Interview #2 - Ed Mechler (EM)
Interviewers: Michael Davis (MD), Anthony Spencer (AS)
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SOFTWARE DEVELOPERS WRITE A CODE OF ETHICS QUESTIONNAIRE

1. *What is your educational background?*

EM: I have a B.S. in mathematics 1976 from the University of Pittsburgh and an M.S. in industrial engineering 1979 from the University of Pittsburgh. But, most of my work has been in engineering. I was going for electrical engineering, and they sort of—I had worked four years at MIT, and I come back here and they wanted me to take a lab four hours a night for one credit, and I said no. So I switched to math. But I'm basically an electrical engineering, computer engineering…areas like that.

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

EM: Actually, none. I'm unemployed right now. At the time, I was working for a utility.

MD: An electrical utility?

EM: No. It was a natural gas utility—at the time of SEEPP. I was a technical manager there, which was in the engineering department—really we were developing special computer systems, geographical information systems, and special document handling systems. Now, I pick up small project management contracts.

MD: So now you're basically just a consultant. Is it for software, or for the electrical part of it?

EM: All of it, just about. I've moved more and more into the project management. I just came back from working with AMTRAK on some of their scheduling. And, I've worked on a couple of other mass transit areas like that. I'd like to get back into the computer area because I'm missing it in a way. I miss all that aggravation (laughs) but that is where the real action is.

MD: So, project management—any kind of project that involves engineering.

EM: Yes, or no engineering to be honest with you. Actually, a lot of the project management material very few people seem to understand how general it is. I'm not an advocate for project management being completely general. But I am an advocate that you can move into different areas very easily. It takes a couple of weeks and you're right on.

MD: So, uhm, you can move from utility to a transportation design, uhm, to, uhm, computers, uhm?

EM: Even go out of that range and I could probably go into banking. Because there's a certain number of commonalities. I'm sort of a—for lack of a better term—systemist. I really believe in general systems theory. And, basically, a number of their concepts boil down to the fact that if you start treating things as systems, then you—they have a fancy word for it, "isomorphism"—can see the similarities and, believe it or not, it's absolutely true. One of the guys that worked on it recently—in the 20th century—basically started a masters program with that concept in mind and it turned out to have quite remarkable results. So, yeah, I can

jump from one place to another. But, this time I'm just picking up whatever comes along, whatever I can get my hands on.

3. *What experience, if any, have you had in software development? What else in your background may have helped you in software development?*

EM: Well, my experience in software development is in the older arena. We developed special codes. Initially, we developed special software to do an analysis of special information at MIT. So, that's development. It's hard—in the software industry in particular—what do you mean by software development? In some cases, when you talk with people, you have to start with, 'Ok, what do you mean by it?' Now, my son—he likes software development—and he wants to be in software development. But his way of looking at it…he wants to start generating new coding and developing that. He doesn't really care about requirements. He doesn't really care about how this is all done in the total picture. He just wants to be a developer.

MD: You mean writing the code—

EM: Right, writing the code, making it work, testing it, activities like that. That's what I'm gathering from him…what he's interested in. But, I've written code for a car computer, for a plant here in Pittsburgh. So we wrote a special code for that. Then I was involved with a lot of what is called process control, controlling the electrical plants, automated warehouses, anything like that where we develop special software for them. But that's in the old days…that was when we were really developing the codes in machine language, assembly language, or some higher level language.

MD: So you weren't, for example, doing software architecture first?

EM: What do you mean?

MD: Determining a process for development.

EM: Well yes. That came later, when we really started getting into what I worked on. An equitable amount was working with top-down structuring. There was a number of things that were more recent. In that case there was a major process involved in bringing the gas from West Virginia all the way up to Pittsburgh. So that was designed. Then there was what we call the AM-FM system, automatic mapping and facilities management, which is a geographical information system which had to be mapped out. That went right from the requirements to the specifications to the actual work and all the way to the finished product. Then we had a document management system. Now our document management system wasn't really a document management system like the normal ones. It was all the large maps and drawings. So that background is a total picture of going from the requirements all the way through the finished product.

MD: What led you into the field of software? You began as a mathematician—

EM: Not really. I began as an electrical engineer. Never really got the electrical engineering degree, but got the mathematicians degree.

MD: That was because of that one lab.

EM: Well, not particularly one thing. I just got tired of being told to do this and that. So, I started in electrical engineering, electronic technician, and then moved into the computer arena…the hardware, and then moved into the software…and

then finally moved into the communications part of it. So, yes, what brought me into the software was the idea of trying to understand how we were controlling the computer, because it was simple in a way. The hardware is fairly simple and tedious and straight forward.

MD: So, the software got more and more interesting.

EM: Well, yes. I kid a lot of software people by saying the electrical engineers saw you guys coming and what they did was they decided okay, 'Here, I'm building this hardware that does this. It does this set of instructions. Now if you want to do something, make the instructions do it.' And they walked away from the logic (laughs). Hell, I worked on analog computers, and those things can be a bear.

4. *Are you an engineer?*

EM: Yes, a well-rounded engineer in electrical, computers, and industrial engineering also. Yes, I am, more than anything else.

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

EM: You got this wrong, I think. You are saying that the software engineering and professional practice was a task force.

MD: Uhm….

EM: And it really isn't…it was sort of…that's what I was trying to look up and I couldn't remember how— Actually, IEEE/ACM was a joint task force to make software engineering a profession…there were three areas involved. I can't remember what they called them. Program, committee?

MD: Well, maybe there was slippage in the naming.

EM: But it was unusual because it wasn't a normal run of the mill set up. It turned things around in a way, because you wouldn't think that a task force would have been over three different groups, but actually the task force was running everything. I think they changed everything around within the last few years. I don't know if I can find exactly how they spell it out. But, the task force was basically a—

MD: There were working groups under the task force?

EM: I think…maybe that was the name of it, working groups. They had an unusual way of doing it. I mean, because that's why it caught my eye. I thought you had spelled it out once in one of your letters.

MD: At one point I cleared the exact description with Gotterbarn, and it's probably at that point that it was right.

EM: Yes, there were three…one was to—

MD: Standardize practice? Or document practice?

EM: There were three committees attached to the task force. Now, usually committees are higher than task forces where I've worked. So, it was reversed. So, that's how I heard about it. I heard about it from that paper that *The Institute* of the IEEE that I mentioned.

MD: So, you actually were recruited by an advertisement.

EM: I wish I could remember what it said. I wish I could've found it. It basically said they had put together the task force, they had the other two going,

and they were in the academic field and the knowledge concepts. And they needed people for this one, this committee. It got confusing later on, too.

MD: We'll get to later on.

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

EM: I basically thought…the software industry, in particular just kept going around in circles. And at that time they were really going around in circles. The material that they handled is really not that complex. In fact, the computer is really a simple-minded thing. But there are so many pieces of the simple mind. And we kept going around in circles, almost like reinventing the wheel. And I figured, well, maybe if we put something together like this…if they put an engineer behind it and they get the people to start doing that and take it out of the other realm, maybe we can really concentrate on making it an engineering thing that really builds on itself and starts moving ahead instead of just keep going around in circles. I mean, even now you can pick up a book and it's a matter of terms. And soon as you figure out what the terms are, you're right back 10 to 20 years ago. It really doesn't change. So, what I really wanted to get out of it was to maybe try to make it more of a discipline like engineering.

MD: Where there's set routines and you test the routines and you improve them.

EM: Right. You go back and learn the old ones and then you apply them. It isn't like trying to re-invent…maybe it's because it started out as computer science…I don't know. But somewhere along the line it just kept going in circles. I think it still is, because as I start talking to people—

AS: So you were looking at efficiency then.

EM: Yes, we needed an engineering approach instead of a…it needed to build on itself, because the whole industry was moving very fast and it just seemed like we weren't catching up, we're not staying with it…it's doing new things and they still have the same problems they had 20, 30, 40 years ago.

MD: Bugs, for example?

EM: Yes, the same things. They never really followed a methodology to put it together. It was all seat of the pants. And when something goes wrong, nobody really knows where to start. So, you could put hours and hours of overtime (laughs). For no reason at all, in some respects. But that's basically why.

MD: So, you were really interested in structuring the work in the way that engineering did, so that there are minimum standards for documentation, there are sets of procedures for developing a piece of software, for documenting it, for testing it inside the larger units…. so if you were to move from one company to another you would recognize the same process in place, and if somebody went back later to check software that was 5 or 10 years old they would know where to look and what to look for.

EM: Right, it was even more fundamental than that. It's the fact that at least…pick a process and do it. There were a lot of people writing about a lot of processes, about how things should be done, and basically you could see the engineering part of it better. But when you got into reality, nobody ever used any of it. So this was the combination of the two, and I figured in the back of my head that if you make it an ethical issue that says if you go in there and develop a piece

of software and don't follow a methodology of some sort, then it's unethical. You're wasting your time, their time, their money, their everything.

AS: So you saw it as the best way to frame it…this is an ethical matter….

EM: I thought it was a way. All right, it was a way that nobody had said anything about. They had tied it together as ethical in practice, uhm, like I said I found out subsequently afterward—after we put the first draft together—there was a committee that was putting practices together. I don't know what happened to that committee.

MD: Uhm, I think it recently reported—that would be the third committee.

EM: See, that's one thing I had a problem with. I don't even know how we were structured. I knew there was a joint task force, I knew there were three committees. How SEEPP was structured, I had no idea. We started out trying to put together the codes. We started out very easy…let's look at some other codes and see what we can get out of it. That's not a bad idea. There were a half a dozen people on the committee, and we started to do that. And that's when it died. And that's when I took over and we combined it, because I didn't even know there was another committee out there putting practices together—if there was. Don called and told me that we should look at this guy because they're putting this together. We didn't spell out explicitly where you got to use this practice or that practice. We basically got the fundamentals and said, 'You got to use a process to develop this stuff.' And the ethical part was part of it. And I thought, 'Well, gee, you know, why not?' (Laughs). The first time we sent it out, Mario [Barbacci] sent it

to Mary [Shaw] and a couple other people. I don't know who they are. I can't remember now.

MD: Sent out?

EM: The codes that we developed. The original ones. The versions never really changed that drastically. Nothing changed…maybe the words were a little better. And he sent it around, and they came back with a lot of their comments about it in the sense that it would be nice to have that. Well, gee, you know, put it somewhere. You know, everybody's saying we should do that, so make it an ethical issue then…some kind of issue. You know…oh that's right…that's another thing that's in here. They put it out on the web, and they got a whole bunch of comments back, and they checked off each item in there or something like that. I got a copy of the thing he [Gotterbarn] sent…the hard copy of what he sent. The hard copy of what people wrote, how they reviewed it. That's that. It just seemed like, well, they were hand in hand, because I didn't know and none of the people that were on the committee really knew anything else. We thought we were the only committee doing it. There wasn't any subcommittees that we knew about.

MD: Well, there's a list someplace of 8 subcommittees. Originally, we were divided up into lots of subcommittees.

EM: We weren't hearing anything back and then I started to kick it off. That's when we found out you existed. We didn't even know that he [MD] was there to see how we're doing it. I said to him, 'Who the hell are you? Are you part of the

committee or not part of the committee?' We didn't know anything that was going on.

MD: And that was the first we had heard of you.

EM: Yeah, and I thought it was a…it really wasn't a planned idea…the opportunity was there and I jumped on it. I said, 'Why not?' If we build it up in such a way, and we put the things in there that we think that should be ethical issues—we might be stretching ethics—but if you say that you shouldn't accept kickbacks, what's the difference in saying, 'Well, you should follow the process to get the job done.' So, and they, most of the software people, and the people that were loading the software, building the software, testing the software, had no idea of any process. They just did it.

AS: Do you think the code has made the process more efficient?

EM: I don't know. I haven't been out there in that area. I haven't really been there to see. I really would love to get back and see, though. I really would love to see what they are doing. There were an awful lot of ideas that came out in the '90s in particular that were great ideas. I would really like to see if they implemented any of them. I mean, everybody talks about teams…I worked for a vice president who thought teamwork was the way things should be done. I told him he was full of it. We are required to do things on our own…we don't work with people. Now you want us to work as a team. So, I'm curious, because now just because we changed the group to work like a team, is it working like a team? So, some of these ideas were out there. The team thing is true. But, I listen to them sometimes,

and I really don't pick it up. Well, nobody's ever been trained to work as a team member.

MD: Well, now businesses are forcing the colleges to train people to do team work. So maybe the next generation will have a chance.

EM: I hope so. It's obvious what the results could be, especially if you worked on a team. The team that we put together to put this together worked out fairly decently. We never even met each other. It worked out pretty damn decent. But, that's, that's, basically it. That's what drew me to it. The frustration of not seeing some things implemented.

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

EM: Yes, I paraphrased a couple, and tried to figure out what they were saying. I tried to put this in one sentence, and then other people did. And that's where we were supposed to start putting it together. That's when I started thinking about putting together more and more of the practices. Some of the codes have practices in them.

AS: What are the disadvantages of the code?

EM: What, this one? I never could see any.

AS: You mentioned that one of the advantages is that it helps to make the process more efficient.

EM: It makes it a little more potent. If people are using it, then basically what you are saying is that some of those things are ethical issues. They're not disagreements between two people, and that's one thing that I found to be at the

ultimate in the software area. You could get into an argument with somebody and have no idea what they are talking about, but they're going to stick to their guns no matter what. But, I don't see any disadvantage to it. I thought it served the purpose that we talked about. We never really got anything back from the committees that was, 'You can't put that in there.'

AS: Do you think it [the SE Code of Ethics] has stifled creativity in any way?

EM: I don't think so. I think some people will tell you that it has stifled creativity. But maybe you should sit down with them and ask them what the hell they think creativity is. No, I'm not too sure how much creativity is in software development (laughs). I mean, yes, somebody might come along with an idea, but really, if you don't get it right logically, it doesn't matter how creative it is. So, I'm not too sure it stifles…I don't think it does at all. I think people should be put on the spot and asked what they mean by creativity. What's a software developer have in the way of creativity? He's got to make the machine do something. The machine has the rules. Rules aren't going to change. You get your best creativity when you can bend the rules. The machine don't change…it don't bend the rules. So, yeah, that's the standard baloney, 'it stifles creativity.' If anything, it would enhance creativity because it would take some of the damn frustration out of doing some of the work.

AS: Yes, I think that's the common complaint when new policies are introduced. The downside is they might tend to limit one's creativity or expressiveness.

EM: Well, when we put the pieces together, I tried to make sure we did not say, 'You've got to do this.' Instead, I tried to say: You should use a process. I'm not going to tell you which one, but you should use one and you should tell them that you're using this one. Well, first of all, I think it's unethical in a way because we have all these people in the university developing these things, so why can't we use them? That's about it, though. I mean, no, I don't think it stifles…yes, there is some note to the fact that some of these policies and procedures are ridiculous…they make it up for 10% of the people and punish 90% of the people that aren't doing it. And they come up with some off the wall things, too, that are absolutely ridiculous. So, I imagine that would stifle it…it would stifle anything. But I don't think we ever tried to tell people exactly what to do.

MD: You never said things like, 'You have to use object programming.'

EM: Right. But next year that could change. But if you're going to use object programming, we thought that you should stick to using object programming and you should tell people up front this is what we're going to use, and explain it to them.

MD: How much did you know about codes of ethics before you started?

EM: Not much, but I was familiar with them. I mean, I read a few…we had them in EE…we had them in the different places. You'd look at them, yeah, and most of the stuff was commonsensical to me. There really wasn't anything in them that was surprising. At that time, I really devoted a lot of time to it, but I never really found anything that was earth shaking. They basically tried to say, 'Okay, try to do the right job.' Yeah, some familiarity, but not extensive.

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

EM: This is something I learned from the whole process. I don't know what was happening, but I was participating in it as a member of the team, assuming that we were going to look at the code of ethics. We were told to look at the different codes—

MD: It was probably Don.

EM: I think, yes.

MD: Alright, because if we had a reporting order—

EM: He was in charge…him and another person were supposed to be in charge. You may know all the names. I forgot all the names. And they said let's look at the codes, and so we started looking at the codes. Then I put my report out there, and one of the team members said, 'Oh, Ed did a hell of a job. I better get off my butt and do something.' Then he did it, and another did it, and another. And then it died. We heard nothing. People started writing emails.

MD: This would be late '95?

EM: It might be.

MD: I tried to go through the memos, and it seemed like there was a period in late '95 and early '96 when—

EM: That could be. I'd have to look at those emails. But it just died. It just died on the vine. I wrote emails asking what was going on. Never hear anything back. So that's when I jumped in and I said. 'Okay, here it is. Do you guys still want to work on this?' I sent the email around to everybody. And a number of people said

yeah. So we put it together. That's what I learned from it. Somebody has to have the task of doing it, or it isn't going to get done. And we kept doing it…we kept passing information on to Don and everybody we could. We kept passing it on, but we never heard a damn word. The only time I remember hearing a word was when we had put it all together—we had put the first straw man together so people would have some thing to look at and something to comment on.

MD: This would be version 0.

EM: Yes, so we had this out there, and we just sent it to the committee, and I used the term this is 'our final version'.

MD: So, this would be version 1.

EM: Right, right. Yeah, version 0 was constantly being worked on. I gave it to you and you put some nice words in it because you didn't want to do anything else at the time.

MD: I was trying to be an observer.

EM: So, it was version 1. Anyways, I said in the email that this was our final version, and that finally woke Don up. He came back and said I couldn't say it was the final version. Then I said, 'Don, if you read the email, I said this is *our* final version.' Then Mario sent it to three people. He got three sets of comments back, and he sent them to me. And he wanted me to answer them. I answered them best I could. Then Don took over, and I guess they had some kind of procedures in place that they had to put it out for people to read and comment on. They had to put it out on the internet for some…for this other thing…this write up. The thing that got me, in hindsight, was the fact that everybody was worried

about who…so everybody looked at it and everybody commented on it, but almost all of it was never incorporated into the code. That code over there is basically similar to the code of version 1. There were comments upon comments—I don't know what happened to them—but the code never really changed. I don't think that code has changed that much. I didn't see anything in it that was different. So we did a half way decent job.

MD: Okay, the basic structure is ours, and the language. They did rearrange things a lot, and they removed some provisions. But I think we need to figure out what happened exactly. Because, in a way, I too think it's basically the same code.

AS: Do you think the other people saw the code as not only providing some type of efficiency but also as there needing to be something that software developers are held accountable for?

EM: I don't know.

AS: For example, safety issues.

EM: Yeah, yes, I think so. I think there was a little bit of that in there because it is controlling, and they kept saying that the software is becoming more and more important and it's controlling more and more of everybody's life, so therefore we need some guidelines…something…because we weren't doing it. This code, though, was a little different than most of the codes. It took into account certain things that a lot of people wanted done…and I think everybody on that committee agreed, because they would have said they didn't if they had a problem with it. And the thing was we were uptight about the fact that no one was taking

responsibility, and we thought that was an ethical issue. I mean, it's not a moral issue, but still it's an ethical issue. If you don't take responsibility for what you do—

MD: They broke it down by responsibilities to subordinates, managers, colleagues.

EM: Yes, but I think we went over the limit of what people generally think a code of ethics is. I didn't think there was anything unethical about it. I don't know if it was Mary or not, but somebody really came back and said, 'I really wish we could do things like this.' I was dumbfounded…because I managed to figure out who the three or four people were that he was sending it to so I could figure out the comments. He wanted to keep it a secret, but it turned out that if you knew the names of the people at the top of the committee, you could figure out who their emails were. So it wasn't very good secretiveness.

MD: Did you participate in any of the other versions?

EM: I saw them, but I didn't have any problems with them. I sent them around to the committees. Really, the only time anyone complained was when the condensed version was put out, and that was really the only thing. At that time, and I don't know how anyone else felt, but we felt that we did our job. But the things that we had in there, I never thought we overstepped our bounds or anything like that. So, if people would have started taking things out….

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

EM: Mostly email, except with you.

MD: So you actually didn't know Manny?

EM: No, I never met him, and I don't know what he looks like. I never even met Mario, and he works across the street.

MD: So email worked for you.

EM: It worked very well, I thought. I thought it worked better than a lot of the other meetings—face-to-face meetings where somebody takes their own notes or somebody takes minutes. I thought email was better because we weren't wasting anytime in meetings. So, actually the code became the object, and we just worked on the object. I thought it worked very well. I really don't see any difference in terms of the things that went right and wrong. The same things happen when you're face to face. I thought it worked very well.

AS: You mentioned earlier that the process kind of died. Do you think that form of communication [email] might have had something to do with that?

EM: No, my guess is some kind of political infighting somehow. I mean, I don't care if we had phone calls, it would have been the same thing. I think there was something going on that really killed it.

MD: Is there any chance that the problem was what we were supposed to do after we wrote the summaries of codes, that is, write a set of specifications for code? The scope statement?

EM: My experience is that they sometimes use that as an excuse not to do anything. We're wasting more time on that than on the product. I think you have to sort of use that material for what it's worth.

MD: So the scope was an impediment to the process.

EM: Right. What were we going to do by defining the scope? Now, the problem here is when you want to define the scope you have some disagreement or misunderstanding about what your product is. We knew what our product was, the code of ethics. So, the idea was to get something out there…yet we were going to sit there and argue about what it was before we did anything. So, it was either or. I think you need a scope statement when you have a disagreement on what it is you're going to do. And we knew what we wanted to do. I mean, everybody sort of knew what they wanted to do. And then, of course, I think Don killed it with that email [about the scope statement].

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?*

(SEE ABOVE.)

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

EM: Not too many. I think that a meeting once a year with people is important, but it's got to be extremely structured for work to be done.

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

[**EM provided a stack of documents.]**

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

EM: Yes, I think more codes need to be as detailed as ours. A lot of them don't go as far in explaining things as we went in ours. They don't make it clear about what you should and should not do. They need more detail.

AS: Do you think the way people approach developing software and projects related to developing software has changed due to the code? How do you think the code has influenced the process?

EM: I don't know. It's been a while since I've been in that field. But I'm starting to find out from people that I know that are in the industry if they have even heard of it. So far I haven't heard anyone say yes. So, it may be just me, or it may be just this area, but I'd like to know who uses it. I think that if people start looking at it, it'll make a big difference.

AS: What do you think it will take for people to start following it?

EM: I don't know, probably a lot of time. I think it will have an effect.

AS: Was the code written for certain people in the development process?

EM: I just assumed it was specific to grade.

AS: But what if people lack the proper credentials to call themselves software engineers?

EM: Most people do. This is interesting. Now, I'm a software engineer. I have an engineering degree, and I deal in software, so I'm a software engineer. There were only two colleges—three—at the time that had the software inside the engineering area, that you really could say they were software engineers. One was in Texas, one was Penn State. My son is one of the only ones I know that is a real software engineer. Now we got masters degrees working it. So, no, because at the

time there weren't very many software engineers. Because some company calls you a software engineer, it doesn't make you a software engineer.

AS: So, do those people have to follow the code it they truly aren't software engineers?

EM: If they are doing software engineer work, yeah. I think so, yeah. I think that anybody that's working with software. Even if you're not a software engineer by society's definition.

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

EM: It spells out the gray areas. It tells us what we should be doing as a minimum.

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

EM: I'm pleased that we finished the product. The displeasure was the lack of communication within the whole communications area that was kind of bad. There's a lack of feedback in everything.

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

EM: I'm pleased that we finished it. I was really happy with it, because I felt that we finally had something that was really helping. I never found anything unhappy about it.

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

(SEE ABOVE.)

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

EM: Those who were part of the first team. One other thing about the committee for version 1 is that we had the right size. I've been on some now that are too big or too small. And I think that's the key to doing this. I know there are certain…we have these sticklers in certain organizations that say anyone who wants to participate can participate…but I think there's a limit. There's definitely a limit. You start getting into too many problems. So, you've got to be careful about the size.

MD: So you really need a core.

EM: Yes, a subcommittee, somebody to do the real work.

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

EM: The only thing I would have done differently is communication. It was poorly run. Nobody really knew what we were doing. I mean, the group knew—we put it together.

AS: What would have improved communication, more face-to-face meetings?

EM: I think so. In some respects, I think we needed that. I'm surprised we got out of it what we did. But, uhm, I think the core team should have gotten together and done some work and then continued on with a small group. I think you need to decide who is going to do what, and not treat a volunteer as a sacred cow. Treat him as an employee.

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

what you have already said?

EM: You might want to ask how it compared to other projects.

MD: Okay, how did it compare to other projects?

EM: It basically had its own set of small idiosyncrasies, but basically it ran. If you have the same kind of people doing the same kind of things, you're going to have the same results. Whether they meet everyday or they e-mail or they're on the phone, whatever, you'll have the same results depending on the individuals in a group. There's a lot about individuals' personalities that take over a group, especially the leader's. Before I didn't realize that. I didn't realize how much an individual's personality controls the group.