

Douglas A. Palmer

Interview conducted by

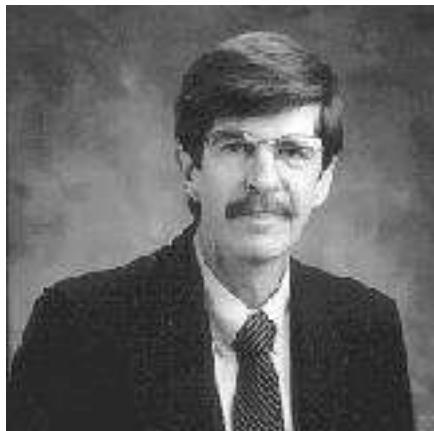
Joel West, PhD and Caroline Simard, PhD

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SAN DIEGO TECHNOLOGY ARCHIVE

A photograph of the San Diego skyline at dusk or night, featuring the Embarcadero and the city's financial district. The buildings are illuminated against a dark sky.

Douglas A. Palmer



Dr. Palmer specializes in unconventional signal processing. He holds over a dozen U.S. patents and has founded or participated in the startup of many companies. He spent 8 years at the Stanford Linear Accelerator and then went on at Linkabit Corp, Western Research Corporation, became head of R&D Director at HNC Software, and then moved on to ThermoTrex, a subsidiary of ThermoElectron. In 1998 Dr. Palmer cofounded Pathi Network Technologies where he developed the world's first video over IP systems. In 2002 he joined the California Institute of Telecommunications and Information Technology at UCSD. He has been working with Intellisis since 2006. Dr. Palmer received his MPhil and Ph.D. in High Energy Physics from Yale University after earning his B.A. in physics from UCSD Revelle College.

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7 **INTERVIEWER:** Joel West and Caroline Simard

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10

11 **[Length 01:47:08]**

12 **WEST:** One of our standard questions is, what made you come to San Diego? But, I think we've
13 probably resolved that question.

14 **SIMARD:** Your mother and father.

15 **PALMER:** When you're born here, you're stuck here.

16 **WEST:** Well, what about the decision to go to UCSD?

17 **PALMER:** We couldn't afford [Laugh] to send me someplace fancy, because my sister was going to
18 Stanford at the time. UCSD was small and marvelous, and had a great reputation. Revelle was just
19 a superior place. I think there were all of 250 students in my class, you know. It was a big campus.
20 It was Revelle when I joined.

21 **WEST:** Oh, Mira wasn't even opened then?

22 **PALMER:** No. So, it was Revelle and you had a block of . . .

23 **SIMARD:** That was the engineering school?

24 **WEST:** No. No.

25 **PALMER:** It was science.

26 **WEST:** It was the entire . . .

27 **SIMARD:** The entire school? Wow.

28 **PALMER:** The whole school at the time. But there was just a little Revelle quad, and you parked
29 near it. You had classes in the Quonset huts. But . . .

30 **WEST:** And you could drive through campus, because the old 101 still went through campus.

31 [Laugh]

32 **PALMER:** Well, not by that time. They were starting to pinch it all off. It was interesting, though –
33 they had this bridge over here and they went east on it and into dirt fields. There was nothing out
34 east of Five. You would go all the way to the Miramar lakes or that little weird community of Mira
35 Mesa, but the rest was just dirt.

36 **SIMARD:** Now it's prime real estate. [Laughter]

37 **PALMER:** Yeah. The Golden Triangle.

38 **WEST:** Okay. What did you major in at UCSD?

39 **PALMER:** Physics. Base physics.

40 **WEST:** Can you expand on that?

41 **PALMER:** Yeah. AP&M was there. It was cool. I took my math courses in applied physics and with
42 really smart guys.

43 **WEST:** Why did you major in physics? What do you do with an undergraduate physics degree?

44 Go to grad school?

45 **PALMER:** Yeah. I went to grad school. But, physics is fabulous stuff. I just love... it started with
46 the Science Fair.

47 **WEST:** Okay. It wasn't any particular goal, career goal ambition, whatever? It's just . . .

48 **PALMER:** Just to make contributions in physics, study and learn physics. I still do it. I'm still
49 working. It's a hobby of mine now.

50 **SIMARD:** Did you go straight to grad school, or did you . . .

51 **PALMER:** Yeah. Straight.

52 **SIMARD:** Where did you go to grad school?

53 **PALMER:** I went to Yale University. Then after three years there, I ended up going to the Stanford
54 Linear Accelerator Center for my thesis research. I was up there for eight years. I did my thesis in
55 three years, then I postdoc'ed for a while, and then I joined what was called IIRPA. It was Institute
56 for Intercampus Research of Particle Accelerators of the University of California. [Laugh] Back to
57 the University of California again. The ties go deep. My sister spent her first two years at UCSD
58 too. Then I came down here to teach.

59 **SIMARD:** You were a professor at UCSD?

60 **PALMER:** I don't know what all the titles were—tenure track, lecturer. I don't remember the things
61 since that . . .

62 **SIMARD:** But, you came back and taught in physics?

63 **PALMER:** Yeah. Yeah. So, I was teaching undergraduate physics here, and then . . .

64 **SIMARD:** How, why did you decide to come back?

65 **PALMER:** Well, my dad died at that time. And I loved San Diego. It was still a . . .

66 **SIMARD:** It was in your mind?

67 **PALMER:** Yeah. Although, the Bay Area's a nice place. When I first started up there, it was '75. I
68 was sharing a house in Menlo Park with some guys. They were grad students. My dad came up
69 and he looked at the house across the street. He walked in there, looked around, came back and
70 said, "It's \$25,000. Why don't I buy you the house? Then you fix it up," because I was a good
71 carpenter, "and it'll save on the rent?" I said, "No. No. No. I'm not going to be here that long."
72 [Laughter] When I left after eight years, those same houses were going for \$250,000, and today
73 they're going for millions.

74 **WEST:** So, you came back to San Diego because you liked it?

75 **PALMER:** Yeah.

76 **WEST:** Was it the career opportunity or you just basically said, "I'm going to find something to do
77 in San Diego?"

78 **PALMER:** It was a lot of things. I wanted to teach some. Also, George Mesick and Wayne Vernon
79 were in the Physics Department here and I just thought the world of them. I think Wayne Vernon
80 is one of the smartest people in the world. So, it was people, people again. When I was teaching
81 here I got introduced to Irwin Jacobs, and . . .

82 **SIMARD:** He was teaching at the time? Was he?

83 **PALMER:** No. Not really. He was right over here at Linkabit in Torrey Pines.

84 **SIMARD:** Oh, he was already at Linkabit?

85 **PALMER:** Right. And then it turns out that a couple of people, one of them Jay Kaufman, had

86 been doing radio astronomy here and he went over to Linkabit. I went and interviewed with him.

87 That convinced me it was full of smart people, and it was. It was an amazing organization.

88 **SIMARD:** So was the attraction of Linkabit that it provided a way to have an academic mindset but
89 in industry?

90 **PALMER:** Yes. I interviewed in several other places in town, and they didn't have the same
91 academic mindset. At Linkabit they just let me come back here and teach. So, I continued to
92 teach here and work on the programs there. It didn't take long before I realized that he had
93 collected a lot of brilliant people. Amazing. Just . . .

94 **WEST:** And, how did he do it?

95 **PALMER:** How did he do it? I'm still asking people this to this day. [Laugh] I've been part of
96 probably twenty startups in twenty years, and it's people, people, people. If you build your first
97 core team properly, it acts like glue. There's an interesting thing in startups. If you get a really
98 good core team and you move at high speed, you can't help but to bring on dead wood, so to
99 speak. There are people that just don't fit the culture or the lifestyle of the company. If you've got
100 a really good core team, those people eventually leave. They don't feel a part of it, they don't feel
101 they're keeping up. It's too much work, etcetera, etcetera, etcetera. It's kind of a streamlining.
102 I've seen this again, and again, and again. So he must have gotten a really good core team. He did
103 keep it like a campus. It always felt like a campus. At first maybe some people like it. I don't
104 know. But, there seemed to be a lot of freedom. I've learned this about him. It's kind of
105 interesting. If you have a company with a lot of smart people in it, you have entrepreneurs. You
106 can't help it. You've got people who are entrepreneurial spirited. What Irwin Jacobs did is he had
107 an entrepreneurial mindset. You could come to him at any time with your ideas and he never said,
108 "No." What I learned was, and he could clarify this more than anyone, and maybe he's not even

109 aware that he's as good as he is, but what he does is he says, "Well, continue with the job you're
110 doing now, because that's important. We'll see. Maybe we'll fund your idea and keep working on
111 it in house." You accomplish two things. Or maybe three things. If you say, "Nah. We don't have
112 any interest," or something like that, you're going to lose some good people and replacing them is
113 very hard. It's very hard to get good people. Number two, if they are good and it's something that
114 maybe turns out okay, you can make a mint off of it. Number three, if you keep them around at a
115 cost of like \$50,000 on an IRAD or something like that, they are still doing their jobs in the
116 company, it can pay off, and they're not out competing with you.

117 **SIMARD:** Right. In a way, if he hadn't sold Linkabit to M/A-COM, maybe he wouldn't have all
118 these startups. It all came unglued when he and Andy left. It was always Irwin and Andy. That
119 was the . . .

120 **WEST:** Were you at Linkabit when they left?

121 **PALMER:** Yeah. There's an interesting story there. There was kind of a shock in the company for
122 a while. But, M/A-COM sent some guys out to appease all the engineers and the staff.

123 **WEST:** After they left?

124 **PALMER:** Yeah. It was three days later. This is kind of funny. We go in the auditorium and we
125 listen to the guys from M/A-COM say, "We're brilliant. We'll take care of you. You just do your
126 jobs and be good boys". I went back to my office and got on the computer and updated my
127 resume. [Laugh] No questions asked. It was just quiet in the auditorium, which is contrary to
128 normal Linkabit operation. I submitted it to the print queue. It went off and the print queue
129 backed up. I wanted to know when to go in and pick it up, so I did a search on the print queue and
130 it gives the names of the files being submitted. It was "resume, resume, resume, resume,
131 resume." [Laughter] There must have been twenty resumes popping out of it. I went there and

132 looked and it was every good person I knew – it was sad. It was . . .

133 **WEST:** And, this is in an hour after the talk?

134 **PALMER:** Yeah.

135 **SIMARD:** Wow.

136 **PALMER:** But, I fell in with Hussein El-Ghoroury, who was the best systems engineer I've ever met.

137 Hussein was trying to keep the company together and he brought a group of the good people
138 together in the system engineering team. He called it his "tiger team" or something. He kept a lot
139 of good people together there.

140 **WEST:** When you were in his group, did you notice the culture shift that was going on?

141 **PALMER:** Oh yeah. Yeah.

142 **WEST:** So, what was the difference between the old culture and the new culture? Were people
143 just reacting to, "Oh gosh, the brilliant founders are leaving. We better jump"? Or were there
144 more tangible things?

145 **PALMER:** Oh, it was tangible in the following sense. It went from a campus atmosphere of
146 academic equals to a paternalistic corporate atmosphere. Management was up in the clouds and
147 they cast down tidbits to the peons – that's an exaggeration.

148 **SIMARD:** The headquarters were now on the East Coast, so you were not aware of the decisions
149 they made?

150 **PALMER:** Right. They put in big conference rooms too. There's a real difference. I've lived on the
151 East Coast in that atmosphere. Massachusetts is an arrogant part of the community. You look at
152 MIT, Harvard, BU, *Scientific American*, you look at the peoples, the Kurzweils, the Wolfram, they're

153 the center of the intellectual universe. There were things happening with MIT, Lincoln Labs. The
154 arrogance out of there was filtering down and it doesn't fit with California. I'm not saying it's
155 worse, or delivers less. They've done good work out there, but it's a different mindset. You can't
156 have any further mindset than between Boston and California.

157 **SIMARD:** That's interesting, because there's actually been a book about the difference in culture
158 between Massachusetts and Silicon Valley, asking, "Why has Silicon Valley took off and Route 128
159 didn't?" The book talks a lot about this kind of corporate culture.

160 **PALMER:** Even now I'm helping out on several mergers and acquisitions. Mergers and
161 acquisitions are all about culture, you know. It's just like a marriage, you know. You get a husband
162 and wife who come from totally different cultures, and you've got things to overcome, let alone all
163 the rest of the problems [Laugh] you have left. Mergers, M&As fail on culture, mostly. A lot of it
164 you can't put your finger on, but something's different.

165 **WEST:** So you ran Hussein's team while the rest of the company was really shifting. What was it
166 like in Hussein's team? You said he had good people there, so at least you were keeping good
167 people. Was there anything else about the team that was different, other than the quality?

168 **PALMER:** The team was excellent. Some of the programs were shifting to less... As a company you
169 can stay high margin, cutting-edge. You're doing things right at the limit of what technology can
170 produce. That's one corporate culture. The next one is to fall back into low margin, cut pennies,
171 and lock up the file cabinets. Memos started pouring out right and left. "The supply cabinet will
172 be . . ." We never got memos before, but all at once memos were pouring out everywhere.
173 Controllers were coming in. "Too many pencils are being used. Too many book binders." From
174 now on you had to sign out for all bookbinders. "The stockroom will be under lock and key." It's
175 just a culture shift to . . .

176 **WEST:** You're from San Diego. Were there other people that were equally offended? San Diego
177 culture, particularly in the '70s and '80s, wasn't particularly hierarchical and centralized. But, for
178 the people that would come from... Irwin hired a lot of people from MIT.

179 **PALMER:** From all over. And . . .

180 **WEST:** The East Coast people also kind of noticed the shift, or did you particularly?

181 **PALMER:** Everyone, I think. A lot of people stuck it out. A lot of good people even stuck it out as
182 long as they could. I went early because a recruiter I know called me and said, "There's a bunch of
183 loonies over here on Miramar Road that are doing just bizarre things. You really ought to be part
184 of it." [Laugh] I went over there and it was a bizarre company full of brilliant . . .

185 **SIMARD:** What company was that?

186 **PALMER:** It was called Western Research. It was run by Bob Hunter. His brother is Duncan
187 Hunter, the congressman. It's a great family. I still stay close to them. They're very wonderful
188 people. Bob Hunter is the rebel. A real rebel. He was going to knock sense into the Department
189 of Defense, the Department of Energy, you name it. We were going to build the world's largest
190 laser. We were going to build everything. More technology came out of that company in a few
191 years than you can even believe. It was an amazing place.

192 **SIMARD:** Was that company doing a lot of military type work?

193 **PALMER:** All. A hundred percent.

194 **SIMARD:** So you had worked on some military technologies?

195 **PALMER:** Yeah. Yeah. At MILSATCOM.

196 **WEST:** MILSATCOM at Western Research or at Linkabit?

197 **PALMER:** At Linkabit. I think Steve Hart left before me. His office was next to mine at Linkabit.
198 He's VIASAT. And then there was another one. I think there's someone else that left before me
199 too, but then I, bingo, was gone. It was hard to leave, because I had so many friends there. It was
200 a great social atmosphere.

201 **SIMARD:** What year did you leave, in 1990?

202 **PALMER:** Eighty-five, I think.

203 **WEST:** Do you remember when in '85?

204 **PALMER:** No. May or something like that.

205 **WEST:** Well, I understand the announcement was in April.

206 **PALMER:** Was it that soon? [Laugh] Maybe it was later. Maybe it was September or something.

207 **WEST:** Irwin Jacobs left in April.

208 **PALMER:** Okay. So, it might have been like September or something. Hussein was a great guy. A
209 lot of guys stayed and really fought the battle to try and keep it together. They really gave it their
210 all. Slowly they . . .

211 **SIMARD:** Eventually they left and formed PCSI.

212 **PALMER:** Dave Lyon was – yeah.

213 **SIMARD:** Lyon? Yeah.

214 **PALMER:** Western Research is interesting. I can't even tell you what they were doing because it
215 was all Star Wars, but it was just mind-blowing. They did the first adaptive optics in the world,
216 beyond even the systems they're building now. It was quite a place. They actually tried to hire

217 Hussein to come in and manage a program and they couldn't tell him what it was. [Laugh] It was
218 strange stuff. But, that was a brilliant company. And then Bob Hunter was appointed to the
219 Department of Energy.

220 **SIMARD:** So, the rebel? [Laugh]

221 **PALMER:** Yeah.

222 **WEST:** What did he do in DOE?

223 **PALMER:** He was Assistant Secretary. He tried to reorganize it and kick out the boondoggles, and
224 he ended up being kicked out. [Laugh] He was tramping on the sacred cows. He was doing what
225 should have been done.

226 **WEST:** Oh yeah.

227 **SIMARD:** That was probably why they hired him.

228 **PALMER:** The sad part is, when he left, he had to eliminate his commercial interests. He sold
229 Western Research to Thermo Electron. Another merger and acquisition-gone-crazy company out
230 of Waltham, Massachusetts. When that happened . . . [Laugh]

231 **SIMARD:** Someone told me in one of the interviews that Irwin Jacobs will never sell Qualcomm.
232 [Laughter]

233 **PALMER:** No.

234 **SIMARD:** He's had his experience with that, you know.

235 **PALMER:** Yeah. Especially to a company out of Massachusetts. So anyway, I got it again. [Laugh]
236 I bailed and went with Hecht-Nielsen, who is a professor here, to Hecht-Nielsen Neural Computers.

237 We did neural networks. More ties to UCSD again.

238 **SIMARD:** Hecht Computers?

239 **PALMER:** Hecht-Nielsen Neural Computers. It's called HNC. HNC Software.

240 **SIMARD:** I know it by HNC.

241 **PALMER:** Okay.

242 **WEST:** When was that?

243 **PALMER:** That was '87 or so.

244 **WEST:** When you were at Linkabit, were you a communications guy or a laser guy? Or . . .

245 **PALMER:** Communications. Or whatever. At Linkabit, Irwin always said, "Hire a smart guy. He'll
246 figure out what to do in the company." That was his hiring philosophy. Hire just smart people. As
247 soon as they come in, they are immediately blazing a path somewhere.

248 **WEST:** And at Western Research you were also in communications?

249 **PALMER:** Laser stuff. [Laugh]

250 **WEST:** So, optics?

251 **PALMER:** Lasers and optics. Right. We worked with Clark Guest, who's a professor here at UCSD.

252 And Sung Lee.

253 **WEST:** You were at Western Research when you worked with him?

254 **PALMER:** When I was at Western, right. When I went to HNC, likewise, I worked with Clark Guest
255 again, because he's a brilliant guy. One of the smartest guys I know. I'm still working with him.

256 He's a brilliant guy. At HNC we worked with a lot of groups around town.

257 **SIMARD:** Still military oriented?

258 **PALMER:** No. They didn't know where they were oriented. They had neural networks and they

259 were Chase money. They were funded by Battery Ventures out of Boston. [Laugh]

260 **WEST:** One case where the Boston money didn't screw them up, right?

261 **PALMER:** Right. [Laugh] Then it gets kind of funny. I worked with a lot of other companies and

262 professors in town, Dr. Ty Smith at the VA Hospital, and Albert White in the Economics

263 Department here. A really brilliant mathematician, in applied economics – well, that's probably

264 why he's in economics. But, then just as an aside, I did a hobby thing with some guys out of

265 Linkabit. We formed a company called DR3 Datadesign, and we pioneered just kind of off-the-wall

266 things.

267 **SIMARD:** Deer3 it was called?

268 **PALMER:** DR3. It was the initials of the founders. [Laugh] Doug. And Dave Cook was in there.

269 Dave Cook has been in every startup and you'll see his name a lot. He's at Votrax now. He was at .

270 ..

271 **SIMARD:** Wow. Okay.

272 **PALMER:** I brought him into Western and I brought him over to Sabia. It's all incestuous around

273 here. He was at PCSI. He was with Dave Lyon.

274 **SIMARD:** Uh huh. The team.

275 **WEST:** You were giving us the DR3.

276 **PALMER:** DR3, we did printed sheets . . .

277 **WEST:** With Dave?

278 **PALMER:** Oh, yeah, that was Dave Cook. We had the chairman of the UCSD Music Department at
279 the time. I think his name was Erickson, and Rob – Rob, Rob, Rob. He was one of the Rs. I can't
280 remember. It'll come to me in a bit. We made printed sheet music and we were working with Bill
281 Norgrund and Myron Eichen. Now, there's a name you're going to see over, and over, and over
282 again. I had a long relationship with him. He just died about a year ago, but he founded Ivac,
283 BrookTree. He was involved with Pacific products. His son founded Proxima, which was computer
284 products or something. It turned into Proxima. Then he went off and he formed Rokenbok, the
285 toys. Myron's been an investor in dozens of companies. All over the place. And Bill Norgrund.

286 **WEST:** Was he an angel or was he actually starting them himself?

287 **PALMER:** He was actively involved in it. Bill Norgrund was more of the angel. Myron always was
288 hands-on. I worked with Myron at BrookTree when there were only three guys in an office.
289 [Laugh] BrookTree was eventually sold to Rockwell and became part of Conexant. There were
290 three or four basic technology groups in San Diego early on that started everything. One was NCR.
291 That started all the semiconductor stuff down here.

292 **WEST:** Why do you say that?

293 **PALMER:** Like every company, they kind of did weird things and a lot of their people rolled out of
294 there up into Newport Beach and Silicon Valley and came back into town. Kumar Majeti and
295 others.

296 **WEST:** Was NCR doing semiconductor work here in their RB plant?

297 **PALMER:** Yeah. They had a plant in Carlsbad, I believe. They were building computers. They
298 were world-class at the time. The next group of things began with General Atomics. That was the

299 birthplace of lots of other companies. That was Freeman Dyson, who was called then to form a
300 group on the Orion Project. The Orion Project was going to launch rockets with exploding nuclear
301 bombs. Freeman Dyson brought in thirteen of the most brilliant minds in the United States,
302 including Myron Eichen, and Bob Beyster.

303 **WEST:** Okay. [Laugh]

304 **SIMARD:** Very interesting.

305 **PALMER:** You're starting to see the picture here? Okay. [Laughter]

306 **SIMARD:** Yeah. We talked to Gene Ray yesterday. He mentioned Bob Beyster.

307 **PALMER:** Now you're really tying the loop, because Gene tied Linkabit to the remnants. The other
308 one is Jim Palmer, the guy that was there. He went off and started Horizons Technology.

309 **WEST:** Jim Palmer was at GA?

310 **PALMER:** Yeah. Remember, almost as soon as everyone was collected they started doing
311 experiments, quite successful ones actually. There's a tower down in Point Loma where they were
312 sending things out. [Laugh] I used to sneak behind the fences down there and go look at that in
313 high school, junior high level, and used to watch these experiments. GA was very active in
314 supporting the Science Fair.

315 **WEST:** Oh yeah.

316 **PALMER:** I used to go up there. You remember that?

317 **WEST:** Yeah. That was even in . . .

318 **PALMER:** Did you get the tour?

319 **WEST:** The GA tour was the highlight.

320 **PALMER:** Yeah. That was the best. TRIGA. Remember TRIGA?

321 **WEST:** Yeah. The blue water or something? "Fusion is just around the corner."

322 **PALMER:** Yeah. [Laugh] So anyway, almost as soon as Orion began it was demolished. Freeman
323 Dyson left to go back and Bob Beyster stayed here with Myron Eichen and started SAIC. After
324 eight years or something like that, Myron left SAIC. He was the only outside shareholder for a
325 long, long time, because it was an employee-owned company. Then he started Pacific Hydro
326 Products and then started his chain of founder, foundryships, or whatever you call it.

327 **WEST:** Did you ever work at SAIC, or you just worked for people who had?

328 **PALMER:** No. I knew a lot of people there.

329 **SIMARD:** Just knew a lot of them?

330 **PALMER:** If you're here, you collaborate with them on lots of things.

331 **WEST:** One of the things we were trying to get at... Obviously a lot of people in town have passed
332 through SAIC. And the question is, at least when we look in the commercial side, we see a lot of
333 people who passed through Linkabit by starting companies. We don't see many people,
334 comparatively speaking, who passed through SAIC. I don't know if it's the caliber of the people or
335 the culture, or the training they get.

336 **SIMARD:** Or their technology or whatever?

337 **WEST:** Yeah. Yeah.

338 **PALMER:** Right now, you're right about it. A few good guys left and did things. Jim Palmer was

339 one. But, it's the culture. SAIC has been so involved with government for so long they kind of
340 have that culture too. It doesn't reward, there's no entrepreneurship. It's, "Do your job and don't
341 make any waves." So, it wasn't conducive.

342 **SIMARD:** Getting that next contract rather than thinking?

343 **PALMER:** Yeah. Fulfill the customer's requirements. Although, they've done neat things but it's a
344 different culture. It's not my culture, but it's *a* culture. They do have some smart people. At HNC
345 we hired some SPAWAR guys who were just fantastic, but we blew it at HNC and they went back.

346 **SIMARD:** They went back to SPAWAR?

347 **PALMER:** Yeah. It's a funny thing, but like many of my buddies from Linkabit, if nothing's going on
348 where we get stressed out... We lived for stress. You had to be at the edge of falling apart, running
349 out of the last dollar, trying to do some marvels in the face of insurmountable circumstances. That
350 was Western Research. A lot of the people are like that. Dave Lyon's like that. Of the whole team
351 out of Linkabit, a lot of them had that personality.

352 **SIMARD:** Very driven?

353 **PALMER:** Yeah.

354 **SIMARD:** Is there anyone in particular at SPAWAR we should try to talk to to investigate . . .

355 **WEST:** Or somebody who came through there and made out on the commercial side?

356 **PALMER:** Try Peregrine Semiconductor. Ronald Reedy and Rory Moore. Reedy took the silicon-
357 on-insulator technology to Peregrine Semiconductor. A lot of good people went through there,
358 who then branched out to other places. Jim Tiernen is another one you haven't talked to.

359 **SIMARD:** James Tiernen?

360 **PALMER:** We hired all of his people. The last company I cofounded with UCSD professors was
361 Path1 Network Technology. We hired most of their people. [Laughter]

362 **SIMARD:** Oh really?

363 **PALMER:** From Joe. Yeah.

364 **SIMARD:** They sold to Radyne/ComStream, right?

365 **PALMER:** Yeah. And then did really well.

366 **SIMARD:** Yeah. Right.

367 **PALMER:** If they'd only held it a little stronger. Jim was a headstrong guy. Chris Bennett, who
368 worked with him, was a good guy too. Chris Bennett would be a good guy to talk to.

369 **WEST:** Where is he now?

370 **PALMER:** Maybe he went with Radyne/ComStream.

371 **SIMARD:** Okay.

372 **PALMER:** Then, let's see, from HNC . . .

373 **WEST:** You were doing software stuff at HNC, or were you doing algorithms, or what were you
374 doing?

375 **PALMER:** Yeah, Algorithms. Algorithms and hardware. You did everything. You wore a hat in
376 three different directions all night long. Bob Hunter came in. We were trying to get an
377 experiment done. This is amazing stuff. Someday someone will write a book about it.

378 **WEST:** And what year is this?

379 **PALMER:** Eighty-seven, '88. This is Bob Hunter's personality. It was 3 a.m., between Saturday and
380 Sunday, we're trying to get an experiment going. It was all ripped apart, and he walks in. Three
381 a.m. right? [Laughter] Paul Johnson and I are sitting there and working. He came over and said,
382 "How are you doing?" We said, "We can't find the problem." And he said, "Okay. Give it all you
383 got. I'll see you in the morning." It's 3 a.m., which meant he's going to be back at 7 a.m. to see
384 that all this . . . [Laugh] That was the style of the company.

385 **WEST:** And people took it?

386 **PALMER:** It was one incredible place.

387 **SIMARD:** They liked doing it. Yeah.

388 **PALMER:** Yeah. We were going to show the world what we could do, and it was an amazing place.
389 Paul Johnson, who was sitting next to me all bleary-eyed when Bob walked away, said, "Doug, you
390 know, most people would find this a very stressful situation." And I said, "Paul, I think we like
391 stress." [Laughter]

392 **SIMARD:** We find it fun rather than stressful? Yeah.

393 **PALMER:** But, one day when I was at HNC, the new management kind of took over. Robert was a
394 fun guy, really fun guy. But new management, sent out from Boston, so to speak, took over. They
395 were moving the company up in the credit verification and so a lot of the scientists went out to
396 other places.

397 **SIMARD:** It seems to be a time following the arrival of new management. My husband works in
398 Silicon Valley and he says, "Managing engineers is like herding cats." [Laughter] When the wrong
399 person tries, especially someone who doesn't have the technical abilities, then they . . .

400 **PALMER:** Yeah. Sure. When I was at HNC two weeks, I was trying to work with Dave Lyon of PCSI.

401 They had a neat startup. They had Martha over there and it was cool. They got Dave Cook in
402 there. He came out of Western and went over to PCSI. PCSI was really cool. You'll see why in a
403 second. [Laugh] What goes around comes around. When I got a call back from what was left of
404 Western, it was under Thermo Electron, and they said, "We're being very entrepreneurial." It
405 turns out that George Hatsopoulos, who was running Thermo Electron, was a very interesting guy.
406 He was chairman of the Federal Reserve. He built instruments. They talked me into coming back
407 to finish a program and they said, "We're going to do a lot of startups and things. We know you've
408 been through two or three of them now, so help us out." So, I went back and spent six, eight years
409 there.

410 **SIMARD:** Did they want to spinoff startups?

411 **PALMER:** Yeah. Their vision was you could raise capital on the venture markets cheaper than any
412 other way. It was the best way. And then you got the entrepreneurship of the people you spinout
413 to do it. So, they were going to create an empire of fifty-one percent ownership. And then people
414 felt, "Gee, by buying some stock in this company I don't have just a flaky startup. I'm actually a
415 part of an empire that knows how to manage and look over its assets."

416 **WEST:** Sort of like a more decentralized version of the GE model? You're buying a portfolio of lots
417 of businesses and you assume they know how to run it?

418 **PALMER:** Yeah. So, it was a lot of fun. I was commuting out to Boston again. Somehow, at HNC I
419 was doing that every other week. I was doing it again. [Laugh] We went through probably forty
420 startups and spinoffs and acquisitions there.

421 **SIMARD:** Forty spinoffs?

422 **PALMER:** There were more than that. But, I mean the ones that I was doing due diligence on. We

423 bought Gamma-Metrix here in town. I tried to buy PCSI. There was a problem though. There was
424 some spin going on. George Hatsopoulos was leaving it to his brother. His brother moved to Wall
425 Street and found there's more money to be made on Wall Street and hype than from sound
426 business principles. You can go look up the history of Thermo Electron. A lot of people came to
427 this conclusion. I was trying to start another communications company called Trex
428 Communications. The company started treating people badly. Eric Korevaar left and formed
429 Astroterra.

430 **SIMARD:** Uh huh. Right. He was at Trex Communications wasn't he?

431 **PALMER:** Yeah. Scott Blum left to form AirFiber. I stuck it out with Trex as long as I could. We
432 bought a few companies. We were all into the free-space optical communications. I joined the
433 Center for Wireless Communications. That was Larry [Larson], and Tony Acampora, and good guys
434 over here. The . . .

435 **WEST:** When you say "joined," you became an investor?

436 **PALMER:** Yeah. It was a real good deal. In fact, it quickly convinced us that free-space optical is a
437 bad deal. [Laugh] It paid off in spades. CWC was a very valuable investment.

438 **WEST:** So, what happened then to Trex?

439 **PALMER:** I was raising capital. I spent a lot of time in Midtown Manhattan. It's a great place to
440 raise capital. New York beats anywhere in the world. What you learn in Silicon Valley and
441 everywhere else is that VCs can't say "no." It's not in their vocabulary. They never say no. "Well,
442 yeah. This is interesting. Maybe if you had a better management team." That's their way of
443 saying "no." It's almost like dealing with Japan. There's never a "no." They're getting a little
444 better now. [Laugh]

445 **SIMARD:** Right. They had to learn.

446 **PALMER:** But, in New York City, you would walk in with your PowerPoint. They would give you
447 five minutes. You would put out your business plan. They would have a financial guy, a technical
448 guy and a partner. In ten minutes you got your answer. "No. No interest." And often no
449 explanation. But, it was a great place and New York's a wonderful place to hang out. But I was
450 getting bad vibes. At some of the companies I was going into, I was getting yelled out for the
451 financial practices of Thermo, and I'm a techie. By the time I had raised enough money, \$17
452 million on this one, I'm also getting bad feedback from Gamma-Metrix. A lot of the good people
453 were leaving there. I watched Eric and Scott go from my group, and I felt like, "Hmm." Rick
454 Kramer left. He's doing well now. So, what happened is I hired Ron Fellman, who was an ex-
455 professor from UCSD out in the entrepreneurial world. He was doing consulting work on our free-
456 space laser. He was working so well. It was, "Wow." Anyway, I got back from a trip and called
457 him in the office one day. I closed the door and said, "Ron, you and I have got to go out and start a
458 company. [Laughter] This place is doomed." We went out and raised money and about three
459 months later we were out. I sold my stock at \$49, and about three months later it was about \$13.

460 **SIMARD:** The right vision at the right time?

461 **WEST:** Yeah.

462 **PALMER:** So, I shed of all of those... There was a term that was used in Thermo Electron, it was
463 called "murders and inquisitions." [Laughter] So, Ron and I did Path1 Network Technologies. We
464 started out doing voice over IP, then switched to video over IP.

465 **WEST:** Why?

466 **PALMER:** Because I love video. In voice over IP there are too many weird big guys out there, the

467 big Telcos. They're very strange companies. We know now why they were so strange. They all
468 had [Laugh] bad things going on inside. By exposure to first M/A-COM and then to Thermo, I spot
469 it very quickly and know where to short stock, and stay away from it.

470 **SIMARD:** Did you do any wireless at all at Path1?

471 **PALMER:** Our patents were covering wireless. We were seeing 80211 start to rise and thought it
472 was interesting. So we extended our patents to that domain. They'll become very valuable some
473 day.

474 **SIMARD:** I did think you were doing those both.

475 **PALMER:** Yeah. We did some interesting work. We were basically the pioneers of video over IP.
476 Myron Eichen had introduced us to Marco Thompson originally. I started a company, Video
477 Freedom, in the meantime that, unfortunately, the federal government clobbered with the V-chip.
478 We had a competing technology and they wouldn't allow us to show it to the government. They
479 were bought off by the MPAA. So we were out of business. You have to have clout. That's one
480 thing that Irwin recognized quickly: to grow you have to get into Washington D.C. You have to
481 play with the big boys. He's very good about that. Anyway, at Path1, it was kind of interesting, our
482 big success came with the box I built at Dr. Design with Marcos' guys. He gave me a discount. He
483 always did. Marco's a terrific guy. Marco's team built the box for us, under our design, to carry
484 commercial quality video over IP. We hired Tiernen people to help us in the program. We were
485 trying to sell this thing, and networks are very, very cautious people. They don't . . .

486 **WEST:** "Networks" being in this case telephone operators?

487 **PALMER:** No. In this case, it's real television networks.

488 **SIMARD:** Yeah. Right. Right. [Laughter]

489 **PALMER:** The CNNs. [Laugh] They don't risk anything.

490 **SIMARD:** They protect their turf.

491 **PALMER:** We had Williams, and Enron, and everyone trying to deal with us, and I was getting
492 funny vibes out of these guys. [Laugh] I can't quite describe it, but odd things out of Enron and
493 Williams and Nortel. They all had an interest in us, but Sysco seemed to be a straight shooter. No
494 interest, but they were straight shooters. We sold about half of the company to a Canadian
495 company called Leach. It turned out the CTO of the Canadian Telephone Company was running
496 that one. He went over to run it and then he bought into us. But, we were trying to sell to CNN
497 and they said, "Well, we don't trust your equipment." We had this beautiful little 1U box that was
498 light years ahead of all the competition. Sysco was selling something this big that was inferior.
499 Every one of six companies was inferior to our little itty bitty module. Thanks to Intel, they gave us
500 an IXP-1200 upfront. More connections in San Diego again. Intel came through for us, and we
501 came through for them too, with our first commercial product for their network processing. Intel's
502 been very good to me. I've got a development system on my desk here. Intel gave it to us.
503 They've been wonderful guys. With this box, we finally talked CNN into covering a Redskins game,
504 out of Washington D.C. to Atlanta. So, we went out on September 5th and installed it.

505 **WEST:** This would be like 2001?

506 **PALMER:** Yeah. [Laugh] Yeah. We installed it in Washington D.C., set it up, and they went via
507 traditional landlines, via satellite, and used ours as number three backup. They told us that it
508 performed flawlessly the entire game. It was comparable to the other stuff. "Well, will you buy
509 it?" "Nah. No interest. We don't like that." "Well, we'll have to go out and remove it." Bam.
510 September 11th happened. The federal government took all the satellite channels. They took
511 everything. They took everything.

512 **SIMARD:** I had no idea.

513 **PALMER:** Yes. DoD walks in and every channel anywhere going anyplace is theirs now. CNN . . .

514 **SIMARD:** For how long?

515 **PALMER:** A week or two. CNN has no way of getting broadcast video out of Washington. We got

516 a call. "Can we use your box? We need it now." [Laughter] The internet, remember, is

517 independent of all that. It just runs, you know. All of the coverage that came out of Washington

518 D.C. for two weeks was coming through our little box. All the interviews down at the Pentagon,

519 the President, everything was flooding out, and CNN distributed to the whole rest of the world.

520 We were going, "Yeah." [Laugh] It never crashed, never had to be rebooted, never anything. Just

521 performed flawlessly.

522 **WEST:** When you say your "box," you actually had one back in CNN's center too, right?

523 **PALMER:** Yeah. Yeah.

524 **SIMARD:** Did you have to install more? Did you put . . .

525 **PALMER:** We had four of them around the country.

526 **SIMARD:** Okay. So, you didn't all of a sudden need to scramble to produce more . . .

527 **PALMER:** Right.

528 **SIMARD:** Or you were ready for that kind of . . .

529 **PALMER:** No, we weren't ready. It just did its job. The guys at CNN had no channels, no channels,

530 and here's one. They just plug it in and adapt as fast as they can. It went in as a standard

531 television feed, SDI, and came out as a standard television feed. That was fine for them.

532 **SIMARD:** Did they buy any?

533 **PALMER:** No. [Laughter]

534 **SIMARD:** Wow. They used it and didn't buy it?

535 **PALMER:** Yeah. Yeah. Sales are starting to really flow now, but they went right back to their old
536 ways of doing business. [Laughter]

537 **SIMARD:** That's the biggest journalistic coverage need that they could have ever had in their
538 whole existence.

539 **PALMER:** Yeah. It's business, and business isn't fair. I'll take luck over skill any day in business.
540 Anyway that's kind of funny.

541 **SIMARD:** That's unbelievable.

542 **PALMER:** So anyway, we kept our ties to UCSD. We had Ramesh Rao on our Advisory Board.
543 We've always kept ties here. I left the company. I wanted to go off and do some physics and do
544 some stuff on my own for a while.

545 **SIMARD:** So, it's still existing, Path1?

546 **PALMER:** Yes. It's a publicly traded company. I was on so many boards and things at the same
547 time. A group of guys wanted to start a company. It was the founders team out of Gamma-
548 Metrix. [Laugh] We had purchased them and then kind of destroyed them, so they wanted to
549 start a new company to do the same thing, which is a bulk analyzer company. So, they formed a
550 company called Sabia, Inc. I went in and was their first investor, and on the Board, and had been
551 helping them out. What's kind of funny about this is the guy who was president of Gamma-Metrix
552 at the time was Derek May. Derek May left also and went to become VP of manufacturing at

553 Qualcomm. Derek left and sold stock. They sold the manufacturing to Nokia. So, Derek bought a
554 yacht and went sailing. He lives in Sunset Cliffs, right near me. He went and became a director at
555 Sabia. And about six months ago things weren't going well at Sabia. They didn't have the business
556 expertise they needed or the customer relations. Derek May became the CEO of Sabia.
557 Meanwhile, I brought David Cook over to Sabia to help out and he wrote all the software for the
558 company, but then he got called to go to Votrax. So, he's head of technology, I think, VP of
559 engineering or something at Votrax. From PCSI, Dave Cook went to WaveWare, which was Martha
560 Dennis's company. Then he was a consultant for a while, and then I brought him over to Sabia. A
561 good culture. Good culture.

562 **SIMARD:** Yeah. She was wonderful when we were . . .

563 **PALMER:** Yeah. She's great. So anyway, Ramesh called me and said, "Doug, can you do some
564 consulting for us?" I said, "Sure. That'll be fun."

565 **WEST:** I imagine at this time it's at Sabia?

566 **PALMER:** No. He was here. He stayed a professor in UCSD. I was consulting with Marco on a
567 project for Disney for a while. Then Ramesh called and he had some projects that he wanted help
568 with. That lasted about a week and then he said, "Oh, forget it. Why don't you just join us?" And,
569 I thought . . .

570 **SIMARD:** Calit² was getting started up already?

571 **PALMER:** No. No. It had been . . .

572 **SIMARD:** It had been started?

573 **PALMER:** Well, there wasn't much here. There wasn't anything. There were five people. But, he
574 told me about it and I thought, "Gosh, this is like a startup. And it's the University of California.

575 This is cool. Okay." Calit² is fantastic. And Larry is a university entrepreneur. I have great respect
576 for him. He had a birthday party, and the whole team piled in the conference room over here.
577 There were about ten people sitting around. A true entrepreneur he said, "There's only ten of us
578 here" and he said, "I think in two years there's going to be 500 of us." All that, that kind of
579 ambition is just [Laugh] fabulous. A great motivator. Ramesh too. I have great respect for the
580 team here.

581 **SIMARD:** Does Calit² have some commercialization projects? What happens to the technologies,
582 the projects that you come up with?

583 **PALMER:** Yeah. Foremost, education. Foremost is to create the next generation of
584 entrepreneurs. How do you create these people? Give them . . .

585 **WEST:** Yeah. How do you create the next generation of entrepreneurs?

586 **PALMER:** Create exciting things for them to do. How do you do that? You can't pull it out of thin
587 air. You have to do something real. Real stuff is being done here. It's visionary at one end and it's
588 applications at the other end. If commercial things happen, fine. I suspect in ten years you're
589 going to see a hundred new companies spun out of here doing wireless, everything. It's going to
590 be an incubator beyond belief. Guys like Don Kimble, a brilliant guy. The team being assembled is
591 remarkable, really, really.

592 **SIMARD:** Do you patent any of the projects and then license them to companies? Or is that not. . .
593 .

594 **PALMER:** We can. That's not the overall... Education is the number one aim. Number two is to
595 create jobs in California and to boost the reputation of the university. Motivate young people. In
596 the new building, when we get living labs up there, I think a lot of people are going to want to...

597 We'll get into the high schools and try to convince more people to get into the field.

598 **WEST:** Into what field?

599 **PALMER:** Engineering, wireless, information technologies. "Field" is a funny one. There's
600 engineering and there's visionary engineering, which is not "I'm going to do what everyone else is
601 doing better." It's "I'm going to the left. If everyone goes [right], I'm going to the left." [Laugh]
602 Whichever direction. I'm going to go my own way and create a whole new technology,
603 nanotechnologies, anything. You name it. Lori has a fantastic way of getting people all around the
604 school tied in. What Calit² can do is kind of interesting. For faculty members, if you're teaching
605 full-time, it's a full-time job. If you want to be really good. So, getting into research and things,
606 writing proposals and grants, it's a tough job. We kind of bridged opportunities between faculty
607 people all over the country, especially California and the government. I think it's a great thing for
608 the institution to have.

609 **SIMARD:** I had asked Stephanie, two years ago when Calit² was one room with boxes in it. It was
610 just starting, and I had asked her, "How do you interface with the other efforts at the university,
611 like the Center for Wireless Communication, Technology Transfer?"

612 **WEST:** CMRR?

613 **SIMARD:** Right. And then there is another. I spoke with Abigail Borough and there was another
614 center.

615 **PALMER:** The Von Liebig Center?

616 **SIMARD:** Yes. And so, how does Calit² interact with the other parts?

617 **PALMER:** We're light years ahead. [Laughter] Everyone wants to be at Calit². But there's no
618 jealousy. Everyone wants to get into the wake.

619 **SIMARD:** Okay.

620 **PALMER:** Yeah. Steaming successful entrepreneurs don't push. They don't cajole. They don't
621 force. They steam ahead full speed and suck everyone into the vacuum behind them, and that's
622 the way I see it.

623 **SIMARD:** Yeah.

624 **PALMER:** Really. It's just the energy. It's like one light in a room full of moths.

625 **SIMARD:** I was at a conference of Peter Cowhey, and Larry Smarr was showing the wireless bus.
626 Is that still working? The bus?

627 **PALMER:** The cyber channel?

628 **SIMARD:** Yeah. [Laugh] The picture, and the people on the bus checking their email. That's
629 great.

630 **PALMER:** Uh huh. It's little things like that that really roll.

631 **SIMARD:** Well, it excites students a lot.

632 **PALMER:** Yeah. Yeah.

633 **WEST:** When you say it excites students, is this undergraduates or graduates?

634 **PALMER:** Everybody. And, business and industry outside. One of the things I like about this is...
635 When you're an entrepreneur and your company is six people, "Hi. I'm Okie Phenokie startup
636 company." Click. Buzz. [Laugh] Getting recognition. Well, you saw Path1 with CNN. It was
637 impossible. The task is overwhelming. But, I call now and say Calit² and it only takes a second. If
638 they haven't heard of it, it only takes a second and then, "Oh. Okay." If they have heard of it,

639 "We'll be right down." Just like that. Larry's reputation really encourages that. Ramesh has said
640 something that's kind of interesting about why he brought me and Don Kimble and some of the
641 other supermen in here. He said, "We want to build things. We want to actually make things." He
642 said, "That's so hard in a university. They can turn out papers, and research, and ideas, and
643 thoughts, but they don't actually produce a tangible thing. Calit² can make the tangible things.
644 When you're through, you're going to have something that you can stamp your name on and say,
645 'That's it.'" The other one that – this is off the record. Berkeley gets great PR. Their motes, you
646 know, BSD. We know about it. UC San Diego, we all want to see them – UCSD had, UCSD-Pascal
647 came up one time. I don't know if you remember that. It was . . .

648 **SIMARD:** In the rankings?

649 **PALMER:** Yeah. It was everywhere.

650 **SIMARD:** I've actually heard that some deans at Berkeley were really nervous [Laugh] because
651 UCSD was like . . .

652 **WEST:** No. UCSD-Pascal was a programming language in the '70s and the '80s. It's a variant of
653 Pascal the programming language.

654 **SIMARD:** Oh, okay.

655 **PALMER:** We've seen Linux and we've seen other things. We want to create some new open
656 things that become adopted worldwide. I'm working on two, which I'm hoping will push
657 something. And . . .

658 **SIMARD:** So, you're doing some open-source projects?

659 **PALMER:** Yeah. They'll be open to researchers. Maybe if there's a licensing opportunity too we
660 won't ignore it, but that's not our primary goal.

661 **SIMARD:** That's not a goal?

662 **PALMER:** Education first. Motivation too. As Larry puts it, it's pervasive ethernet, or pervasive
663 internet. One of the things we really like to do is make... Everyone laughed about it with the crash
664 of the dot coms and everything, but ethernet was the greatest civil engineering project of all
665 human history. Nothing ever even came close to it. Counting the number of people, the money,
666 the effort that went into it. It was like a hundred times what the space program was. It dwarfed
667 the Panama Canal or anything else. It was great. Everyone pooh-poohed it and laughed about it,
668 but they're on it ten hours a day. It totally has changed life and everything we can imagine. And,
669 it hasn't stopped. There's this temporary pause but it's gathering momentum again and it's going
670 to crawl into places you can't even imagine.

671 **SIMARD:** How was it to start Calit² among the doom and gloom of the past couple of years?

672 **PALMER:** A miracle. [Laughter]

673 **SIMARD:** Because, you do have industry membership, right?

674 **PALMER:** Yup. A lot of it.

675 **SIMARD:** It stays somewhat stable?

676 **PALMER:** Some of the pledges went south and we couldn't help it. But, it's done pretty well. We
677 hope it'll weather the gloom and doom of Sacramento. Because we are going to be generating the
678 jobs of the next ten years.

679 **SIMARD:** You got some funding through Sacramento?

680 **PALMER:** Yeah.

681 **WEST:** It's a matching fund right? You get so much corporate and you get the state to match it?

682 **PALMER:** Yeah. But, I just see it as – you remember Idea Lab? Do you remember that at all? It
683 started way back . . .

684 **SIMARD:** I remember Idea Lab.

685 **PALMER:** We're a big idea lab. I just see a lot of that going on. I see a lot of people, students.
686 And remember, Irwin is back piling a lot of money in here. We're working with Qualcomm.
687 There's still an academic flair to Qualcomm, and they're talking to us very closely. You can see
688 good things emerge there.

689 **WEST:** How much of Calit² is related to Wireless Center?

690 **PALMER:** I don't know. Maybe thirty percent or something that's with the Faculty & Staff
691 Association.

692 **WEST:** When you say thirty percent, you mean thirty percent of UCSD, Calit², or both UC and UCI?

693 **PALMER:** Probably both. But, the ties go way beyond wireless. Wireless is one physical layer,
694 fiber, the computing side of it. With the Homeland Security we're working on a number of issues
695 there that are really cool. A lot of the Homeland Security is moving internet information
696 technology down to a wearable level, at a sensor level, meshes of networks. The building is going
697 to be a kind of a model of a pervasive ethernet in the future. If anything goes on we'll have lies,
698 and spies, and sensors.

699 **SIMARD:** The federal government gives some funding for the Homeland Security projects?

700 **PALMER:** Yeah. It's a typical grant. But, we have to deliver it.

701 **SIMARD:** Yeah. Two years ago, I talked Stephanie, who said they were looking to...

702 **PALMER:** Yeah. But, the federal government is serious about getting a return on its investment.

703 They want answers and that's their goal here. And, wizard program working on that was, that's
704 with Dr. Leslie Lenert entered at the VA hospital. He's the program lead on that. So, we tie a lot of
705 pieces together.

706 **SIMARD:** That's great.

707 **PALMER:** Irwin thought successful entrepreneurship and leadership is energy, motivation, go out
708 in front, lead, and suck everyone into your wake. And when I think of others...

709 **SIMARD:** Nice analogy, actually. I've never heard that analogy before, speedboats speeding away.
710 Do you have a list of member companies with Calit²?

711 **PALMER:** I think our website carries a lot of that.

712 **WEST:** You're doing the Homeland Security. Is there much being done in Calit² that's military or is
713 it just Homeland Security is as far as it goes?

714 **PALMER:** I don't know all the programs here. We have ties to all kinds of stuff. But, the ones I'm
715 aware of, and the ones I'm working on, are Homeland Security. But, there are probably secure
716 defense things. Last night we were until eight o'clock down in the bowels of SPAWAR, talking to
717 guys about solutions. They have bewildering problems in their IT and their network infrastructure
718 in Iraq and such. We walked out of there going, "Oh man. [Laugh] This is a problem."

719 **WEST:** Can we back up to your career a little bit, because we kind of buzzed through it. I know
720 that with twenty companies in twenty years, it is kind of hard to [Laughter] do any of them any
721 justice, but just so that we understand. We had a couple of things we're interested in. One is the
722 crossover between military and civilian work. It sounded like you were in military quite a bit for a
723 while. Did you cross over and never come back? Did you go back and forth? I mean, how did that
724 ...

725 **PALMER:** I think my secret clearance lapsed in '92 or something like that. That was kind of the
726 end of that. [Laugh] But, even at Path1, Livermore and Los Alamos wanted to do some high-speed
727 video and so we were talking to them. I'd hate to have a company that depended on the
728 Department of Defense. But, at the same time there are wonderful people in there and there is a
729 lot of cross-pollination. There's Linkabit. Even Qualcomm got started on DoD contracts. I don't
730 know if you've heard the story. I've heard it third-hand. Qualcomm thought they were going
731 under at one point. They're overwhelmed and they were literally working out their Chapter 11
732 papers, and then they got a phone call from DoD and had some money. [Laugh] Irwin worked it
733 really well between military and... What he always did that was kind of cool is he would work on
734 DoD programs that were cutting edge and could benefit the commercial programs. If you're
735 making canteens or pup tents it's probably not going to help you commercially. But the types of
736 things he always got linked to did.

737 **WEST:** Did you find that there was any issue in terms of crossing over from when you had your
738 secret clearance and you were primarily doing military work to working in commercial work? Was
739 there any problem in transferring your skills? Was there any problem in terms of going from a
740 company that was military-focused to a company that was civilian-focused?

741 **PALMER:** There's less documentation [Laugh] in commercial. You sell it first and then document
742 it. In the military, the documentation starts first. But no, there's no – the military is very easy
743 about. It's probably easier than the university about intellectual property and rolling in and out
744 their . . .

745 **SIMARD:** Gene Ray was talking to us yesterday and his perspective was that on the engineering
746 side the crossing over is easy. On the managerial side it's very difficult, because the client is so
747 different, has special requirements...

748 **PALMER:** Yeah. Yeah. The accounting.

749 **SIMARD:** And the culture. Yeah.

750 **PALMER:** Most companies just create two groups, military systems and commercial systems. You
751 make it a separate business unity or something instead of – they live in different places. At
752 Linkabit there was The Hill, [Laugh] that was mostly DoD, and then commercial in the Valley. But,
753 there are ways of getting around it. Thermo Electron and Thermo Trex went back and forth. They
754 finally just booted most of the commercial. They'd spin it out. You do have to keep them
755 separate. But, for the people, engineers, sometimes the work is more exciting in DoD. It's more
756 challenging, more cutting-edge. Someone will throw \$2 million to develop a chip that is beyond
757 the beyond, and you get to do it and it's fun. At Western . . .

758 **SIMARD:** Yeah. So, that's that top-secret stuff then? I know someone who works at Lockheed in
759 their most secret division, and he says, "My god, I'm working with knowledge that I didn't even
760 know existed." He's just so excited. So, from an engineering point of view, it can be very
761 attractive.

762 **PALMER:** Yeah, it can. It depends on the program, again. DoD has some exciting... There was
763 stuff I was on in Star Wars, that was just incredible. It was so fun. [Laughter] That's what you
764 dream about. SLAC was great. I love hardware. SLAC had two and a half miles of the greatest
765 hardware on the planet. That was nuts, but it was fun. Maybe if I were filthy rich and could just
766 dabble I, maybe I'd go back to SLAC and work on an experiment. But, in the meantime this is the
767 funnest place in the state to work. [Laugh] It's great.

768 **SIMARD:** Do students come here and do doctoral projects, or how do students interact? I know
769 you said teaching. So, do you go into classes? Do they have . . .

770 **PALMER:** Project oriented. Our students come in and work with the projects that are here. The
771 equipment we're developing here is coming back to give something for students to work on that's
772 cutting edge. Each of us in here has a number of student projects we mentor. They have
773 university projects, really cool ones, through ECU 191 and 291. So students can actually work on a
774 real, live project, not a student thing that's right out of a box or something like that. We have a
775 number of those going. Students are really fun to work with.

776 **SIMARD:** Do you see some sort of interfacing with the future business school as students come
777 here and work on all those exciting technologies and learn about them?

778 **PALMER:** Yeah. There's a gal here – gee, has her name changed or not? She's getting married.
779 Anna Marie Besarites. She works in the Chancellor's office, and Chancellor's Associates. I've spent
780 a lot of time with her. She knows a lot of this stuff. You might talk to her. I could get you her
781 number too. She's very knowledgeable, from the chancellor's office, of ties to industry. The
782 Chancellor's Associates is an interesting group.

783 **WEST:** What are they?

784 **PALMER:** People around town who are entrepreneurial-bent and who have back ties to UCSD.
785 They can stay in close to see where things are going. You know about CONNECT, right?

786 **SIMARD:** Uhm-hmm. Do you guys do some stuff with CONNECT sometimes?

787 **PALMER:** No. But, at Calit², I'm helping some entrepreneurs. Calit² would like to keep ties with
788 startups and help where we can. A lot of introductions. Startups need introductions. It's that
789 credibility gap.

790 **SIMARD:** For a company? Yeah.

791 **PALMER:** So, if we can route things through, it's just fine. It's great.

792 **SIMARD:** Are you going to keep track of people that came and worked on your projects, and then
793 started companies?

794 **PALMER:** Yeah. Definitely. Von Liebig is there. I'm working on two things with professors to try
795 to get spun out through Von Liebig. It should be a good deal. The university – UCLA does it well.
796 [Laughter] This is something we're all aware of. UCLA does it well. Berkeley does it well. UCSD
797 does it badly.

798 **SIMARD:** Doing what? Connect the . . .

799 **PALMER:** Getting professors and students connected entrepreneurially.

800 **SIMARD:** Okay.

801 **PALMER:** There's CONNECT, which doesn't help a whole lot for getting a professor out and rolling.

802 **SIMARD:** Right.

803 **PALMER:** We do it badly. I knew this when I was on the outside, when people like Ron Fellman
804 had to leave. They just had to leave the university. I'm trying to work with the Tech Transfer
805 Office and I'm bringing in venture capital people I know around town. Leo Spiegel is a good guy.
806 You might even want to go talk to him. He's a partner at Mission Ventures. Another Chancellor's
807 Associate. Marco is another one who... We're all UCSD grads too. You push for your alma mater.
808 But Leo, he's from the funding side. He was an entrepreneur. Grew his own company. Did really
809 well. I tried to get him into some startups but he ended up in the Sandpiper, which was acquired
810 by Digital Island, and then [sound effect]. [Laugh] But he got some money out of it and he joined
811 Mission Ventures. He too would really like to kick butt and get the university to really – but the
812 university has had some scandals in the past ...

813 **WEST:** Which one?

814 **PALMER:** [Laugh] I can't name them. But, there's something about biotech where there's always
815 some professor who leaves in biotech and he starts a little company and then suddenly, "Hey he
816 stole all the . . ."

817 **SIMARD:** All the IP?

818 **PALMER:** "The public property," and all of this.

819 **SIMARD:** Stanford has that story with Yahoo.

820 **WEST:** But they didn't steal it. They were out in the open. Everybody knew that.

821 **PALMER:** That's Stanford's model. Stanford chose not to do anything about it and gave them their
822 blessing, even though they worked on this part of it while they were at Stanford. It was well
823 known.

824 **SIMARD:** NCSA sued people and lo and behold the founder of Yahoo gave a whole bunch of
825 money back to Stanford. But, the other guy never gave anything back to them.

826 **WEST:** Bill Gates did endow a building at Harvard after using the Harvard computers to create
827 Microsoft.

828 **PALMER:** Yeah. And Sun certainly hasn't hurt Stanford any. Interestingly at the birthday party I
829 learned a lot. It was fun. God it was fun, because all the old Linkabitters came back, and we all sat
830 in one room. And . . .

831 **SIMARD:** You really missed something.

832 **PALMER:** This is going to sound weird. I've never seen such a group of tall people in my life. It is
833 strange.

834 **SIMARD:** You know, there's research about how tall you are and how successful you are. [Laugh]

835 **PALMER:** Well, I don't mean necessarily a success, but just Linkabiters were all over six feet. That
836 was the biggest group of guys I've ever seen. It was weird. Just a coincidence. No one cares what
837 you look like, and we had our little four-footers, but it was just funny. [Laugh] It was just kind of
838 funny. But . . .

839 **SIMARD:** Was that right before Christmas? That party?

840 **PALMER:** I guess it was. It probably says here. Maybe it doesn't. October 17th. Okay.

841 **SIMARD:** Ah, it was in October.

842 **PALMER:** One of the cool guys here was... You've followed up on Torrey Science and Technology
843 too? Dave Cook went through there too. Dave Cook's interesting because he's worked for all of
844 these companies. [Laugh] This is kind of funny. At the birthday party they said a couple of
845 interesting things. One is, Irwin insisted that if a professor leaves here, he can take a leave of
846 absence to start a company and come back without penalty. So we do have that going for us.
847 That's really good.

848 **WEST:** Irwin insisted this when he was here or when he was outside?

849 **SIMARD:** When he founded it.

850 **PALMER:** Halfway in between.

851 **SIMARD:** When he founded the Engineering School, when he came?

852 **PALMER:** Yeah. There were testimonials from all these people who worked with him. The other
853 one is, Irwin said something I totally agree with, "When you're in engineering school, learn the
854 fundamentals." Everyone wants to jump on immediately, make products and everything, but

855 "Learn the science." That's one of the interesting things about Irwin. Instead of just apps on top
856 of other people's work, he really stressed the fundamentals. You always felt that in Linkabit. One
857 of the most impressive people I ever met was Dave Lyon. He does seminars. He always did
858 seminars, weekly seminars, and they never pulled their punches. Man, they were highly technical
859 on everything. Fundamentals on everything. Of course, Andy Viterbi was always right there too.
860 It was always basics. If you really want to generate intellectual property, be at the basics. I
861 remember Dave Lyon gave a lecture when I joined up there, on modems. I thought, "Oh yeah, big
862 deal." He got through and I was blown away, "Wow. What a science. It's incredible." So, that's
863 one thing I remember about Irwin, "Learn the fundamentals." I think that was a lot of the problem
864 with the dot coms: they came in at an application level and blew up because an infinite number of
865 competitors can do the same thing. The guys who went into that business with the fundamentals
866 come out of it really well, the Syscos and the Intels. They came through it. They had the
867 intellectual property base. They had something fundamental. So they did pretty well.

868 **SIMARD:** But, it seems also that during the dot com bubble, the floodgates were open. It was
869 kind of a gold rush. Everybody and their uncle were programming, even though there was
870 absolutely no diagram in it. It was really kind of . . .

871 **PALMER:** And all the con men came in too. Then . . .

872 **SIMARD:** One thing that . . .

873 **PALMER:** You won't get any history of it, but con men have been rife in San Diego, I think.
874 [Laughter] Starting from, shall we say, not K-Pro. That was one of the early ones. Some con man
875 has just wiped out... Along with all of this steady, wonderful work, there's this seething sea of con
876 men running the system underneath trying to collect money and capitalize. I'm sure the Bay Area
877 has its history too.

878 **WEST:** Did you say K-Pro's rise was . . .

879 **PALMER:** No. No. It's demise was. [Laugh] You might look at Silk Road. There's another one that
880 was funny. There are a number of these banks that... Every bright side has its dark side.

881 Somewhere it has the dark side of the force, so to speak. But, that might be part of the story.

882 **SIMARD:** Well, in Silicon Valley, they say "the vulture capitalists," because there are some that
883 were all about hyping something that wasn't there, and then . . .

884 **PALMER:** Generally I don't have a great regard for VCs. I have a high regard for angels.

885 **SIMARD:** Yeah. Or a handful of VCs you have respect for? Right.

886 **PALMER:** Yes. For example, we have Hamilton here. It's just good. I mean . . .

887 **SIMARD:** Hamilton Atkins?

888 **PALMER:** Yeah. But, my belief is, VCs can get so tied up in palming something off on... I don't
889 know if you know some of the story of what happened in the 1990s? It affected us a lot too. I got
890 exposed to it. A lot of it was just plain corruption. The VCs funded companies composed of
891 undergrads who don't know anything. Fund them. Spin stories. The spin starts around it. They go
892 to an investment bank. They want to move their investment 10X in twenty months. Why does the
893 investment bank do this? Due diligence will tell you there's nothing in there. The investment
894 banks have the two arms, with a Chinese wall in between, which doesn't exist, and I've seen it.
895 The investment bank goes to an Intel or some big company and says, "If you buy this from us, we
896 will pump your stock through our stock analysis." Meanwhile, these guys personally all take stakes
897 in the . . . I won't name the names, but I've sat in meetings where I was thinking, "Is this legal? Can
898 these guys do this?" And it was bad. It was bad news. I hope it all gets weeded out. It really
899 needs to be before everyone trusts the system and that's . . .

900 **SIMARD:** In the Valley, when the bubble burst, some guy was quoted as saying, "Thank goodness
901 all the wimps are gone." [Laughter] Only the hardcore techies are left behind and will...

902 **PALMER:** It's true. Two or three years ago I was talking to my unemployed buds at lunch, [Laugh]
903 and they were moaning and groaning. These are hardcore techies. I said, "Why are you groaning?
904 It's back to where it was in the '80s before all the hype." It's the same hardcore guys. All the
905 people or used car salesmen who suddenly became dot com marketers [Laugh] are back selling
906 used cars. [Laughter] Real people are leaving and going into real estate. You name it. But, it's
907 back, I think, to the harder core of where it should be. Remember energy in the '70s? Maybe you
908 don't, but in the '70s everyone was suddenly in the oil business. And then probably in 1985 was
909 when Texas was getting jealous of Silicon Valley. "We can do it too. We can make an Enron, and a
910 Williams, and a . . ." [Laugh] That was pretty funny.

911 **WEST:** Well, we're kind of tying this all back together. One of the closing questions we're asking a
912 lot of people is, "Where does the talent go?" Certainly, the Calit² vision is a very optimistic one,
913 but at least in Silicon Valley, the backbone of the middle class has moved to India, or the jobs at
914 least have. Then again, we were at an electronics company today where they're going to have
915 more tech people in China than they're going to have in San Diego. And so, what is it that this
916 region and wireless and the sundry telecom can do to continue to be valuable in a job cluster?

917 **PALMER:** Yeah, it's a problem. But, there are always short-lived problems. In the end we'll go up
918 in value. I saw something recently that's kind of interesting. An Indian engineer makes twenty
919 percent of a U.S. engineer's salary. If you count all of the trips, the transportation, the
920 communications, etcetera, it means there's probably a fifty percent savings. Then, there are a
921 couple more issues that pop up. One is, India can change governments. China can change
922 governments. If you go back fifty years, I've seen waves of this where, "Hey, the place to be is

923 South America," and then there's a revolution and the company's nationalized. Then they all run
924 to Washington saying, "We want to be paid back. We want to be reimbursed for our losses." That
925 could happen. Theft of intellectual property is huge out of these countries. People I know who
926 have set up manufacturing over there, they're finding bootleg parts on the market by the tons.
927 They've tried to track them down and stamp them out and they've found out they were coming
928 out of their own factory. They didn't shut down at five o'clock and go home. They came back at
929 midnight and ran more parts for themselves. Things like that. They have . . .

930 **SIMARD:** There's much less control?

931 **PALMER:** Yeah. There are other stories I've heard from friends. One is a guy I know who had a
932 company that was doing printed circuit boards. They were competing on contracts and losing
933 against another company that was moving over to Malaysia, or something like that. He was trying
934 to decide, "Should we move to Malaysia and compete on a price basis?" and he decided not to.
935 He called all the engineers together. They decided to modernize here. What they did is they
936 boosted the technical and customer skills of their employees, and they found that they became
937 the FedEx of circuit boards. Companies would say to them and to their competitor, "We really,
938 really need a whole bunch of these by Monday." The other company said, "We can't get you
939 anything short of two months out of our factories in Malaysia. We have to retool, send some
940 guys." While this company would say, "We'll do it." They learned to do turnarounds pronto, just
941 like that.

942 **WEST:** That's fairly similar to, although a week is a bit extreme, but in some ways that's sort of a
943 more aggressive version of Marco's business model.

944 **PALMER:** Yeah.

945 **WEST:** You need something. You don't have any way of building a team from scratch. You've got

946 to have it. You're hoping to ship. You want a turnkey solution.

947 **PALMER:** Yeah. So there's a hope there, just on speed. The other one is, I think, we're still the
948 innovators of the world. We turn out very innovative people from our schools.

949 **SIMARD:** Yeah. Well, the human capital is still . . .

950 **PALMER:** The human capital is good. The other thing is, I think you're going to see a lot of cross –
951 maybe the manufacturing will go over there and the manufacturing research. There's another
952 thing that people don't seem to understand. Writing software isn't high tech. It's the steel
953 industry. The automobile is as high tech as anything else. Everyone's lying about Silicon Valley
954 being high tech. Dot com wasn't high tech. To write some html, that's not high tech.

955 **SIMARD:** Tech.com is not high tech?

956 **PALMER:** Yeah. You need PhDs to do high tech. What people call "high tech," turning out an old
957 circuit board to do this with some plans, this isn't high tech. This is the steel business. All these
958 'high tech' jobs that talk about "data entry," that's not high tech. Circuit board manufacturing. It's
959 not high tech. Writing website software is not high tech. Here's high tech. Genomic studies.
960 Nanotechnology. Fiber optics. Free-space optics. You can go on, and on, and on, and on, and on,
961 and on. Materials properties. Semiconductor properties. Getting processes and semiconductors
962 down below twenty nanometers. That's high tech. I'll give you an example. You want a foundry?
963 A million dollars, and you've got an old beat up foundry and you're making chips. Is that high
964 tech? Not one person in there will have anything more than a high school education. But, wafers
965 will go in one end and chips will come out the other end. That's not high tech. So, the definition
966 of high tech is changing. And there's still a hardcore of hard high tech that's going to remain here.
967 I'll tell you something else. There aren't enough high tech people in India or China to satisfy the
968 world's needs. There aren't enough really high tech people anywhere. It's just that bell-shaped

969 curve. There aren't that many people on the planet who can really go out in front and lead.

970 [Laugh] I hope I haven't shocked you about this. But the definition of high tech has to change.

971 When Coleman College gives you a high tech career, give me a break. That's not a high tech

972 career. The other thing about high technology is that it's diversifying to an extent that's beyond

973 belief. It used to be that there was electronics, there was biotech, [Laugh] there was computer

974 science or something like that. That was about it. There are a thousand fields now and they

975 practically can't even talk to each other, because they're so weird. Look at human body implants.

976 Oh, if you want to see something amazing, [Laugh] this will blow your mind. You've got to go over

977 and get a picture of this, just for fun. [Laugh] Over there in the Med School, next to the med

978 library, walk down the hallway. My wife was looking for a vending machine. "I need a Coke. Lend

979 me a dollar." She walked over, put her money in, and went, "What is this? Tea?" No. It's a

980 vending machine [Laugh] that sells DNA. [Laugh] I don't even know what the stuff is. I can't even

981 speak the language. [Laugh] I went over and looked at it. It's just mindboggling. You put your

982 credit card in it and it sells you, what did I see, "calf intestine cytokines." I don't know what these

983 things are. All these chemicals. It says, "Don't worry about having a cold pack. It comes with this

984 built-in refrigeration thing." I'm looking at this and thinking, "Do people just walk down the hall

985 and put their credit in" and think, "Oh good, cytokines," and go back in their labs? They do.

986 [Laugh] This is high tech.

987 **SIMARD:** I wonder who thought of that as a business model? [Laugh]

988 **WEST:** Well, I don't know. We had that last interview where they talked about locking up the

989 supply cabinet. Maybe this was their equivalent of locking up the supply cabinet? [Laughter]

990 **PALMER:** No. This is a private vendor. This is some company.

991 **SIMARD:** Oh, so probably a biotech company? Just decided to . . .

- 992 **PALMER:** Yeah. But out of a vending machine. Yeah. It's getting . . .
- 993 **SIMARD:** My advisor at Stanford studies biotech, so I will get a picture of the machine. [Laughter]
- 994 **PALMER:** Yes. Do. You know the entrance to the biomed library, that hallway down to the side
- 995 there. It's right halfway down the hallway. [Laugh] I mean, that should tell you something.
- 996 **SIMARD:** That's great.
- 997 **PALMER:** Human implants. They had an open house here when they opened the new natural
- 998 sciences building, and there were twenty lectures that I sat through thinking, "God, I don't even
- 999 know what language these people are speaking." [Laughter] So, there aren't enough high tech
- 1000 people in the world and there never will be. There's your old Bell curve out there and even if we
- 1001 take everyone in China and everyone in India who's up there, it's still not going to satisfy the
- 1002 world. As far as I'm concerned, everything that boosts China and India is going to boost us in the
- 1003 long run too. It's not a matter of exporting the jobs. All jobs are nebulous and moving. That's . . .
- 1004 **SIMARD:** Probably will become a market as well if their life standard improves and they become
- 1005 potential customers to all your technologies.
- 1006 **PALMER:** Yeah. It's unfair right now because their government is manipulating things. They want
- 1007 to build up dollar reserves and they won't buy our products. We have to deal with it. One way to
- 1008 do it is to buy all their companies while the dollar is high, and then we can retire on them someday
- 1009 when they're way up there. I don't know. Whatever it is, it has to be worked out at a national
- 1010 level. But, on a human level, there are costs and it has hurt here. There's an odd thing that's
- 1011 occurring in San Diego right now that someone ought to take advantage of. The people on the
- 1012 streets, the unemployed, are the most brilliant. The most brilliant people around were the ones
- 1013 who were in crazy little startups, and those are the ones that died. All the backward, low-tech

1014 companies in San Diego [Laugh] have done fine. Look at Silicon Valley: Fairchild did okay. Look at
1015 IDTI. Companies that are making really backwards chips, they just kept selling into DVD players,
1016 but those cutting-edge companies doing low process semi, they all went down the tubes.

1017 **SIMARD:** My husband's startup got bought by AOL/Time Warner and now they've just fired
1018 everybody who used to be on the Netscape campus. Again, it's this East Coast/West Coast threat
1019 happening. "We're going to make them our satellite office with a couple of hundred people to do
1020 our bidding." Now everybody is working on their resumes. So, when you were talking about that
1021 it just seemed so brilliant.

1022 **PALMER:** Don't you think AOL and Time Warner will split?

1023 **SIMARD:** I don't know. Maybe.

1024 **PALMER:** I think so. That's – I heard a funny one on the news the other day and it was on
1025 Marketplace. The guy said, "Well, here's what the financial advisors say, 'Buy that other company
1026 because that merger is a generator of synergies and you can cut the costs, eliminate redundancies,
1027 and have economies of scale. We can always sell . . .'"

1028 **SIMARD:** How many can you sell?

1029 **PALMER:** Right. A year later they say, "You've got to get rid of that asset because it's worth more
1030 when it is spun out than it is as . . ." Financial people just want the churn. Churn. Churn. Churn.

1031 **WEST:** They keep churning to get you going.

1032 **PALMER:** Exactly.

1033 **END INTERVIEW**

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The San Diego Technology Archive (SDTA), an initiative of the UC San Diego Library, documents the history, formation, and evolution of the companies that formed the San Diego region's high-tech cluster, beginning in 1965. The SDTA captures the vision, strategic thinking, and recollections of key technology and business founders, entrepreneurs, academics, venture capitalists, early employees, and service providers, many of whom figured prominently in the development of San Diego's dynamic technology cluster. As these individuals articulate and comment on their contributions, innovations, and entrepreneurial trajectories, a rich living history emerges about the extraordinarily synergistic academic and commercial collaborations that distinguish the San Diego technology community.