my father, who was then in the Chicago
436 area, did say that it was one of the best liberal arts colleges in Illinois. And I found that to be
437 the case. In my interview with the administration, I had two questions that I asked. One was:
438 "What's ROTC⁵ doing in a liberal arts campus?" And the other one was: "Your number of
439 minority students on campus is extremely low. What are you doing to deal with that
440 problem?" The net result was that when I came, the associate dean had spread the word that
441 the flaming liberal was coming.

442
443 The first thing I was ... that happened to me was I was put on a committee to essentially do
444 something about the distribution of minority students, the number of minority students on
445 campus. Also during that first year, there was some discussion about whether we should have
446 ROTC. At one point, the dean said it would be appropriate to have a motion of some kind. So
447 I said, "Okay, I'll so move." In the local labor paper there was an article about the fact that
448 this young assistant professor had made this motion. Then there was further stuff about the
449 chairman of the Philosophy Department, who had been there one year longer than I had, who
450 was also young, who had made another motion that was on the other side of the issue —
451 related issue. At the end of that ... article there was a thing about "Dr. and Mrs. Young live at
452 ..." and they gave the wrong address, luckily. Where they have ... something about, "Their
453 attractive colored daughter has joined their family of two sons." So we invited the editor of
454 the paper over one evening for tea after the children were in bed and explained to her why
455 that was an inappropriate remark, explaining to her that she had never seen our daughter, so
456 how did she know she was attractive?

457
458 There were a couple of negative aspects because of the fact that Susanna was ... I guess
459 "racially mixed" is what the official term is. The agency was very bad about telling us what
460 was actually going on. I think it was a white parent and a black parent, but it doesn't make
461 any difference. She's just a beautiful woman. And somebody spread the rumor that we had to
462 go to Canada to adopt Susanna. When I talked with the director of athletics about this —
463 because he'd been spreading it and I had heard about it — I said "Who did you hear it from?"
464 He wouldn't tell me, so it was hard to track things down.

465 [45:18]

⁵ ROTC = Reserve Officers' Training Corps, a college-based Officer training program for training commissioned officers of the United States Armed Forces.

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466 But for the most part, it was a good environment to raise the kids in. We enjoyed the
467 community. We deliberately ... the second house that we bought was in an area that was
468 racially mixed and the children had lots of good friends, all different colors. And they went to
469 a school that was well integrated. The only real problem we had was when the school board,
470 at the urgings of the one black member of the school board, redrew the lines so that our
471 children would go to a school that was all white except for the daughter of this member of the
472 school board. I went to her and I said, "Our children don't need to go and integrate. Our
473 younger daughter doesn't need to go in and integrate this school. She's already integrating
474 her family."

475
476 By this time we had adopted a second daughter. It took longer and she was older. She was
477 three and a half months when she arrived. But that gave us the full complement, two boys
478 and two girls. And Barbara did come to visit us once from Oberlin and had some marvelous
479 experiences going out on geology field trips with the head of the Geology Department. She
480 was taking a geology course at Oberlin at the time. So everything was great.

481
482 We had... I had seen the handwriting on the wall. When I went to Knox, I immediately
483 looked into ways of moving my teaching to other things that were needed. Okay, I had the
484 abstract algebra, but what about the future? The future was applied mathematics. The future
485 was using the computer to teach mathematics. The future was theoretical computer science. I
486 went to NSF⁶ summer institutes in all these things. My first programming was done at
487 Florida State University on a big mainframe on Fortran 2. Ridiculous stuff. I remember
488 getting back reams of paper because I put a 1 in column 1 of a Fortran format card.

489
490 Everything really went well for us. I taught a course in using the computer to teach
491 mathematics and students stayed in that course for the whole year. I still have good friends in
492 that group. One is at this meeting, SIGCSE meeting. Another two sponsored a reunion of the
493 class thirty years after it was taught. The ... others have met with us in Hawaii or we've seen
494 them in other situations. Good group of people and I was very close to them.

495
496 Then the ... I ended up teaching beginning computer science fairly regularly. But then I had
497 a student who was in this class who ended up doing an honors project and did his honors
498 project in the area which was partially electrical engineering, partially computer science, and
499 very theoretical and mathematical. As a result of that I ... well, I got this idea from a summer
500 institute that I had at Williams in ... discrete mathematics. There was another course that we
501 did that was taught by a computer scientist, C.L. Liu, who was at the University of Illinois. I
502 had Dave Liu as the outside examiner for this and he told me at the end of that year about a
503 possibility of coming down to the University of Illinois and working on their PLATO⁷
504 project and doing some programming for it. I did that four days a week, I'd be at University
505 of Illinois. The other day, and Saturday, I taught a course at Knox. The two added up to a full
506 salary. I learned a lot and then did teaching at the regular computer science level.

507 [50:05]

508 Then I got a Fulbright to go to Nigeria in the Department of Computing Sciences at the
509 University of Lagos because this student and I had published a paper. It was the only paper

⁶ National Science Foundation

⁷ PLATO = Programmed Logic for Automatic Teaching Operations

510 that I published in computer science, it was the *SIAM Journal of Computing*. When I got
511 there, I ended up teaching everybody: the first-year students, the second-year students, the
512 third-year students, the post-graduate diploma students. I was somewhat overworked, but
513 luckily there was another ex-pat there who was able to do some of the teaching of
514 programming. The faculty in the course were mostly theoreticians, they were mostly
515 mathematicians, operations researchers. So basically the computing was being taught by me
516 and this other ex-pat. Came back [to Knox] and ended up where I was doing 5/7ths of my
517 teaching load was computer science, teaching courses like operating systems, standard stuff
518 of that era.

519
520 Okay. So I had not taken a sabbatical to go to Nigeria. I took a leave of absence because I
521 was saving my sabbatical. I really needed to do something in the way of a sabbatical, but I
522 said, “Well, I really can’t move the family at this point, so maybe what I ought to do is find a
523 place I can go as a visiting professor and one where I can audit some graduate courses.” And
524 there were places that were interested in me. The one that I got was the University of Iowa.
525 Five days a week I am in Iowa City and weekends I’m back home doing house repairs.

526
527 While I was at Iowa, I taught the appropriate number of courses as a full-time load but I also
528 audited graduate courses. I audited two graduate courses each semester and I audited a
529 graduate course in the summer. That was a good thing for me to do. I learned about compiler
530 construction. I learned about analysis of algorithms. I learned about proving programs
531 correct. Learned a lot of good stuff. But I was one of ten faculty members with 400 majors
532 and I had 40 advisees, with no knowledge of the internals of the program. I probably made
533 some mistakes. I know I did in some of the computing work because I didn’t understand
534 JCL⁸ the way I should have.

535
536 But I did do one thing that was very good. One of the professors and I ended up teaching a
537 programming language concepts course. Up until that point — this is 1980 or 1981, I think
538 — to that point the programming language concepts course was a really boring course where
539 you said: “Here’s Fortran. Here’s how its syntax works. Here’s COBOL. Here’s how its
540 syntax works.” Boring course. I said, “What we really ought to be teaching is why the
541 language operates the way it does because of the decisions that were made in the language
542 design.” When do you bind a variable to a storage location? If you do it early, what are the
543 language consequences? If you do it late, what are the language consequences? How does
544 that impact the user of the language?

545
546 We took the three languages we were supposed to do: Pascal, SPITBOL⁹, and Lisp. We
547 assigned the same project in each of the languages. The project was a horse genealogy
548 system to be able to figure out who the sire and dam of the — or mare or whatever it was for
549 horses — descendants and all sorts of other interesting things. Of course, in Pascal strings are
550 fixed length. In SNOBOL you can index by strings with no problem. In Lisp you have to use
551 property lists for everything. I think the students learned a heck of a lot more than they would
552 have in the other course. That’s the year that Ghezzi and Jazayeri [“Programming Language

⁸ JCL = Job Control Language

⁹ SPITBOL = Speedy Implementation of SNOBOL

SNOBOL = StriNg Oriented and symBolic Language

553 Concepts”] came out, which essentially took that view toward the programming language
554 concepts course.

555 [54:45]

556 And then I realized it would be useful to have some sort of academic credentials in computer
557 science. So I looked into the possibility of going to graduate school. I knew Dave Liu at
558 Illinois. He encouraged me to do it. So I applied. You had to take the Graduate Record
559 Exam¹⁰. I’d taken it back in 1960. I wrote to the department and said, “Do I need to take this
560 again?” [They replied], “Send them in, we’ll see.” “No, you don’t have to take them again.
561 They were perfectly adequate.” And then I showed up, after studying all summer, to take
562 their exams to see if you could satisfy the basic information. I had an interesting experience. I
563 knew some of the faculty, so when they were giving the exams, they said, “Hi, how are
564 you?” But after passing four exams — you had to pass four of the five — there was one that I
565 knew I couldn’t pass, but the four I knew I could. I ended up passing the four exams; three of
566 them I was the top scorer and one I was one point below the top score. There were only two
567 people who passed all four exams. I later discovered that they could have filled the whole
568 entering class with people who already had Ph.D.s. They only admitted two. So I was in a
569 unique situation.

570
571 Unfortunately, the person I wanted to work with, Mark Ardis, left University of Illinois and
572 went off to Wang Institute. So I got to work with somebody else and it was ... alright. We
573 published some good papers together. We attended some good seminars, good conferences,
574 and I learned a lot. But my final thesis proposal was one that probably would have taken
575 \$10,000,000 to finish and a staff of about 100. I did not pare it down the way it should have
576 been. But in the four semesters that I was down there — one term off at Knox meant a full
577 semester at Illinois — for four years I managed to do everything necessary to get the Ph.D. in
578 Computer Science except write the thesis. I did all my course work. I did all of my
579 examinations. I did ... the thesis topic was written up and accepted. And a committee was
580 formed.

581
582 And then I went back to Knox having been [at the University of Illinois] for four separate
583 falls and three summers. Well, one thing that happened in the middle there was that one year
584 when they were renewing my research assistantship, paid for by IBM, there was a thing that
585 said you have to sign a thing that says you registered for the draft. And I said I wasn’t going
586 to sign that. It was blatantly discriminatory because women didn’t have to sign it. Besides
587 which, I was 44 [years old]. It was irrelevant. Besides which, the money that was paying for
588 me ... paying for my thing came from IBM. It was supposed to be given to the person best
589 qualified to do the job, not the person who had satisfied some loyalty provision. I managed to
590 get three offices of the university — the Dean of Students, the Dean of Graduate Studies and
591 Research, and the head of the Computer Science department — in total agreement. Each one
592 thought that it was a problem of one of the other two. So I lost my assistantship, but my ...
593 the person that I had it with arranged a way for me to do 40 hours ... or 20 hours of work a
594 week and get the same amount of money and so forth.

595

¹⁰ The Graduate Record Examination (GRE) is a standardized test and an admissions requirement for many graduate schools in the United States.

596 But I ... and, as a result, I got an invitation to be a panelist at a American Association of
597 University Professors panel discussion. I was to present the young graduate student point of
598 view. I called them up and I said, "You know, you've got the wrong person. I'm an old
599 fogey."

600 [59:46]

601 Okay, so I come back to Knox and we had left a position vacant in the department for a year
602 as a courtesy to the dean, who needed it for financial reasons, and we wanted it back. The
603 routine was we had to make ... write a paper, a case statement, that says, "Make the case for
604 getting the position." The department chair wasn't going to do it. So I said, "I've been chair,
605 I'll do it." Whenever I wrote a document for the department, I had a procedure I followed. I
606 would go around and interview every single person in the department, asking appropriate
607 questions, and then use the results of those interviews to draft a document that incorporated
608 all of the wisdom of all of the people in the department. The question I asked everybody was:
609 "Why do we need this position? Why is it crucial for the department?" The answer I got from
610 every single person in the department — except me, because I didn't ask me the question —
611 was: "We need a real computer scientist in the department." Unfortunately, this department
612 had, for five to seven years, advertised every position as: "We need a Ph.D. in Mathematics
613 who can teach beginning computer science." Because by this time I was teaching mostly all
614 computer science. The reason I couldn't leave is that, if I left for the whole year, if I left the
615 students in the major couldn't finish because the Director of the Computing Center, teaching
616 half-time, was doing the other computer science.

617
618 I was a little bit irritated. I applied to this position I saw in *Communications of ACM* as head
619 of the Department of Computer Science at Rose-Hulman. I wasn't sure that it was the thing
620 for me. It's an engineering school and I'd been liberal arts from the word go. I was a liberal
621 arts freak, very narrow focus. So I wrote off the application, misspelled the name of Terre
622 Haute on the thing, but, okay, we sometimes do stupid things like that. I get a phone call
623 from the Dean; he wants to bring me in for an interview. And, as his wife said to my wife
624 many years later, "Boy, he was really discouraged after that phone call. He said you tried to
625 persuade him not to interview you and he really wanted to interview you." So I interviewed
626 there, despite of the fact of trying to persuade the Dean that he didn't want to interview me.

627
628 Single-sex institution. Engineering institution. Required ROTC. Clearly, it doesn't fit with
629 me. But they said, "We really do want to go co-ed. We want to emphasize engineering as a
630 twentieth/twenty-first century profession, not as an eighteenth century profession."
631 Humanities and social sciences are an important part of the education of an engineer and,
632 from that point of view, I did fit in.

633
634 When I went there, the department had already decided on a new curriculum, because it had
635 just separated from electrical and computer engineering. It was a good curriculum and I was
636 willing to accept it except for two issues. One was: there was a course called Writing for the
637 Computer Industry, which was required for the major. I said, "Who's going to teach that
638 course if the English professor leaves or goes on sabbatical?" Everybody says, "Well, well,
639 well, we don't have an answer to that." And I said, "We have to be committed to teach that
640 course in the department if it's a required course for the department." Eventually, I was the
641 one who was committed to teach the course.

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The other thing was they had a senior capstone experience, which was a ten-week experience. I said “Gentlemen, this is an engineering school. Capstone experiences in engineering are supposed to be more than ten weeks long. This ought to be a minimum of twenty weeks. Ought to be two terms in the senior year and maybe three.” We changed that at the same time that the engineering departments were eliminating their capstone course, or capstone experience, and turning it into, “You have to take these three design courses in the senior year.” Well, we got the major through and the number of majors dropped from what it was, which is about 90, down to 70. We were the only non-Engineering department that had any significant number of majors. But we were still not fully a member of ... fully ... we didn’t get much respect.

[65:04]

But as the years went on, the number of majors increased steadily. I brought in some excellent people in the department. More and more respect. Finally, when I retired, fifteen years after going there, the number of majors was 225 or more. That was not just due to the fact that the number of students went up — it went up slightly — but the fact that we had tripled in size, both in terms of size of the department and in terms of the number of majors. We were the fourth largest department in terms of number of majors and there were more than four engineering departments. So things had changed.

And then when Cary Laxer became department head — after a nation-wide search that I insisted be done that way, even though I had a strong suspicion the department was going to want Cary as a new department head — he’s worked out very well. I retired early knowing full well that the department was going to continue to do better as the years went on.

While I was teaching, I had to do a lot of changing of the courses I was teaching. Initially, it was introductory courses, but then I would teach operating systems, which I had taught before, but in a slightly different way. I gave up the programming language concepts course because Claude Anderson did a much better job at that than I did and did it from a completely different perspective. Talked about how you implement all of these design decisions for different languages using Scheme. Marvelous course, I would have loved to have audited it but never had time.

We got an Industrial Advisory Board and the Industrial Advisory Board did a very good job. I got Joe Turner on there and Dennis Frailey and they anchored the academic aspect of things. I had some excellent people from local industry. They influenced the department in very good ways. One of the early meetings, they were talking about the importance of computer graphics. I said, “I agree.” And databases. “I agree. But I need to have faculty qualified to teach before we can do courses like that.” Cary came up to me and he said, “My Biomedical Engineering degree did a lot of graphics. I’ll do the graphics.” He developed a beginning graphics course and then an advanced graphics course that’s survived to these days. When we hired J. P. Mellor in the department, he also has a graphics background. He took over that. Cary and he did excellent work in computer graphics.

I got rid of the half-credit courses in Programming in Fortran, Programing in BASIC, Programming in Java, Programming in Ada by just never assigning them to be taught.

688 Eventually, the people who wanted those courses realized that they were obsolete. I ... when
689 the English professor who was teaching the Writing for the Computing Industry course went
690 on her sabbatical, I ended up teaching that course as well. I realized that the Software
691 Engineering course that I was teaching — that I was not prepared to teach but I taught
692 anyway — in that course they were mutual prerequisites for each other. I ended up creating a
693 two-term Software Engineering course that was an introduction to the senior project. And
694 that course — which was affectionately called “Storytime with Frank” by many of the
695 students, including Dennis Brylow, and ... what’s his name? ... Jerod Weinman from
696 Grinnell; Brylow is at Marquette; both Rose graduates who are now academicians — they
697 remember that name, they remember the course.

[69:41]

699 I did one very good thing in that course. At one point ... the senior project was finished in
700 March. I said to the people who had finished senior project, “I’d like you to come in and do a
701 presentation in the Software Engineering course ...” (because it was taught January through
702 June) “... and just talk about what you learned in your senior project.” They came in and,
703 much to my joy, they said, “You know, those stories that we heard last year were really very
704 important. The things that you studied in software engineering and you will study in software
705 engineering, you’re going to need them next year. They’re very, very important.” And that
706 made a big difference in the students because, for the first time, the seniors doing senior
707 project had the knowledge of the previous generation passed down to them. The quality of
708 the senior projects jumped, a discontinuous increase in the function, and we continued doing
709 things like that for a while. That was a very good thing for the students.

710
711 Later on, we got people to come in who would teach courses that ... I then taught other
712 courses. We had one unfortunate experience for me. We needed a networking course and so I
713 said, “Okay, I’ve got to teach it” and taught it to a rather large class of about forty — we like
714 to keep our classes under twenty-five. It was not a successful course. It was — I forget the
715 name of the textbook; I forget the author — but the textbook, we called it the “TLA book”,
716 the “Three Letter Acronym book”, it was a study of all the possible acronyms you could have
717 in networking. I spent some time thinking about the right way to do the course and two years
718 later said, “Okay, we’ll offer that.” Unfortunately, eighty people signed up for the course. So
719 here I am teaching two-thirds time and I’ve got two sections of forty and the textbook that’s
720 being used is completely different than before. The students have completely different
721 preparation than before. I have the highest credit contact hour of anybody in the department.
722 I was just way over everybody else. I survived that and then, two years later, offered it again
723 to a smaller group. That year, first-year students have never seen computer networks. The
724 second time it was taught, the students had seen [networks] and used them. The third time it
725 was taught, I had students in there who had designed [networks]. That’s the nature of
726 computer science education these days. It’s just an utter disaster.

727
728 I was teaching things, even at Knox, I was teaching things that were less than five years old.
729 At Rose, I was constantly doing that. My colleagues in other departments, who were teaching
730 material that was well established ... they could perfect their ways of teaching it because
731 they could fine-tune their lecture notes. I said, “But lecture notes last for one lecture and then
732 they’re obsolete! We’re putting things in the Introduction to Computer Science course that
733 are less than five years old, that were research things just recently.” My colleagues didn’t

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734 understand that outside of the department. So we had a very, very heavy teaching load.
735 Eventually, I was able to pare it down by counting laboratories as almost full courses. Giving
736 people two laboratory sections or a laboratory and something else. Keeping them ... if they
737 had three courses, two of them were the same, two sections.

738
739 Eventually, the administration realized that since we didn't have very many laboratories and
740 the laboratory people were counting the laboratory as contact hours, that it was unfair to us to
741 count things that way. So things got a little bit better. But constantly while I was at Rose,
742 change was the name of the game. Just constant change.

743 [74:40]

744 **B: Somehow, Frank, you had time to do things that were outside Rose. Somehow, I recall,**
745 **yesterday you gave a talk as part of your duty as the recipient of the Lifetime Service**
746 **Award of SIGCSE. And ... I know you gave the talk, but it would be nice for you to talk**
747 **about your service roles and how you were managing the obviously heavy, heavy, heavy**
748 **teaching stuff. You were clearly involved in many volunteer professional activities.**

749

750 F: But those activities also helped me. They helped me a lot.

751

752 When I went to Knox, I eventually ended up doing AP¹¹ grading, in Calculus, and did that for
753 a long time. The last year I did it, when I was aging out — I had done it for 12 years or
754 something and that was it — that was the year they called some people over to help grade the
755 computer science exam, the first year it was offered. The next year, Henry Walker and I are
756 in there grading computer science. I did that for ten years, rising to be an exam leader. I got
757 money for that. Of course, I paid for it because I had to fill out state tax forms for New Jersey
758 or South Carolina or wherever we were doing this. The working conditions were sometimes
759 lousy. We did get to live in a girl's dormitory on the Clemson campus. I don't know what the
760 attraction is of that, but ...

761

762 One thing we did, a group of us would sing hymns. We had a hymn sing because some
763 people could play the piano. We'd bring hymn books with us or borrow from a local church.
764 The people who were doing the heavy drinking over here; the people who were playing
765 bridge over here; the people who were playing some games over here; the the hymn singers
766 over here. It was great fun. It gave me extra money, which I needed. Okay. It gave me the
767 opportunity to travel, that was one of the few ways I could travel. All of our vacations were
768 visiting relatives and everybody in the car, pre-air conditioning. Four kids, a disaster.

769

770 I did the AP stuff because I believed it was very important that the AP courses be equivalent
771 to college courses. I did it because I wanted to make sure that that was the case, by grading
772 the exams and seeing that the exams were equivalent. At Knox, we would grant credit if you
773 had a 4 or 5, but not if you had a 3. So that was a good experience. I met lots of people who
774 were moving over into computer science. Particularly, when I got to grading the computer
775 science exam, I met lots more of them. People like Fran Trees or ... Don ... Slater. Don
776 Slater. Really very, very talented people.

¹¹ Advanced Placement (AP) is a program in the United States and Canada, created by the College Board, which offers college-level curricula and examinations to high school students. American colleges and universities often grant placement and course credit to students who obtain high scores on the examinations.

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I had previously done some work when I was early at Knox trying to get the mathematics departments of the various associated colleges of the Midwest to talk to each other, to help each other out. And the same thing with computing. It had been fairly unsuccessful because there are big distances involved and everybody was stuck in their own silo. But I did get started a joint math colloquium with Monmouth College. I get a couple of sessions where we'd all get together up in St. Olaf or Carlton. I believed in cooperation among institutions. I didn't believe you should have silos of departments in institutions. I didn't believe you should have silos of institutions in a nation, particularly when the institutions are in the same consortium and when they really have similar reasons for existence. That idea of getting people to work together was an important part of the way I felt I should behave as a human being. So, whenever there was an opportunity to get people working together, you'd find me there.

I encouraged some of these high school teachers to teach on the college level or to get jobs on the college level, which Fran and Don both have. There are some others. I tried to get Joe Kmoch to do the same thing, but he was happy doing what he was doing. One of the Knox graduates who was teaching — actually computer science in a suburban Chicago school district — I tried to get him to come to Rose-Hulman as a visiting professor, visiting instructor, whatever, but I couldn't do it because our beginning salaries were — for Ph.D.s and he didn't have a Ph.D. — were under the salary that he was getting at his institution for doing nothing at his institution, in his school district. Suburban Chicago pays very well.

[80:33]

I've always tried to cooperate with people no matter what level they've been. The AP thing taught me that you judge somebody by the quality of their work and not by the level of their teaching service. I just got involved in things like that automatically.

I don't know how I found out about SIGCSE, but it sure was a lifesaver for me because I got to know even more people who were transitioning from mathematics to computer science. I was ... I needed that interaction. Working in the AP grading under a high school teacher who was my boss, who was my table leader, was an excellent experience. I'm convinced as an educator that everybody should be, at some point the stupidest person in the class, and at some point the brightest person in the class, and at some point in the middle. That those experiences are good educational experiences and everybody should have them instead of what I had going through, always being the brightest person in the class. That was not a good thing for me and later on it had its impact.

I got involved in SIGCSE and I saw that there was a need in SIGCSE to talk about AP, because nobody was talking about AP then. So I had a ... I created a panel discussion that had the chief reader of AP and a high school teacher and a college teacher and me as moderator talking about this whole process.

Other things developed as life went on. SIGCSE is the cheapest conference in the world. I mean — and back then it was even cheaper — so I could afford to go. That was good for me and so I just got involved in SIGCSE stuff. When I got to Rose-Hulman, I wanted the members of my department to go to SIGCSE and so I dragged two of them, the only two that

823 would continue in the department, because the other people were either leaving, or being let
824 go, or retiring. I made sure that they knew what SIGCSE was offering. That was the first year
825 Cary came to SIGCSE and it had an impact on him.
826

827 Later on — I went to Rose in 1987, so it was 1988; that was SIGCSE '88 — I saw that Dick
828 Austing was at some point going to retire and I started talking to Cary about the fact that
829 maybe we ought to take over registration. Cary thought it might be a good idea. You know,
830 “What do we really want to do that for?” I said, “Well, it’ll be great PR for the department. It
831 will mean that everybody will know who we are. And we will have opportunities as a result.”
832 And that was true. We did. There was a survey done some years ago about “Name some of
833 the best undergraduate computer science programs.” Rose got mentioned frequently because
834 everybody knew about the program. Not because we were good, but because people knew
835 about us. Actually, we were good, but it was nice.
836

837 Cary and I just did that work and we brought back the problem of creating a reasonable
838 database for the process to our seniors. They had an opportunity to design a program that was
839 actually going to be used. And there were upgrades to that program. Those were excellent
840 senior projects and was a real wealth of experience for our students.
841

[84:57]

842 And then we started bringing students to SIGCSE and we had some amazing results. First of
843 all, the students were impressed by the fact that everybody knew us, which we thought was
844 not really very interesting. I mean, we knew everybody, so everybody knew us. But they
845 ended up going to some of the sessions and they discovered that some of the sessions were
846 taught by people ... at SIGCSE were taught by people who were absolutely atrocious
847 teachers. They were horrible teachers. And the students came back and they said to their
848 classmates, “You know, our teachers are really, really good compared to some of the ones
849 that are out there.” And then the students also went to sessions where they understood
850 everything that was being said and they realized that they were getting an excellent
851 education. They came back and they said that too. They also said, “We had an opportunity to
852 interact with some really important people.” There were CS conferences done then at the
853 same time so you could interact with some really big names. We made sure that that was a
854 possibility. Students came back with a lot of respect for us. It was a wonderful experience for
855 us.
856

857 In addition to which, we got to take various leadership positions. I said to Cary, “Maybe we
858 ought to do something about being program chairs one year.” This is before it was a two-
859 person job. That was the first year that two people did it. Then two years later we did the
860 conference chair, conference ... chair of the conference committee. We had a lot of fun but
861 we also did a lot of work.
862

863 Cary and I have both been involved with ITiCSE and, as treasurer and registrar for the
864 conference, various of us in various years and on the working groups. That’s been a way to
865 get my wife to Sweden and my wife to Portugal and my wife to England. It’s been good. My
866 feeling is, that ... and as I said in the talk — do you have a copy of it? I’ll send you a copy —
867 that we need to pay back the people who gave us opportunities and skills and abilities to do
868 things. But we also want to make things easy for the people in the future, so we have to pay

869 forward as well. My motivation in all of this has been that I owe the past a lot and I owe the
870 future a lot and one of the best ways to pay the past is to pay the future.

871
872 **B: I have one other ... we should be winding it up about now and I have just one other**
873 **kind of topic that I had heard you talk in your talk yesterday. And then when we were**
874 **talking in the aisles ... talk about how you give a lot of sermons. So there is a life outside**
875 **of computing and outside of family for Frank.**

876
877 F: Okay. We're Quakers, the silent kind. We don't give sermons. Silent meditation. Moving to
878 the Midwest, there were a lot of pastoral Friends meetings. But we moved to Terre Haute,
879 there was no Quaker meeting in the area, so we attend a Unitarian-Universalist Congregation.
880 I served as the Sunday program chair and getting people to be in the pulpit. My wife now has
881 that same position. As a result, occasionally you have to give a sermon.

882
883 I re-use mine because I've spent a lot of time on them. They tend to be things that emphasize
884 living a life that is worthwhile, that respects other people. As a matter of fact, Unitarians
885 have these seven principles, one of which is the use of the democratic process in our country
886 and in our denominational affairs. I gave a sermon once on why that was a very poor idea.
887 [laughs] I said, "Sounds to me like if there is a 5-4 decision you are going to argue to get one
888 of the 5s over to the 4 to change it." Shouldn't people in religion be trying to uncover truths
889 that are going to be long-lasting?

890 [90:17]

891 I'm not religious in the traditional sense. I am reluctant to talk about what I believe in terms
892 of theological issues. Quakers have something called "the Queries" that essentially make
893 some statements about possibly how things should be and then say, "Do you do this?" or in
894 some nice way. There's one about ... [published by] Britain Yearly Meeting, about
895 ecumenical work and about cooperating with people. The end statement isn't a query, it's a
896 statement saying, "Think you might possibly be mistaken," which I think is marvelous. But
897 in all of this, what I find most important is ideas like Tillich's¹² argument, in one of his
898 sermons, where he said ... "Perhaps in order to ... you have to understand the meaning of the
899 word "god". Perhaps in order to fully understand that you have to forget everything you've
900 already learned and look into the depths of your being to that which you accept without any
901 question." Now that can be done by a person no matter what their religious doctrine is. I
902 think that ... I think that you need to look into the depths of your being to see what you
903 accept without any question.

904
905 My sermons are unusual. The one that I gave in early February at the Unitarians in West
906 Hawaii had to do with describing the indescribable and had to with the limitations of
907 language. The first quarter of it was about the Peano postulates¹³ and what's a "2". I quoted
908 from several of my favorite gospels: the gospel of Matthew; the gospel of fortune cookies,
909 which comes in fragments; and the gospel of Bill Cosby, where he talked about the
910 kindergartners going off to school and the teacher says, "Now children, one plus one is two.

¹² Paul Johannes Tillich (August 20, 1886 – October 22, 1965), a German-American Christian existentialist philosopher and theologian; widely regarded as one of the most influential theologians of the twentieth century.

¹³ A set of axioms for the natural numbers

911 One plus one is two. Repeat after me.” Kid in class says, “One and one are two. One and one
912 are two. Teacher, what’s a ‘2’?” After we spent a quarter or half of the sermon on describing
913 what a “2” is — unsuccessfully, because the Peano postulates do not describe what a two is,
914 they give an example of what a two could be, a system that has the same behavior as the
915 integers, but that’s different from The Integers. Talked about how do you describe the things
916 that are important in life. I used an example from the Unitarian Universalist seven principles.
917 I picked a whole lot of words from them: Respect. Truth. Tolerance. All sorts of words that
918 are in there. I forget the words now, but they’re nice words. I said, “We can’t define these
919 things. And if we define them, we can’t define them the way you make a statue out of marble
920 by chipping away the things that are wrong. We have to define them by defining in the same
921 way that many of the concepts in all the religious works that have been written are defined.
922 You give a story that gives you some indication of what might be the truth. You have another
923 story which gives you some more indication about what’s the truth. Each piece of clay gets
924 put on the statue and the statue builds up. The more clay that is put on and refined — without
925 cutting stuff away — the better you understand it.”

926

927 **B: Thank you, thank you. The ...**

928

929 F: Oh, I forgot to mention one thing.

930

931 **B: Okay.**

932

933 F: I’m currently doing social work.

934

935 **B: Okay.**

936

937 F: I’m a court-appointed special advocate for the juvenile court in Vigo County in Indiana. I
938 deal with children who are children in need of services. I’m their spokesperson in court to
939 make sure that their welfare is attended to. I love it and it’s a way that I pay forward again. I
940 get to work with kids. I get to talk with parents who ... or foster parents about the whole
941 process. It’s fun.

942 [95:20]

943 **B: I’m seeing a big smile on Frank’s face.**

944

945 **Do you have some advice you’d like to give a young person just starting out with**
946 **computing?**

947

948 F: It’s going to change. [both laugh] Not only is computing going to change, but the world is
949 going to change. We think today about changes with regard to wars and scarcity of resources,
950 but the thing that has struck me in my 75 years of living is that that the things that change are
951 the way we think and the way our societies are organized. I’ve seen fantastic changes. I
952 attended segregated schools as a youngster. Now I have a family that the number of
953 European ancestry-only in the family is less than half. When I was young, homosexuality
954 was [sound to indicate it was considered horrible] hard. I now have a niece who has a
955 partner. It’s a loving relationship that I think is just fantastic. I have seen same-sex marriages
956 which are more loving than many of the heterosexual marriages that I have. So I see no threat

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957 to my marriage from any same-sex marriage. I have seen a change in people's attitudes
958 towards interracial marriage. I've seen changes in the way the laws are.

959
960 But I've also seen some things stay the same. We have people today who believe that their
961 beliefs should be imposed on everybody else. The extremely orthodox groups in every
962 religion are growing — and by orthodox, I do not mean good, I mean the ones who accept
963 things literally that should not be accepted literally; who would essentially have blinders on
964 their eyes. I think that you have to live your life realizing that you may be wrong. I was
965 always taught the scientific method was to make a hypothesis and to design an experiment
966 that would disprove the hypothesis. All of scientific thinking is that you assume that you
967 know what the laws are and then you realize that they may be disproven at any moment and
968 you'd better be ready to accept that. You have the president of IBM who said, "You don't
969 need computers. Nobody would ever need a computer on their desk. Mainframes are the only
970 thing." All sorts of other strange statements that have been made by people who are fairly
971 intelligent. I probably made a lot of those statements myself.

972
973 I think what you have to be able to do is to change yourself on a daily basis. I was ... I used
974 to put a thing on my website which I don't have anymore: My job as an educator is to take
975 the education that I received over 40 years ago and prepare my students today to be
976 contributing members of society 40 years from now in a society, in a world, that I will not
977 experience. And so constantly thinking towards the future and trying to change it, but change
978 it in ways that are good for society. That's why I teach.

979
980 **B: Thank you Frank. That's the statement to end with.**

981
982 **Thank you so much for giving me this time and lots and lots of stories. I like stories.**
983 **Thank you.**

984 [99:43]