

This interview with Ron Bengelink, Chief Engineer for International Programs at Boeing Commercial Airplanes, took place on the campus of Arizona State University on April 12, 2001.

Susan Ledlow: We're here today with Ron Bengelink, Chief Engineer for International Programs at Boeing Commercial Airplanes. Ron, could you give me a little information about your background and your career at Boeing?

Ron Bengelink: Well, I graduated from Michigan [Michigan State University] in 1964 as an aeronautical engineer. I went straight out to Boeing for what I thought was going to be a four- or five-year stint . . . and I'm still there. So, I did aerodynamics for commercial airplanes for probably twenty years. Then the last twenty years I did management for aerodynamics. So, you've heard the thing about, "I didn't know how to spell engineer, and now I am one." Well, it's really tough to spell aerodynamicist. So I did learn how to spell. . . . Up until four years ago [my career] was strictly aerodynamics. Since then, it has been a lot more involved with international engineering.

Ledlow: Could you tell me, from your perspective, how important is teamwork at Boeing? How much of a typical day might an engineer spend either in formal team meetings or informally working and coordinating with others?

Bengelink: That is hard to say, because in some sense almost all your time is with a team. You're certainly sitting in a group at all times. Yeah, there is individual work that is going on, but I would say teamwork is pretty close to one hundred percent of the job. You know, we say an airplane is four and a half million parts flying in close formation. How close that formation is—and whether all the parts are together—depend much on teamwork. You cannot, as an aerodynamicist, for example, design a wing unless you also understand the impact you're having on the structure, on the flight controls, on the manufacturing—or whether or not you can build this design. So, every engineer has to spend a lot of their time working as part of various teams.

Ledlow: I've heard a number of engineers refer to teaming skills as "soft skills." What sort of soft skills do you feel are important working in that team environment you just described?

Bengelink: I'm not sure "soft skills" is the right term. What I would like to differentiate between is engineering science, which is what every student gets very well, and skills for the practice of engineering, which are a lot tougher to pick up at school. The practice of engineering, as we've said, involves working with people. So understanding people, understanding how you get people to do what you want to do, understanding what people mean when they respond to you—body language, all those kinds of things—are a part of the practice of engineering. Therefore, I don't know how you practice engineering if you just understand the engineering sciences and don't have those practical skills. I think it's totally necessary, kind of from day one.

Ledlow: In your experience, how well is [a new hire] prepared for the practice of engineering, as well as the science?

Bengelink: Most are not very well prepared. On the other hand, it depends a lot on what people have done outside of their formal studies. If you have had people who have worked in Baja team races, moon-buggy, other things where they have already experienced some of what is necessary to be an engineer and work on a team—they are a lot better prepared. I would say even someone who has worked as a night manager at McDonalds understands how you get people to work, understands training and those kinds of things. All of that is important. But, if you get somebody who has just gone straight through school, taken all the courses required, and got really good grades, they have a lot of adjusting to do once they leave the campus and come to work.

Ledlow: What happens to that person who leaves the campus, comes to work for your company, and has great technical skills, great scientific abilities, but hasn't developed those other skills? What do you do with them?

Bengelink: An awful lot of the training at Boeing is the job. About fifteen years ago, the whole issue of “teaming” was one that we had to introduce to the whole work force. So, we had a very formal program that involved everybody—people who had twenty years of experience, as well as people just coming in. Some of those classes are still required. Many of them are offered, but it is up to the individual to take the initiative to actually take them. On an off-hour basis, I would expect most new graduates to spend at least the first couple of years going to classes, going to teambuilding exercises, those kinds of things. And they are going to feel that. . . . The side mentor, the supervisor—all of them are going to tell them, “Hey, here's where you need to really improve.” The opportunity is available, but we're not going to necessarily say, “On Monday you show up for two weeks.” It's going to depend on your initiative.

Ledlow: Do those [classes and exercises] continue, though, as part of one's regular professional development? Are you also refining, honing, adding to your people skills, as well as your technical skills?

Bengelink: For sure. You would have at least one interview every six months or so with your boss that focuses on what your development plan is. And part of that development plan for many people is going to be improving your skills when it comes to just working with people. . . . So, yes, that kind of thing goes on.

I think the other thing you'll find, is as you work longer in a team, you start to recognize there are deficiencies . . . that even an experienced person has. Peter Senge (in *The Fifth Discipline* distinguishes between discipline and dialogue where he says “discipline” is where you come into a team meeting, a conversation, convinced that you have the answer. Your task is to convince everyone that your answer is the right one. “Dialogue” is more where you say, okay, I'm going to suspend those strongly held beliefs . . . not throw them away, but suspend them, and maybe I'm going to learn something. I find,

for a lot of people, that's not something that comes naturally and that's something that needs training. And over the years I've recommended it to people with even twenty to thirty years of experience: that they have got to sit down and learn how to do dialogue. So, the short answer to your question is, "Yes, you definitely keep on doing it."

Ledlow: In my experience, a lot of our faculty members resist using teams in their classrooms for a couple of reasons. And the first one is because they are afraid of dealing with team conflicts. How much a part of the everyday work-life at Boeing is spent dealing with team conflict? Is that just something that students need to get used to now because [conflict] is always there or potentially always there?

Bengelink: I don't see how you can have a team without having conflict. To have a good team you have to have people who are looking at the world differently. You have to have people from diverse backgrounds, from diverse experiences, who don't necessarily see eye-to-eye. . . . Developing a consensus out of that involves some conflict, at some point along the way. That's healthy conflict. At the same time, you will, every once in a while . . . find a team that goes off and one person decides to dominate, for example.

Early in the development of Triple Seven, we had such a situation between structure folks and aerodynamicists, as far as wing design was concerned. What happened as a result was the chief engineer ended up spending a good share of his time, for about four months, stepping in and leading the team. It didn't take long before every person on that team [was] really aware that it was not a good experience for their career. That kind of attention was something that you did not want to have. I've got one going on right now where one group of people is really resisting the idea of moving some of their work to a different company off-shore. And so, this last week we decided we have to bring some other folks in and help them. That's never a good situation, but that happens . . . so you just deal with it.

Ledlow: Another problem that faculty worry about is the issue of group grading. That does relate a little bit to evaluating people's work as part of a team. At Boeing, when you are looking at people's promotion and their career, developmentally, do you consider the team aspect as well as their individual technical skills?

Bengelink: Well, people are paid as individuals, of course, so when you decide on that ultimate recognition of how well you're doing, which is your raise, it's got to be an individual thing. On the other hand, certainly, an aspect of deciding on a raise is, "How well do you do in a team? How well are you progressing toward being a team leader?" The grade for the team is the fact that the task got done successfully. More and more we are getting good at providing . . . real recognition for that [effective teaming] as well. But it's more in the line of a celebration, or a recognition of a milestone, than it is something that would look like a grade, which would be a raise or an improvement in your rating. I think you can do both. . . .

Ledlow: I understand that recently you've gotten involved in doing international virtual teamwork. How is that possible? How do you have a team and how do you have that team cohesive when the people aren't even on the same continent?

Bengelink: You make sure that the people know each other first. You cannot have a team when the only relationship is electronic . . . over the telephone or e-mail. We got started on this about 2 1/2 or 3 years ago with some engineers that were available to us in Russia. They had skills that people in Seattle did not have, and so we wanted to have them as part of the group. What we did first [was] . . . we brought them to Seattle and they spent about 4 months working with the folks in Seattle. They worked together, they played together, they went to ball games together, and they got to know each other. Once that happened, they could go back to Russia and be connected electronically with no problem, because folks knew each other. Now, even as we added more folks to that team on the Moscow side, it was okay, because that initial channel of communication had happened. What we find there is that the primary problem is with Americans who have a hard time accepting the fact that other cultures, other nationalities, don't necessarily do things in quite the same way. And they have a hard time cutting folks "the slack" to be themselves. So, it's not easy . . . and I would be the first to admit it hasn't worked in every case. But, what we are seeing is that in many cases, it does work. It depends on the . . . personalities on both sides of the team, just like any other team does.

Ledlow: . . . I know a lot of engineering faculty use Boeing teambuilding type materials in their classrooms. I've been introduced to a lot . . . and the one that everyone seems to know about is the Boeing Code of Cooperation. Could you tell us a little bit about how that developed and what it is?

Bengelink: There again, what you are trying to do is just remind people on a daily basis that this is how a team works. If one person decides to dominate, you're not going to get a team. It becomes very critical in a business, because if one person decides to dominate and, as a result, . . . the team's task is distorted, you're not going to make money. You're not going to be in business—or at least in that business—very long. So, what we did is spend some time training everybody to understand all of those aspects about the Code of Cooperation. And then posted [the Code] on the wall in just about every single conference room. Now, most of that happened about fifteen years ago, and you will still, in just about every conference room that you walk into, see that [Code] posted on the wall. That's one of the things that helps you to train newcomers as well. They not only see [the Code of Cooperation] being practiced, but they see it on the wall. And so, it reminds folks.

Ledlow: . . . What would you like to see colleges or schools of engineering do to better prepare students for the practice of engineering, as you call it?

Bengelink: I think the one best thing they could do is . . . introduce students early to the fact that people are different. That's not good or bad, it just is. A good tool that we have used over the years is the Myers-Briggs personality indicator. It's not just a matter

of giving a test. It is a matter of helping people understand what their personality preferences are, and also illustrating to them very clearly, through demonstrations, that this is real. Most people will look at that, initially, and say, as you said, “. . . That is kind of the ‘soft stuff’.” And soft stuff has the connotation of, “This is not that important. . . . I don’t need this for my career as much as I need to understand this aspect of physics or math.” Yet, that is not true. Understanding the fact that you get better work, better decisions, if you have people of various, different kinds of personalities And it [is important] because they will react differently to a situation . . . because they will see the world differently Not only in the business world. It’s very important as far as their personal life is concerned. When we’ve done it with people who are twenty, maybe twenty-five years into their career, what we get every time is, “Wow, if I had known this from the beginning, it would have been so much easier.”

Ledlow: Thanks so much for talking with us.

Bengelink: You’re welcome.