Oral History of Robert Donner

Interviewed by **Michael J. Halvorson** for the Microsoft Alumni Network

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Preface

The following oral history is the result of a recorded interview with Robert Donner as conducted by Michael J. Halvorson on August 21, 2023, at Microsoft Studios in Redmond, Washington. This interview is part of the Microsoft Alumni Network's Microsoft Alumni Voices initiative. The goal of this project is to record the institutional history of Microsoft through the recollections of its former employees, so that the information may inform and inspire future generations.

Readers are asked to bear in mind that they are reading a transcript of the spoken word captured through video rather than written prose. The content reflects the recollections of the interviewee. The following transcript was edited by the Microsoft Alumni Network, which holds the copyright to this work.

Interview

Michael Halvorson Hello, my name is Mike Halvorson and it's August 21, 2023. I'm here today with Robert Donner, who is going to talk about his career at Microsoft, which started in 1989. So, we'll get started!

Hello, Robert. How you doing?

Robert Donner I'm doing fine.

Michael Halvorson Great. Can you tell me a little bit about where you're from and what it was like when you went to school?

Robert Donner I went to the University of Manitoba in Canada, and graduated with a master's degree in computer science in 1987. I did some consulting work after that, but nothing really interesting until a friend of mine showed me the work he had done on an Apple II for a game. I was pretty impressed with that, even though it was written in BASIC.

We decided it would be a good idea to spend a few months and develop [the program] a little more. So, we set up a company called Casablanca Software. We created a version of [the] board game *Risk* for the Apple II. Squeezing the graphics and intelligent computer players into the limited RAM was a really nice challenge for me at the time. We even managed to get a two-player version of it working that used the modem to connect two machines.

My friend Gary tried to get the licensing rights to release the program officially. Parker Brothers eventually pointed us to a British company called Leisure Genius who was working on versions for the IBM and Commodore PCs. We decided to sell them the program and also work on a version of *Clue* for the Apple II.

But, as this was winding down, a high school friend of mine, who went to the University of Waterloo, had started working at Microsoft in Redmond, and encouraged me to put in my

resume. So, I flew out and actually enjoyed the interviews because people were asking many interesting questions. I remember lots of puzzle-type questions that were fun to solve.

I was offered a choice of either Excel or Word. At the time, Excel seemed to have a solid plan and was already kicking the competition, Lotus 123. But Microsoft didn't have anything that could beat WordPerfect at that point. I didn't really know much about Windows or how long the team had been working on Word, but in May 1989, I packed up my fancy 512K Macintosh and moved to Redmond, Washington. I still have that computer in the original box. I never unpacked it. I never had time.

After the initial orientation, I spent a few weeks in what was called Application Development College, which was run by the legendary Doug Klunder. Although I knew a few programming languages at that time--Pascal, APL, BASIC, COBOL, FORTRAN, and various assembly languages--C was actually new to me. I quickly figured it out and managed to fix a few bugs in what became the first version of Word for Windows, [released in November 1989].

I wasn't really aware of the real pressure to release a product. It was, at the time, confusing why some bugs were being ignored. I was still learning about the layers of code, the internals of what was PC Word, which had no real UI, just text.

Word has a set of layers between the UI and the core code. So, it's sometimes difficult to figure out what impact a change to

the core code has. There was no real concept of unit tests, but they had this interesting group of people called testers that would actually exercise the [product], [after] an official build was released. Those guys were fun and always busy.

Eventually, I learned how to use this Windows thing [Microsoft Windows 2.1]. I wanted to know more about the operating system because people kept thinking it was the coolest thing. I had been using the Macintosh operating system, which I thought was much better and prettier. Eventually, I found an internal SDK and was able to get [the] Windows 3 [beta] working.

I wanted to write a program for it, but I didn't know what. My friend Brad (my Waterloo friend) had been working on the hardware team, and showed me a few of the mice [pointing devices] that he was working on. Microsoft was developing its own mice at the time. I thought it'd be really good to use one of those things.

The other thing that happened was a co-worker of mine, Curt Johnson--who was working on OS/2 Presentation Manager--he had ported a game where you had to find a path from one corner of the board through to another, through a hidden set of mines [explosives]. I asked him for the code but didn't end up using anything except for the bitmap graphics. So, I basically created what became *Minesweeper* over a weekend, and gave the program to a friend of mine, Dave. But after a day, he was still playing it. I was surprised. He wasn't so much interested in finding the path but he was more interested in finding all of the

mines. So, I changed it a little more and added a couple of more features.

Can I ask you a quick question about *Minesweeper*? For those who haven't played it, or really worked with it, what's the object of the game and how does it work?

The object of the game, the version that most people know, is to find all of the mines. The [object of the] original version that Curt had found, and given to me, was just to find a path through these mines. As you're clicking on these spaces, numbers are revealed to [indicate] how many mines are in the surrounding squares. So, if you saw '1', one of the surrounding squares was a mine, and [for this reason] a lot of people just sort of think, "Oh, it's just a guessing game." In fact, when my friend Dave was playing it, I had to stop and say, "Wait a minute, how did you know that you could click there?" And he said, "Well, because there's a '1' here and a '2' here." [I replied,] "You have to explain some of the strategy to me." I really didn't know how to play the program or understand the rules, but it became more obvious that finding all of the mines in the grid was a better goal, so we changed it to that.

One of the early versions of the game also had coins which were the equivalent of lives you can step on. You can discover these coins, where if you did step on a mine (hit a mine by accident) you would lose a coin, but as people got better at the game, the coins weren't as interesting anymore. I tried to make the game as simple as possible. We got rid of that feature and [it] became more about time. How quickly could you find all of

the mines in the board? So, there was another weekend, where I changed a number of things, and that was about it.

Michael Halvorson This is a two-dimensional puzzle game that has a strategy you're talking about. And it didn't take up much of the screen, which as I recall, was one of the cool things about it, right? Can you talk about that? Your decision to make it relatively compact? Or do I have that right?

Robert Donner You have it right. The original version of the game was a fixed grid, of fixed size, and then I added the ability just to start with a small little basic version, a medium size, and a larger one, but the basic game was a fixed size and relatively small. One of the reasons for having it so small is… because this is Windows, I wanted to be able to move the window around on the screen, and do other things at the same time. One of the purposes of this game was to [have] something to do while you're waiting for your code to compile. You're running on the same computer. You're compiling programs, waiting for an answer [to] email, and you can play a game, [a] simple, quick, easy game. It's easy to hide, you know. Small. It doesn't take up a lot of space and you can do multiple things at once, as opposed to [Windows] *Solitaire*, which was also available at the time [but takes] up the entire screen.

Michael Halvorson And *Solitaire* is a lot longer to play and sometimes it's inconclusive, right? But *Minesweeper* was quicker. How long would it take to play a *Minesweeper* game, on average?

Robert Donner [Laughs.] It depends on the person. Some people were better than others. You could just randomly click and then die, but you could pause the game. I liked the casual aspect of *Minesweeper*. Being able to play it. Stop. Think. Go back and [so on]. But when the timer was added, the goal seemed to be, "How fast could you solve the game?"

Bruce Ryan has a really good story about Bill Gates being quite proud of getting like four seconds in one of the beginner modes, but you should read Ryan's version of that, where he created a macro just to keep clicking really quickly and beat Bill's score.

Michael Halvorson Yeah, I've heard a little bit about that. I guess I've read a little bit about that. But that Bill Gates became really interested in this. Is it true that he kind of took it off his own computer but would play it on Mike Hallman's, I think the President of Microsoft [in 1990]?

Robert Donner That's true. I was a little confused, and actually quite concerned, that he was wasting a lot of his time playing this game. When I got the email, and it said, "You know, if you want to verify it, you can go in and see it sitting on Mike Hallman's machine in his office," I didn't want to go. I never replied to the email, but Bruce [Ryan] went over, and had to verify [it], and had to talk to Bill for a while about it. So yeah, he was a fan of it for a while because it's simple and easy to play and there are rules.

Initially, I didn't even have instructions. People figured out how to play the game by themselves. [For] my friend Dave, I just said, "Here, you have to go from here to here." [Then] he explained to me [that] he wanted to just find all the mines and other things. [And I said,] "Okay, we'll change it to be that."

Michael Halvorson So, Robert, you basically created this game very quickly and cleverly. Was that around 1990 or 1991 that you made that game?

Robert Donner Well, it was, like I said in the beginning, when I started learning about Word. There were these layers of Word, and I really wanted to figure out what was going on with this Windows [3] thing, which wasn't released at the time. Actually, the first version of the SDK that I used was Windows [version] 2.11. That was the one officially available. But I said, "No, I want to try with this Windows 3 thing." I wanted to use the mouse, and I wanted to highlight using the mouse, because I thought it was a cool new feature.

Microsoft was coming out with mice with a second button, a left and a right button, so I thought that was important to be able to mark the mines with a right click. There were versions of the mouse that had a middle button, so three buttons [in all]. The middle button was kind of an interesting feature that I added where you could do this big click, where you could basically step in all of the surrounding places, all at once, using the fact that you had marked some of them as mines...

Michael Halvorson I see. According to my notes, Windows 3.0 was released in May of 1990. So, this is before that you're basically working with the SDK somewhere in late '89.

Robert Donner That's what I said. It was difficult to find the SDK in the beginning. People were talking about Windows 3 being this really cool new thing but I was familiar with the Macintosh and the graphical user interface. [I] said, "This is OK, let me do something for that, because I didn't see any games for it." There wasn't much available. Getting the SDK and trying to figure out how to write a program for it--[this] was actually my first real program for Windows. [That] was the interesting thing, you know, even though I was also working on Word for OS/2 at the time, and that's where Curt had given me the code for his program. I wanted to create a Windows version that was small, simple, and fun to play.

Michael Halvorson Did you ever run across a book by Charles Petzold called *Programming Windows*?

Robert Donner That the Bible of programming!

Michael Halvorson I worked over in Microsoft Press on those [programming] books, and [Petzold's] first version came out for the Windows 2.1 version that you're talking about. Of course, the [Windows] 3.0 book wouldn't have come out until after you had done your [*Minesweeper*] work. But maybe you ran into a book like that at that time.

Robert Donner I devoured anything that I could find at the time. There was no real Internet available in those days. The SDK was the only thing that I could use to figure out how to code. It had very few sample programs.

Michael Halvorson Well, I think that's fascinating to learn that you came into Microsoft as a recruited programmer, [but] you hadn't used Windows [before], and it was hard to learn how to do it. That's important to remember. Right before the Internet, as you say, it was hard to learn.

Robert Donner That's one of the reasons that Word had these layers- to keep the core features separate from the user interface and from the operating system. But I wanted to know more about the operating system. How do you write to that? Make it efficient? Make it look good? Because any of the bugs that I was working on, I didn't have real access to the operating system. I had to go through so many layers. So, when I wanted to add a feature, or something like that, it was a little confusing. It seemed to be a little more work than I thought was necessary at the time. It makes sense these days, but at the time, I wanted to write my own little program on the side. Just have a little bit of fun. Learn more.

Michael Halvorson Yeah, that's fascinating. Maybe I'll ask a couple more *Minesweeper* questions, just to kind of complete that, and then we'll go back, and [I'll] ask you a little bit about the Word that you worked on, if that's okay.

Michael Halvorson The *Minesweeper* question is simple: You have this program that's going around the company. People think it's cool. Bill Gates has played it. But when does it get released with Windows? With Windows 3, for example? How does that work?

Robert Donner I just gave the program to my friend, David. Then he or I put it on a share, for other people to find, so it was never officially distributed within the company. I just put it out there, and maybe David gave it to two friends, and they gave it to two friends. You know how that works. But Charles Fitzgerald is the person who, [as a] product manager, thought it would be a good idea to gather a few games and create something called the Microsoft Entertainment Pack. [Ed. Microsoft Entertainment Pack was released in four versions between 1990 and 1992.]

[Fitzgerald] had seen [*Minesweeper* and] a few other programs, and created a small little project to release the games. So, he got a program manager intern, Chris Jones, to track down the individual developers, get the source code, and get these programs [into] some sort of shape, so it could be shipped.

Most of the games actually came from Word or Excel developers. Bruce Ryan managed this whole project, and has more interesting stories about the Entertainment Pack. At the time, I think, I also released *TicTactics* [a Tic-tac-toe variant]. I worked on a couple of other games. A snake game and a version of Nintendo's *Dr. Mario* that I called *Yet Another Tetris Clone*. But I didn't want to deal with the legal issues on that. So,

I was actually very happy to sign over my rights to *Minesweeper* to Microsoft. I mean, they owned the machine that I worked on. Although I worked on it over the weekend, on my own time, it's their program, they dealt with all the legal issues. I only had to attend one discovery session where somebody claimed we'd used his code. That was interesting. It had been years since I had seen the source, and I wasn't overly impressed with my lack of comments. So, I was actually quite happy that Microsoft owned the product and was releasing it, even though it was in this Entertainment Pack.

You should talk to Charles [Fitzgerald] about some of the stats, and how many copies we sold, and how much money that product made for how much we invested in it. You know, it really didn't cost Microsoft anything other than an intern's time. I was never really consulted about moving it into Windows. I was actually quite surprised when it appeared with the build of the operating system, but I had heard that they had been using the program for a while to test versions [or] builds of the operating system because it was small. It was fast. It didn't allocate any memory once it was up and running. So, it was a consistent program. Small and a lot easier to test than Word on an operating system.

Michael Halvorson Some people have pointed out, or observed, I guess, that games like *Minesweeper*, *Solitaire*, or *Taipei*--these types of things--performed a really important role because they helped people learn how to use their mouse and get comfortable with computers. And you know, many people were still coming to personal computers and didn't have those skills. Do you think that's an accurate assessment or a good way of thinking about that? That these games are helping people?

Robert Donner It's very accurate, especially in my case, with *Minesweeper*. I intentionally did not create a keyboard interface for that game. I wanted to highlight the use of the right mouse button to mark mines. Even though it wasn't my intention to release it as a program from Microsoft, I wanted to get people to understand how to use this program. I wanted my friends, my parents, to be able to use a mouse and feel comfortable being able to move it around, click on a thing, and discover how cool it is.

Michael Halvorson Well, in that way your Macintosh background is really important because the mouse was required on the Mac, in those years. But for Windows, there were still people using keyboard shortcuts and trying to do all that within the DOS heritage.

Robert Donner Yes, the Apple mouse famously has only one button, right? That's why I wanted to add features to highlight the right click [on a Microsoft mouse] and even the third button that was available on some of them.

Michael Halvorson At the time, some people were worried about potential time lost. You know, we're playing these types of games, [and the criticism went], "Oh, productivity is dipping." I think people were enjoying these games, but what do you make of that old criticism (or comment) that gaming was distracting somehow from work? Did you hear that back then?

Robert Donner I certainly heard it and I understood it. I mean, Microsoft is a business company. When I started, I was working on Word. And there was Excel [and] Office products... where you make money. They sell for hundreds of dollars at the time. And games seem frivolous!

But for me, they added a little bit of enjoyment. A little bit of [gaming] made it more fun. It made it easier to work with computers on a daily basis. I wanted to have a little more fun. I was a little disappointed that there were no games originally released with the operating system. Maybe there was *Reversi* or something like that. But I wasn't too impressed with that. I wanted something new and interesting. It wasn't the goal to release it with the operating system but I wanted people to have access to this. They could waste their time if they wanted to. It wasn't--it's not my responsibility.

Michael Halvorson There was kind of an obsession in the 1980s about productivity, which actually became kind of an odd thing to focus on but [it was] the idea that computers would somehow make us so productive. I think your game and others really indicate that, "No, we're not supposed to spend all our time being only productive with our computers." Right? That's kind of silly.

Robert Donner Yeah. Even though I had a formal computer science background, I got the Apple II and you gotta remember I worked on games. I had fun playing them, but I must admit, to make a living, I wanted to work on a real business application... such as Word.

Michael Halvorson Indeed. Well, what do you make of Microsoft's later history, much of which you participated in, where Microsoft really [grew into] an entertainment company, in some ways? Gaming is now part of its core activity, you know, with the Xbox, [and] all the many, many games that have come out.

Robert Donner Microsoft certainly has done a decent job at releasing a number of games, and making the Xbox a decent platform for entertainment. I don't think it's ever been its core focus. It's good to expand into this area.. Doing games is just a small part of what they do these days. Software as a Service is very important. You know, cloud computing and all of that.

Michael Halvorson Perfect. Great. I wanted to ask you a little bit more about your early work on Word for Windows, if that's okay. That's the first version of Word for Windows, you said. Did your team talk much about WordPerfect or what the competition was doing? Did you hear much about that? Did that motivate you or help you work on your product? Or were you pretty insulated from the competition, as it were?

Robert Donner We were certainly aware of WordPerfect and their place in the industry. They were a very good competitor to chase. They had features, we had features. One of the advantages of Microsoft is their [ability] to chase somebody. To implement something that someone else has, but better, was a real advantage. We were certainly aware of WordPerfect. I rarely used the product. But

we would be reminded at regular team meetings, how well they were doing and how important it was.

Initially, when I joined Word, I didn't realize how long they had been working on the Windows version and how many features that had been added. Or the stress that the people were under. I was just busy fixing bugs and eventually creating the features as people came up with them. Eventually, it became very nice to be able to sell more copies than WordPerfect, and create features that WordPerfect just could not compete with. One of the better stories was how Multiple Undo was implemented. Undo was always an easy and simple feature. You could always Undo one thing. But when Antoine added that feature for Word, it was quite a surprise to a large number of developers, who hadn't seen it, and it made quite an impact on word processing.

Michael Halvorson Did you also share some core code with the PC (or MS DOS) version of Word? Or was that pretty separate?

Robert Donner Initially, the all the code came from PC Word, and there were shared builds at the time. But eventually, the changes in the Windows version were so frequent [that] the builds became Word for Windows specific. The Macintosh was also there, but I think they just took snapshots of the core code and then integrated their changes.

Michael Halvorson Were they starting to develop a new version of Word for Windows while you were still working on the first version? Did

they do parallel development or just kind of finish the product and then take a break, [laughs] take a shower, and then just do the next one?

Robert Donner

The person to talk to here is Tom Saxton. He was there for a lot of the beginning and through a lot of the changes. We had Word 1 which was based on PC Word but with the graphical user interface and a large number of new features. And then Word 2 just sort of seemed like "the kitchen sink" of features. We just added so many new things that it was quite impressive to us. Every developer was given several features to work on and implement as quickly as possible.

There was an attempt, before we released Word 6, to rewrite a lot of the core code. That's where I would suggest you talk to Tom Saxton or Rosie [Perera] on that effort, and why that didn't work quite as well as it was hoped. But Word 6, when it released, was my last version that I worked on. It was one of the better versions until we tried to integrate the Macintosh and try and release a version of Word for Mac. It just became obvious that a lot of the features just didn't work with the Apple way of doing things. Some of them required right-clicking, and it was also extremely slow. There were multiple layers.

There are a number of reasons why Word 6 did not port very well to the Apple operating system. Eventually that team learned from that mistake and did a better job. I left as Word 6 was preparing to ship. I went over to the Windows team and worked on a product called NetMeeting, which was interesting at the time. Conferencing. And this is when modems were still

around and we were talking about sharing screens and that. Eventually, we introduced video on that product, as well.

Michael Halvorson I want to ask you about NetMeeting but first, just a couple more Word questions, if that's okay, Robert?

When microcomputers and personal computers first came out, and word processors were coming out, most people would write business memos or business documents with those tools. Then gradually, we would learn that people were writing magazine articles or even a book--they would write a book manuscript--with PC Word or [a competitor]. Do you feel like the use of the product, what users were using the product for, kind of changed into new areas like desktop publishing or things like that...? Because it strikes me that once you get into actually using Word to desktop-publish a manuscript, with all of its content, headers, sections, you know, graphics that are embedded, it becomes very, very complicated.

Robert Donner Word became the "kitchen sink" of features trying to be everything for everyone. That's what I said with Word 2. We were just adding so many new features to address all of these possible scenarios. Some of the people wanted to do short little one pagers, the simple letters, they still wanted to do that. Other people wanted to write longer documents, specs, and that. Other people wanted to write books that, you know, [contained] outlines and chapters, as you said. Other people wanted to do desktop publishing, being able to have perfect layout for some things. But eventually, Microsoft realized that there are other ways to solve these problems. We released

PowerPoint for presentations. We released other products [Microsoft Publisher] that were more desktop publishing versions. We released even simpler versions with the operating system.

Michael Halvorson Like Microsoft Write, which came with [early versions of Windows]?

[Ed. Write was released with Windows 1.0 and replaced by WordPad in Windows 95.]

Robert Donner Yes. Write was in there. Some of the code was shared. Some of the features were shared. So, in some ways, we were competing [with] internal word processing systems. I mean, even Excel was... [a place where] you can write an essay in a cell. There were multiple attempts to share some of the technology, but it just didn't work in some of the other programs. We did realize that people wanted to use some of the small features like being able to bold, italicize, apply bullets, manage graphics, that kind of stuff. So, there was an attempt to share features. It didn't always work out as well as we hoped, but we did compete with ourselves a lot.

Michael Halvorson That's a really good insight. I know that, for example, the DOS version of Word was outselling the Windows version, because DOS was still so popular for a time.

Robert Donner For a time, until Windows 3, and then Windows 95, certainly.

Michael Halvorson Totally. Can you talk a little bit about the development tools that you used within the Word group? What languages were you programming in? Or what sort of compilers? I don't know if you would recall that, but it might be interesting.

Robert Donner C was the language of choice there. There was one person dedicated to optimizing some of the C in assembly language for a while. The first two versions, I think, of Word [for Windows] had assembly specific code in it, which he spent a lot of time optimizing. I don't recall anything specific about the compilers. I have more experience with the source code management system where you had to check in and out code, and merge changes with other people. That was interesting.

Michael Halvorson Robert, were you using Microsoft's own C compiler? Probably not.

Robert Donner There was an internal C version. Again, there's a whole tools group of people that managed this thing. I just compiled the code. It worked [or] it didn't. We'd get an upgrade of the tools that sort of showed up. In the project, [once] you enlisted in the project, everything came to your machine. You just had to build the version of Word [you were working on], then sit back for a while, and eventually an EXE appeared. Then you made changes, and then sat back for a while, and ran the new version. So, the inner loop was a little slow at the time.

Michael Halvorson A quick question about the culture of the Word for Windows group. This is the early 1990s. Do you remember what building you were in or about how many people were there?

Robert Donner We were in Building 5 for the most part of my time, second floor. Most of the developers were in one hall. I think it was 15-16 [people]. I'd have to look back through my notes. I could tell you.

Michael Halvorson It changes rapidly, of course. Did you have User Education teams there?

Robert Donner They were around somewhere. Sometimes they were on a different floor. Sometimes they were in a different building. We usually didn't interact with the User Education teams. We would usually interact with the developers and the testers that were just down the hall from us. Program managers were the ones who tried to explain how the features worked to the User Education people and real customers. We didn't want the developers wasting their time with real people.

Michael Halvorson Right [laughs], so you didn't really have much interaction with the customers, I suppose.

Robert Donner Well, there was an annual demonstration of features that you worked on. I remember Bill [Gates] coming around towards one

of the releases where he came to almost everyone's office and saw the features that they worked on.

Michael Halvorson From this beginning, Word for Windows really became a tremendous success, and [it] became the definitive business tool we used throughout the '90s into the 2000s. Even today, right, it's [the definitive tool]... There are things like Google Docs that have come in and tried to democratize [word processing], and make [it widely] available, but Word for Windows, from those beginnings, really became the definitive business software [product]. It's quite interesting to see how successful that [initiative] was over time.

Robert Donner It was really cool to add features and create new concepts at the time. Like I say, I was really impressed with the ability to have [a] Multiple Undo system. Being able to keep that stack and undo your changes in more than just the last word that you typed. It seems like an obvious concept now, but at the time, it was innovative. Being able to deal with graphics inline. Being able to apply styles and fonts. That was basic to the original concept of word processing, but we really enhanced it and spent a lot of time with it.

Michael Halvorson From a customer point of view, they tried to advertise that Windows 3.0 would provide so many ease-of-use features for people. It would be a lot easier for customers to cut-and-paste and use [common features], such as scroll bars and buttons, and dialog boxes. Even printing was kind of standardized somewhat [in the Windows environment]. But, of course, it

wasn't so easy from your team's point of view, right? Printing was still challenging.

Robert Donner A friend of mine worked on printing. I had a printer in my office for a while and one of the biggest problems was making sure that between versions that everything printed exactly the same. Government offices were very particular: "We want it to fit exactly on the page, and we don't want any changes." So, even though we're trying to improve the layout, make the fonts look a little better, and make things fit more appropriately, we had to have some compatibility mode options in there to be backward compatible to the way the layout happened in previous versions.

Michael Halvorson Word for Windows was very disruptive to the publishing industry because there were very expensive line printers and typesetting and publishing technologies. Word was really on their heels. It was a very significant change in that industry.

Robert Donner We invested a lot in converters being able to convert the various file formats from WordPerfect and all of these other programs, to and from. So again, there was a huge effort for part of the team to be able to make sure that the file format, that document round trips, between WordPerfect and Word [would work]. That was a process that we invested in. Eventually those got outsourced, but still, there was a lot of testing time and development effort [that] went into converting and being compatible.

Michael Halvorson I'm smiling because I haven't heard the term "round trips" for a while [laughs], and so that was definitely a term from that era. Customers had a lot of issues with file formats because in their office they would have WordPerfect, and PC Word, and Word for Windows, and Excel, and who knows what else, right? So, that was a challenging era.

Let's move to the next work that you did. You said that you left that team. How'd that happen? And what new roles did you take up?

Robert Donner Eventually, after many years and many versions of Word--like Word [version] 6--somehow, we skipped 4 and 5 and [went] directly to 6 for numbering--a friend of mine over in Windows said, "You should try coming over here for a while. Grow a little bit. We're doing interesting things." They were trying to set up a group that did what was called "conferencing" at that time, being able to share a program that required code to be able to share a screen between two systems over a modem. At the time, we're just integrating voice, so you could carry on a conversation and use a whiteboard. This was called [Microsoft] NetMeeting. We released three versions of that, [the first in 1996.] That was interesting. It was part of that networking group.

I also spent a lot of time working on technology called UPnP [Universal Plug and Play], but operating system [work] was never what I really enjoyed, I guess. It was a change. It was nice to see how the other side worked. I got dragged back, I would say, to the Small Business Group, where there was a project

started that became [Microsoft] Equipt [released in 2008]. Equipt was basically a subscription service of Office putting all the Office products together. And eventually that led to the Office licensing service where I spent my last several years of service to deal with the licensing of Office products.

Michael Halvorson Do you recall some of the dates of those moves, Robert? Just so I can track those, kind of approximately? You went to the NetMeeting group in the mid '90s, or something like that?

Robert Donner NetMeeting was '94 to '98. Small Business Group was '98 to 2000. And it looks like I went back from 2001 to 2003 to work with UPnP. And after that, I took a break. For some reason I got married, had a couple of kids, and so I wasn't up for working at Microsoft for a while. But I came back in 2007 to work on Microsoft Equipt and released versions of that. And then Office subscription, 2010 is when that really started. Then, I eventually left towards the end of 2016-2017, when the licensing service [work was completed].

Michael Halvorson Yeah, that's fantastic. So, in the licensing group, what were your job tasks?

Robert Donner In the old days, you had to type in a key when you bought a product. You owned it and that was it. You got the software, and that was great. It came on a CD. You owned the CD. You could run [it]. It was great. Eventually, it became, well, "You really need a license for this. We want to lock it down a little more." So, the company came up with this key system where

you have to type in this long series of characters, and that's what unlocked the product to allow it to run.

The subscription system that we developed was more [of] a time-based service. It would give you a key that would last for a year or a month. It could work for a month at a time, and then up to a year. But the point was that there was a service that was handing out a key. You basically sign in and you get this key, and you are allowed to run Office. (Office 2010, at that time.) Until you stop paying for the service.

Michael Halvorson Was that something that was a global initiative that you were involved in? So, you had to deal with other countries [or] other contexts? Or [was it] just US based?

Robert Donner Certainly, it was initially the US but Office has always been a worldwide product and it became a worldwide issue on how to release these keys. Keys are regional and they could release only certain languages. It was interesting. I did spend three months somewhere in there in Beijing on the Marco Polo program, helping them set up their licensing system and dealing with all the statistics that we'd get for who's using the service [and] using Office...

Michael Halvorson You haven't specifically called out unauthorized use of software or piracy, per se (copyright issues). But would you like to talk about that? Is that one of the reasons that they wanted to do this?

Robert Donner Microsoft as a company wants to make money and this is how they license their software. I'm not a lawyer [laughs]. One of the reasons I was quite happy signing over *Minesweeper* is [that] they dealt with all the legalities of that. It's not something that I have a strong opinion on at this point in time. I understand both sides, all sides of this issue.

Michael Halvorson Yeah. But I guess more technically, I'm just wondering, were people finding ways to subvert that thing, you know, so that [unauthorized users] could get a key code or just sort of get through? Did you have any data on how many people were breaking your system?

Robert Donner Certainly, we had data. That's always a concern. You want 100% of your people using the product to pay you for legal use of a product, but there are various ways to subvert the licensing. Sort of going around it. It depends on how complicated it is. I'm not the right person to say anything about the legal aspects here. We did have some data but again, it's not something that I can share or even remember [laughs] what the numbers were at the time.

In the beginning, everything was free. If you had the floppy disk. If you had the CD, you were able to run it you were able to run it forever, right? Then keys came along. If you had that key and it worked with the product, that unlocked the product. You were able to run it for forever. The subscription service was certainly cheaper and appealing to a lot of people. You were

allowed to run the latest version of the software. We promised updates and that. As long as you kept paying us.

Michael Halvorson There have been so many different attempts to preserve software [copyright] over the years. And yes, [during] the Internet era, it's certainly easier. I was thinking back to those days when we would have floppy disks, and you'd run over your floppy disk with your desk chair, and you'd ruin your software, and then you'd have to ask Microsoft if you could get a replacement or something. Things have definitely changed.

So, you worked in a relatively small team when you were working in this last group?

Robert Donner The licensing team was relatively small. I think it was six core people. I was managing most of them at the time. It grew a little more, depending on what features we were adding, and we were trying to scale, especially when we were trying to deal with government clouds or international systems or adding features. [When] we did the very first version of Equipt in 2010, that was an interesting project. We had to install many programs--all of Office. It was essentially one of the first Office suites, [including] Word, Excel, PowerPoint, and some of the additional software. I'd have to remember what was in Equipt. So, part of that [process] was installing all of these programs at once, with the same key, [and] licensing them all. There were some interesting utilities that were also distributed with it.

Michael Halvorson I'd like to ask you a few general questions about your time at Microsoft, if that's okay.

One of the things we're asking people is, you when you look back, what are some of the takeaways that you have from your time at Microsoft? What kind of things did you learn about the company, or which have stuck with you over the years?

Robert Donner Sure.

One of the most important things I learned, or realized, after Word had sold like a million copies was that even minor bugs that affect a small portion of people can have a major impact on a very large number of people. So, to me, getting it right and releasing a solid product became very, very important. To me, it [might] seem like a trivial bug, but if it annoys 1% of your people, that's a large number of people who are going to come knocking at your door.

I was lucky to experience the growth of the company and to be part of such an influential company. I really appreciated that the software development process evolved from what seemed like a bunch of cowboys doing their own thing, with testers and customers continuously asking for new features and improvements, to a much more methodical planned approach, with real specs and plans that people tried to follow.

It was interesting when Word 2 and Word 6 came around. In the planning for that, we spent a lot of time looking at specs and [having] meetings, and working on documents, using Word [laughs] to create what we were going to do. Then you would implement it, and it hopefully would match what you were trying to create. In the beginning, though, there were very few written documents. It was the more, you know, "This is the idea. This is what we want. Just make it do this."

Michael Halvorson Do you have particular moments of pride or satisfaction about certain parts of your career or initiatives you worked on? Are there things that you look back and say, "Oh, that was great. I'm really happy about the way that worked."

Robert Donner I'm actually happy about the licensing service. It was a good thing to get Office to sell in that way, and to be distributed online. That whole effort of it being downloadable and licensing over the Internet. It made such a difference from requiring multiple CDs or purchasing a real box. So, I think that was a good thing. I still meet people who ask about *Minesweeper*, and they tell me how much time they spent [on it]. I have to apologize [about] how much time was "wasted" [laughs]. Let's see, Word is still an impressive product. I use it on a regular basis. I do [also] use Notepad, because it's simpler and quicker. [But] for documents, Word is still my choice. Excel is my second most-used Office product, I guess.

Michael Halvorson It's fascinating the products that you worked on and what a legacy they had. Many people worked on them, and they have become so iconic in the industry.

Do you feel like over this 25-plus-year career, Microsoft changed quite a bit, or do you notice there are some parts of the culture that have been pretty consistent?

Robert Donner

The open-door policy of [allowing a] developer to just be able to walk down the hall and talk to somebody about a problem that you're having with a piece of code that they wrote, [or] a feature that you're trying to implement--that has always been very important. It was most important in the early days, when Office products were being developed, and we were trying to get help from the Windows people [about] the operating system. I mean, that was a major advantage that Microsoft had, where you could get information [about] how to write programs, what the real problem was, how to get performance improvements, how to make things work--by having everybody on campus at the same time, having access to those people. I mean, email kind of worked during those days, but it was much easier just to go and find the people, and not necessarily have a meeting, but just to go in and talk to them one on one.

Then Microsoft got bigger and there were more meetings. The program managers got in there, and you know, everything had to be a meeting. Everything was done over email. So, you know, the culture there certainly changed [with more] meetings. We wasted a lot of time [in them]. I certainly believe they're important, but other things can be done at the same time.

Michael Halvorson Robert, I want to thank you so much for the time today and for the fascinating information you've given us. With that, I'll go ahead and close our interview. I appreciate it so much.

Robert Donner Thank you.