Interviewee: Lawrence Bernstein (LB)
Interviewer: Michael Davis (MD)
Location: Short Hills Hilton, Short Hills, NJ
Date: 11/13/2002 *(approved)*

QUESTIONNAIRE

SOFTWARE DEVELOPERS WRITE A CODE OF ETHICS

1. What is your educational background?

   BS in EE (RPI, 1961); MS in EE (NYU, 1963); and a Communications Development Certificate (Bell Labs, 1964).

2. What sort of organization do you work for? What do you do there?

   I now teach and do research at Stevens Institute of Technology, in the Computer Science Department. My title is Industry Research Professor, Software Engineering. But for more than thirty years, until my retirement in 1996, I worked at Bell Labs, eventually becoming Chief Technical Officer of the Operations Systems Business Unit and an Executive Director. In parallel with these Bell Labs positions, I was the Operations Systems Vice President of Network Systems (1992-1996). That's what really matters for this interview.

3. What experience, if any, have you had in software development? If you are a software developer, what led you into that field?

   I have more than 35 years of developing, managing, and teaching software. My job assignments just led in that direction—as software replace electrical circuits.

4. Are you an engineer?

   Yes, by training (EE degrees) and by practice.

5. How did you hear about the IEEE/ACM Joint Task force on Software Engineering and Professional Practice (SEEPP)?

   I believe *Computers and Society* 21 (October 1991) alerted me to Don Gotterbarn. I contacted him and he then kept me informed as SEEPP took shape. Later I answered (by email) a call for volunteers in a journal (either the ACM or IEEE computer magazine, or both). I also sent Don some material we had used at Bell Labs (on such subjects as drugs, stealing, hacking, and breaking into someone else's files and

putting in a bomb message). I think Bell Labs' concern with computer ethics went back to the early 1970s.

6. What led you to participate in SEEPP's work?

   I had been interested in ethics for some time before. I was in industry then (Bell Labs). I considered ethics so important that I discussed cases with staff, for example, the one in Peter G. Neumann, "What's in a Name?" *Communications of the ACM* 35 (Jan. 1992). p. 186.

7. Were you familiar with codes of ethics before you became involved in SEEPP? Explain.

   Yes. The ACM and IEEE codes—and AT&T's own corporate code "Our Common Bond".

8. In what ways did you participate in SEEPP's work, especially in the process of preparing the code? (The more details, the better.)

   I'd send Gotterbarn information and he would do something with it. I was on the Professional Competence task force from November 1994 until I left Bell Labs in 1996. I can't remember editing any versions of the code or attending any face-to-face meetings. I lost contact when I left Bell Labs.

9. By what means did you participate? For example, did you participate by email, or by phone, or through face-to-face meetings, or by letter, or by informal conversation, or the like?

   Email.

10. Did any of these means of participation seem to work better than the others? Any seem to work worse? Which would you recommend as best? Why?

    Email seemed to work well. Since I didn't participate in any other way, I have nothing to make comparisons with. I was pleased things were happening, saw comments other made being used, but had no sense of the process.

11. Any events that particularly stick in your mind relevant to the process? (The more details, the better.)

Each version of the code (comments) was an important milestone. I liked that the successive versions appeared in lots of media, both ACM and IEEE media. I used some of the material at Bell (see attached transparencies). The AT&T code of ethics (which governed Bell Labs) left out ethics associated with research. So, I was always looking for material relevant to research ethics, for example, "Ethics Gap", *Computerworld,* October 14, 1991, pp. 83-85.

12. Do you have any documents, paper or electronic, relevant to your participation in the process? May we have a copy?

I believe all the emails are lost. I do have some articles and other materials I collected at the time: S. Unger, "Help for those who need it", *The Institute*, Dec. 1995, p. __; Jim Nash, "Technology Raises Many New Ethics Questions", *Computerworld*, 1991, p. 89; Jim Barron, "Struck Dumb by the Incredible 1-800-Nothing", *New York Times*, Jan. 16, 1990, p. A25 (about a AT&T failure of service caused by violation of the software-development process). Also see my post-1996 handouts (attached).

13. Has your thinking about codes of ethics changed as a result of your participation in SEEPP's work? How?

I'm less ambitious. I boiled down my aspirations. I'm now of the mind that the only way to enforce the code is by law. (I used to think software engineers would police themselves.) I have come to this as a result of trying to get students and software developers to use the code. Too many don't want to think about the risks for others of what they do.

14. What, in your opinion, is important about having a code of ethics?

To the extent we can teach the code of ethics to new students, we can raise the quality of practice. One of these days something will happen that's so bad that the code of ethics will be used in a court of law. I'm surprised it hasn't happened already. There was, for example, the London Ambulance case. The low-bidder on a 911-type system produced software that queued emergency calls in a way causing long delays, sometimes hours, before an ambulance arrived.

15. Is there anything about your *participation* that you are especially pleased with or unhappy about?

No.

16. Is there anything about the *final code* that you are especially pleased with or unhappy about?

No.

17. Is there anyone whose participation in the process seems to you especially important? Explain.

Gotterbarn.

18. Anyone who you think we should be sure to talk to? Explain.

Peter Neumann (neumann@csi.sri.com), because_____
Will Traz (editor of ACM's *Software Engineering Notes)* (will.traz@lmco.com),
because_____
Dick Hamlet, professor of software engineering, U. of Portland (Oregon),
because_____

19. If you had been in charge of the process, what, if anything, would you have done differently?

I didn't know enough about the process.

20. Is there anything we should have asked but didn't? Anything you want to add to what you have already said?

What is the role of government (including such agencies as the National Institute of Standards and Technology)? Licensing seems impractical.