Oral History with Jay Stein, June 26, 2020
Interview by Benjamin Spohn for Hagley Museum and Library
Hologic oral histories project

Q: Okay. Today is June 26th, 2020. And I am interviewing Jay Stein, founder of Hologic, Inc. Good morning.

[00:00:12]

A: Good morning. Nice to see you.

Q: So, to start us off, can you tell us a little bit about your early life and educational background?

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A: Sure. I was born in Jersey City, New Jersey. And lived in New Jersey until I graduated high school, and went to college, at which point I moved, and actually never returned to New Jersey as a fulltime resident. So my parents were very education-oriented. And we moved from sort of around New Jersey, seeking, when I was a kid, the best educational opportunities that my mother thought would apply. And I wound up graduating—spending my high school years in a town called Teaneck, New Jersey, which at the time had a reputation for very good secondary education. And I graduated from Teaneck High School, class of 1959.

Q: And then you went onto college?

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A: Yes, oh yes, in terms of my further education I attended Brown University in Providence, Rhode Island, and received there, a bachelor of arts degree in physics. And prior to attending Brown University, and taking a freshman physics course, I had nominally thought I would wind up becoming a physician. But my physics course was sufficiently enthralling, that I eventually decided to pursue a career in physics. And when I finished Brown University, I went to MIT in

Cambridge, Massachusetts, with the intent of getting a PhD in physics. And I got my PhD in physics in, I believe it was 1964.

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And my field of expertise, at the time, was a field called x-ray astronomy. And it turned out, my timing at MIT coincided with the—pretty much with the early discovery of the fact that many stars in the sky emit x-rays as well as optical radiation. And I got my thesis in x-ray astronomy, was called something like "The Development of a Novel X-Ray Telescope for Observing the Crab Nebula." And it pretty much, I think, summarizes my early education.

Q: So what was your first job after completing your PhD?

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A: I went to work for a company in Cambridge called American Science and Engineering. And I knew about this company because it also had its own program in x-ray astronomy. It built rocket and satellite experiments for the NASA Space Administration. And the first job I took there was, now that you mention it, I haven't thought of this for a long time, I was a scientist on a project that was launched on Apollo, I believe it was Apollo 13. And the purpose of the project was to measure x-rays reflected from—solar x-rays that were reflected from the moon when the Apollo Command Modules circulated the moon. So my very first job was measuring x-rays from the moon.

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And I enjoyed that quite a bit. And I must say, now that you've asked a question that made me remember back a number of years, I don't believe anybody else has ever measured x-rays from the moon. [laughter] You could probably understand why there wasn't that much interest.

Q: Why wasn't there that much interest?

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A: Well, it turned out that the x-ray information for the moon did not really reveal any significant information in addition to what was already known and acquired by the astronauts, by sampling the real materials that were on the moon. It just gave a rough analysis of what the aluminum and magnesium concentrations were in different parts of the moon's surface. Well maybe I'm wrong. Maybe there was quite a bit of interest. But it certainly, at that point, did not seem very interesting to me.

Q: So what came after American Science and Engineering, and about how long were you there?

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A: Well, I was there quite a while. Because after this program in what I would call my space physics era, I became more interested in applying sort of the training I had in x-ray physics, to more, well, now that I think of the term, you would say down to earth projects. And at about that same time, it turned out that John F. Kennedy was assassinated in Dallas, Texas.

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And the post office, United States Post Office was seeking people who could build the very first baggage inspection systems that might be used to x-ray the mail for weapons. Because it turned out that the rifle that was used in that assassination attempt had been shipped through the mail. So the next project I did work on was the development of what it turned out to be the first baggage x-ray inspection equipment used at US airports. And this was manufactured also by this same company called American Science and Engineering.

Q: And did that technology eventually go, what would you say, international? Is that what they use worldwide?

[00:08:20]
A: The technology built by American Science and Engineering was used in the United States and internationally. And that particular business was successful for quite a few years, actually for long after I left the company. And I was surprised that—Very recently, I attended one of my

son's weddings in New York City, which took place, interestingly enough, in New York City's City Hall.

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And to get admitted to the wedding reception at City Hall, they had a baggage—a parcel inspection system at the front door, which you know is common in many public buildings. And, lo and behold, there was one of the ones I had worked on, and the design I had developed maybe 30 years earlier, still in use at the City Hall in Manhattan, to x-ray parcels and pocketbooks from people going to a wedding ceremony.

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But, be that as it may, those systems were manufactured for quite a few number of years. But in the course of the—of the many years since the first one was developed, other manufacturers have entered the market. And in the course of the next 20 or 30 years, I haven't really kept track. But I see more and more of these competitive systems being used, and fewer and fewer of the American Science and Engineering systems being used. So I guess, like all products in industries, things change over a period of time.

Q: But you still have that distinction of being the first to the market.

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A: Yes. A distinction. [laughter] This distinction, relevant only in the fading memories of a few people who were involved in that time, yes.

Q: So were there any other major projects that you were involved with at American Science before you left?

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A: I'd say that no, those were the—I was involved—Oh yes, oh, how could I forget? I was involved in another really major undertaking, which led to my eventual career path. Not too long

after the development of the baggage inspection system, a medical technique was invented in England by a man named Godfrey Hounsfield. And that was the first CT scanner ever developed. And I was really astounded by the amazing detail that people could see in the x-ray images, even from those very early examples of a CT scanner. People also call it a CAT scanner today.

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And I think I was one of the first people to appreciate that it was a breakthrough in medical technology. And I spent—I remember spending quite a bit of time just explaining to people how it could work, how it could make such remarkable advance, using a very old technology of x-rays. So I know I was at the forefront, just because I happened to have this background in x-ray imaging that came out of the baggage inspection activity I worked on.

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And AS&E, actually I had this, at the time, what I thought was a brilliant idea of how to build a superior CT scanner. And American Science and Engineering did indeed manufacture a CT scanner in a very early time, when they were first invented, when our competitor was a company called EMI, a large British conglomerate. And the man who invented CT scanning, Godfrey Hounsfield, was an employee of the EMI.

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And, for a while, it was a very short while before all the other major medical companies, all of the other major medical imaging companies in the world, like GE, and Siemens, and Phillips, entered the business. We had a very brief and astounding period of success with the design from American Science and Engineering. This design was later called a fourth generation CT scanner. But, as these things happen frequently, it turned out that the design that had the most future expansibility was a design called the third generation CT scanner.

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So pretty much, if we fast-forward through the next 25 or 30 years, almost all the CT scanners manufactured today are a third, what's called a third generation type of design. And the first

fourth generation design, of which I'm still proud of, is now just a footnote in the history of that particular industry.

Q: Why is that?

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A: It turned out the bottom line, really, is that that particular design was simply more expensive to build. And with time and effort, the technology advanced from a—let me describe it as a single ring of detectors, to multiple rings of detectors. And when the course of the detectors became the driving commercial feature for success, the third generation had the great advantage of being able to use much less expensive detectors. And therefore, it eventually—and frankly, it is the right decision.

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I often thought back and found it interesting to think about these early movies you see on when the aviation industry first developed. And there were double-wing and triple-wing and all kinds of genius airplane designs that were tried in the early days of the aircraft industry. And at the time, I'm sure each of these had its advantages and disadvantages. But, as technologies seem to find a way, as they have in this industry also, you'll notice that almost all airplanes look alike today. There are no double-winged commercial aircraft.

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So I guess you could say the fourth generation CT scanner design was the double-winged aircraft design of its day. And just the way that technologies tend to, over time, optimize a bunch of features, including cost, so it went also in the CT scanner business.

Q: Does this bring us up to your first company then that you founded?

[00:16:59]

A: Yes. So the first day, and I want to make sure I totally give proper emphasis to this particular gentleman. On the first day of my first job, which happened to be at American Science and Engineering, I met a gentleman—excuse me a minute—who was, at the time, American Science and Engineering's Vice-President for Marketing. His name was David Ellenbogen. And David and I formed pretty much an instant friendship that lasted pretty much for the next 30 years.

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And the friendship developed into a business partnership. And he and I left American Science and Engineering. I'm going to have trouble telling you what year it was. But it was just after this activity that I described to you, with respect to CT scanning. And we left and formed a company called Diagnostic Technology, which was also dedicated to making another type of medical x-ray imaging system.

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And that company only lasted—only existed for about one year, at which time it was acquired by a division of SQUIBB. And David and I both became employees of SQUIBB for about three years, as one of the conditions of the sale of this small company. At the time this company was acquired, it didn't have more than—it had maybe like 20 or 25 people involved in it. And this company, Diagnostic Technology, made a device which enabled the doctor to see—it used a technique called subtraction angiography, which made it more easy, made it possible to see certain arteries of the body by injecting iodine into the venous bloodstream.

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A technique which is still in use, but is now generally sold by the major manufacturers of conventional x-ray equipment, such as, again, GE, Phillips, Siemens, and Toshiba. So it's after the sale, and the completion of our service to SQUIBB, after the sale of this small company called Diagnostic Technology, that David and I decided that we enjoyed, frankly, an entrepreneurial activity, a lot more than working for a company.

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And so we decided to start another company. But we didn't know what that other company would do, which is an issue. And I like to tell this story as—this part of the story, I like to tell as how doing a good deed was the origin of the company Hologic. Because what happened after the three years we spent at Diagnostic Technology, and there were a bunch of, maybe five or ten key employees who still worked for us, all of us were scheduled to lose our jobs because the company had required the Diagnostic Technology Company, the SQUIBB division was in Seattle. And nobody wanted to move there.

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So it turned out to be maybe five or 10 key people who were about to lose their job. And I felt an obligation to try and help some of these people find new positions. And so I called around to various people I knew in the industry in Massachusetts, to see if they needed any other physicists in their employ. And in visiting one of those companies that was run by a friend, just to try and help some of our employees who were about to lose their positions, in order to try and help them find new positions, I asked this friend whether or not he had a need for any physicists.

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And he said, “Well, not really.” Not at that time, because they were just finishing up a project where they could have used somebody. But it was now completed. And it was a project to develop a certain type of detector, to measure the osteoporosis. So this is kind of an embarrassingly true story. I said to him, “What is osteoporosis?” It was the first time I really had heard the term used in a nonmedical environment. And he explained to me, the device he had worked on was a device to measure the density of the bone in the heel.

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And even though there was no job available for this soon to be ex-employee, it perked up my interest, because it turned out that the technique they were using to measure bone used radioactive isotopes, which were detected, which can be used to detect bone density. And it was the first time the thought came through my mind, is that it would be a type—As soon as I heard

the technology currently in use, it occurred to me that an x-ray source would be much better at performing this measurement than a radioisotope. And that was the idea that became the founding product concept for Hologic, to build a device that substituted x-rays for gamma rays in measuring bone density in the body.

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So, just to finish the story, since at that point our employment with SQUIBB was about to end, David and I, still friends and partners, decided we would try and start another company to build a bone densitometer using x-rays.

Q: That's the origin point of Hologic.

A: Yes.

Q: If I could jump around a little bit, to ask sort of a big picture question, earlier in the interview you had mentioned that you had always intended, before discovering physics, to become a physician. So is that interesting that was in the back of your mind in medicine part of what drew you back to medical imaging specifically? Or was it something else?

[00:25:20]
A: I think you're pretty perceptive, because I've never—I never was that strong on self-analysis. But I think your analysis, when I did think about it later, is pretty much correct. I think the reason that I—I had a background in x-ray technology. And I had always an interest in medicine. And there's no more widely used, other than baggage inspection equipment, by the way, there's probably no more widespread use of x-rays in our contemporary life than medical x-rays. So I think that was the connection that took me from x-ray astronomy to baggage inspection to medical x-rays. So yes, I think that's correct.

Q: So, when you started Hologic, how did you come up with that name?

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A: Well, I kind of wish you hadn't asked me that, because it's a story I've told many times, which is so much less interesting than other origin myths. But I guess I'll just have to tell you the boring details of it are as follows. I mentioned to you that David and I were really casting about to try and find something to do that a new company could work on. And one of the ideas we had was to build a very advanced form of a CT scanner, as I mentioned I had previous background in that.

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And this scanner was—The concept here was to do the scan in a 30th of a second, instead of in 10 seconds, so that you could get an image of the heart, of the beating heart. And because this technology was rather sophisticated, we approached a company we were friendly with called Analogic, which is a well known company in the Boston area, which was pretty well known for building—not for building CT scanners at the time, but for building components that were used in CT scanners, including detectors and other equipment.

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And we approached the CEO of this company, a man named Bernard Gordon, a man with whom I am still quite friendly, by the way, to solicit funding for the new company. And sort of as a—We called the device that we were planning to build, instead of calling it a CT scanner, we decided a new name, a totally new name would be advantageous in branding this product which was just an idea at the time. And we decided to call the new product a holotomographic scan.

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And so when we were seeking funding from Analogic to build a holotomographic scanner, we thought it would be a clever fundraising bid to name the new company Holoalogic, the Holo from the holotomographic scanner. By the way, I told you this was a boring story. The Holo from the holotomographic scanner, and the alogic from the name of the company, Analogic, thereby coming up with the term Hologic. And that's what we named the company. And we did

negotiate quite a long time with Bernard Gordon, whom I mentioned earlier, who was the CEO of Analogic.

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And I don't think it would be deviating too much from the standards of opinion to say that Bernie, as in Bernie Gordon, was a—Well, from one side you might say he was difficult to negotiate with. From his side, you might say he was a very tough negotiator. But in any case, we never came to agreement on the terms for working on that holotomographic scanner. But the name stuck, and then when the event I mentioned to you earlier, of deciding to try and build a bone densitometer arose, we had the name from—derived from a venture that never happened. And we used the same name for the company that developed the x-ray bone densitometry. Told you you'd be sorry you asked me that question

Q: I thought that was really interesting.

A: Thank you.

Q: So, since your initial product focused on diagnosing and detecting osteoporosis, was it always written in Hologic's DNA from the start, that you wanted this to be a women's health company?

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A: Well, that's an excellent question. I would say no. What happened was, so we sort of did have a strong, as you pointed out, preference for doing something in the medical area. But we never thought that it would necessarily have to be just women's health. And I mentioned to you earlier this first company, Diagnostic Technology, that built this device for what they called digital angiography, that basically visualizing arteries. And that device, of course, applied equally to men and women.

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And so the only reason that we wound up having such a very strong influence in women's health is that osteoporosis happens to be a disease that, although it not exclusively affect women, is very, very prominent, much more prominent, maybe 90 percent or more of cases involve women, because loss of bone in that disease is modulated by estrogen. So it turned out, we did not intend to go into women's health. It's just that the technology we developed applied to a disease that mostly affects women.

Q: Sorry. I'm just catching up in my notes. So were there any other products between the bone densitometry products and getting into mammography?

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A: Well, here's an interesting side story. About a year or two after Hologic started, there was another catastrophic airplane event called—that took place, I think it was PanAm. Was it 103? A PanAm flight that was bombed out of the sky by Libyans, if you remember, and crashed onto Scotland. And that event was the trigger, just the way, actually, now that I think about it, the assassination of JFK was the trigger—was one of the triggers for airline security, baggage security at airlines.

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The other trigger for that, if anyone recalls, was it became a fad around that time to hijack airplanes, to Cuba. So just as those events triggered the initiation of what we call carry-on baggage inspection, the bombing of PanAm 109, I think it was 109—please this could be embarrassing if that's the wrong flight number. But anyway, the bombing of that aircraft triggered the passage of legislation to inspect the baggage that went into the holds of airplanes, not just the carry-on baggage.

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So two political events initiated the baggage inspection legislation, and the carry-on baggage legislation, and the PanAm disaster initiated the legislative activity that led to x-raying the suitcases that go into the baggage department, the baggage hold of an airplane. So the reason I

mentioned that is that only—that long little bit of terrorist history-- is that it was the PanAm bombing which led the invested Analogic, who were a group of venture capital companies, to come to David and me, while Hologic was about two years old, to ask if we could build a baggage system that would be more suitable to detecting bags, checked baggage, instead of carry-on baggage.

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And mostly for financial reasons, and at the investment's request, David and I started a second company that co-existed with Hologic, called Vivid Technologies. And Vivid Technologies, which shared some employees with Hologic for a number of years, developed a system that did become used for the inspection of checked baggage in the airlines. And that company, called Vivid Technologies, was later sold to a company called [00:36:46]. And it still operates in some form building equipment for checked baggage.

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But David and I were much more interested in bone densitometry activity than the Vivid Technologies. And David and I stayed with Hologic and continued to grow it, while Vivid went its own way. So I think that answers your question as to what else Hologic might have done. It sort of half did another company, which was later sold.

Q: So just to ask a question to the side here, I do want to stay more focused on the medical business side. But I didn't expect terrorism and assassination would come up so much in this interview. So I have to ask then, after some other attacks, like the Oklahoma City bombing, or 9/11, did you experience any increased demand for security type imaging then as well?

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A: Well, it turns out this company I just mentioned to you, Vivid, was sold—I mentioned to you it was sold. It was sold, I believe about one year before 9/11. And the reason it was sold one year before 9/11, is that this technology for checked baggage had—excuse me, not the

technology so much, as the requirement for checked baggage, the business part of that had plateaued. So it wasn't—it didn't seem like it had as much future before 9/11.

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But after 9/11, as you know, the level of airport security skyrocketed. And that company has done very well in the hands of its new owners. But we were no longer involved in that business. And I can't really comment very knowledgeably about how that affected things. And we still were in a growth phase in bone densitometry at that period of time. And that's where we continued.

Q: So how did you convince people that your bone scanner was the one to get?

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A: Okay. Well that turned out to be exceedingly easy, because it was superior in every respect, technically, to the type I mentioned before, that used the radioisotope to measure bone density. So just roughly speaking, by replacing radioisotope with an x-ray source, we brought to the market all of the following advantage. First of all, the scan took place 10 times as quick, two minutes instead of 20 minutes. There was no requirement for handling radioactive materials, which was a huge inconvenience to any customer who wanted to make this measurement.

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It was, if anything, the same price, at worst the same price. And if you include the fact that the x-ray tube was cheaper than replacing the radioactive source, it was cheaper than the competitor. And I think it's fair to say that the sale of the previous generation of bone densitometers went to zero almost instantly. In fact, only about—

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Oh, here's a story I love to tell. The person who represented our business in Belgium and The Netherlands was a man named Eddy Copans [?]. He was a dealer, if you understand that term. A company that he had started, which distributed other people's products. And at his retirement, he

told—which was only three or four years ago, he told me the wonderful story that he had orders for a competitor's radioactive type bone densitometer. He had 16 orders for a company that he had worked with for quite a while in Denmark, for a device that used radioactive source to measure bone densitometry.

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And we showed our x-ray bone densitometer for the first time at a trade show in Chicago held every year, called the RSNA, the Radiological Society of North America. We showed our x-ray bone densitometer at this trade show for the first time. And when Eddie retired, he told the story that he went back to Belgium. And the day he got back from the show, all 16 customers had canceled their order and bought our unit. So the demise of the previous technology, caused by the introduction of this x-ray technology, was very rapid and very widespread. And Eddie, having no orders at all, and no future, asked to become the dealer for Hologic in the Benelux countries. And he did that for 20 years. So it was an immediate success, yes.

Q: Wow. What's it like when something you develop just comes along and generates that type of massive rapid sea change?

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A: Well, it tells me this must be a lot more fun than being a doctor. And it's just—it's just enjoyable, because there are no negatives. You're helping your customers. You're helping the women who your customers serve. The employees become totally engaged and almost, I would say, excited. Your financial concerns are lessened, because there's very little chance now that you'll need more financing. And I would have to say, it's a very pure and unadulterated form of fun.

Q: What makes it fun?

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A: It's interesting you ask that question, because it's like, when you – Actually, it's a much better question than I would have thought asking. Because I guess different things are fun for different people. And for me, the fun part was, I liked seeing something—It's almost the enjoyment that many people don't appreciate this point. But in a way, product development or technology is sort of—A lot of people think it's dull and boring, sort of like fixing an auto engine or something like that.

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But actually, it's more in the line of the type of fun that people in the arts, in the artistic world enjoy, when a song they write, or a book they write, or a piece of art they create gets widespread acceptance. They're doing the painting and the writing because of the enjoyment of the creative aspect of it. And product development has that element to it, that is generally not appreciated. So the fun is seeing something you create become popular.

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And, in the medical area, as a real important extra bonus, it's not just popular, it's helping people at the same time. So I don't know if that helps. But if somebody listening to this does not understand why that is fun, then they probably don't know why people write songs and create art. It's the same type of fun. It's the fun of creation.

Q: So would you say it's a very fulfilling line of work then?

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A: Yes, I would say that's true. But like anything, not everyone would find this—not everyone, as you know, finds the same thing fulfilling. But if you find this, if you're a person who finds this type of thing fulfilling, then success in the product world is very fulfilling. I've often commented to myself that I've had the good fortune to lead a professional life, where I did basically what I wanted to do, not what I had to do. And I've often reflected on the fact that I'm quite lucky to be able to do that, or to have been [00:48:15] better phraseology at this point in time, lucky to have had been able to do it. But yes, it was fun.

Q: So what comes after the bone densitometry?

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A: So the—Here's a—I want to say this as tactfully as possible, because somebody else will listen to this, who doesn't know these people. David was an extremely personable and likable individual. And he passed away about—geez, it might be as much as going on 20 years ago. But I still meet many people who knew us both at that period of time.

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And in those conversations, people almost invariably tell a story about a joke he told. They don't tell a story about a business opportunity they engaged in, or a professional relationship. They tell a story about how engaging he was personally. And he was a very engaging person. So you asked me the question, how did Hologic go beyond the bone business. And this is sort of a true story. And I gave that description of David so people would better understand that he meant what I'm about to quote him on, in good humor.

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So, at about after Hologic had been in operation for about 15 years, the bone densitometry business was still quite good. But it had flattened, in terms of year over year growth. And the opportunity for new products that would gain further market share had diminished, because frankly, our equipment and our chief competitor's equipment, which was General Electric at the time, were both very good, very capable, and fairly inexpensive.

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So, as businesses do plateau, if you're on—it depends on what side of the ledger you're on. If you're on the creative side, it gets boring. And David was a very creative person also. And he comes to me, he came to me one day, and he said, this was when the bone densitometry business had sort of plateaued. In other words, the sales, year after year, were only incrementally higher than they were the year before. And frankly, we were a little bored because it was so routine.

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He came to me one day, and he said, “Listen, Jay. I'm not going to stay home and have lunch with my wife for the next 20 years. So get off—So, if you wouldn't mind, get off your ass and find something else to do.” And that was the origin of the mammography business for the company. It sounds like I made up the story, but it's a true story.

Q: So what made mammography seem to be the thing to do?

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Well, this was a pretty—this was a pretty natural direction. We were in a—We had a company that was familiar with x-ray technology. It was a company that was very successful in an industry that served women, the same market. These devices that use x-rays, as you probably know, are generally bought by the same customers, radiologists. And it was the closest business to what we had been doing, that really existed, for those reasons.

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And, to make it more promising, the world had just started talking about doing mammography with a digital detector instead of with film. Other parts of the medical industry had already started to move from using x-ray film to take an x-ray to using digital detectors to take an x-ray. And mammography was the last holdout in this, what otherwise would have been a normal progression. So it was just a totally natural allied business.

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And at the time, it just fortuitously turned out that a company you're probably familiar with, since it was really a two-punch spinoff, a company called DRC, Direct Radiography Corporation, became available for sale. And Direct Radiography Corporation made a digital detector. It did not make a mammography detector, it made a digital detector that was intended for use in the area I just described, general x-ray imaging.

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So we decided that DRC, Direct Radiography Corporation, well it really wasn't mammography but at least it was digital. And you know, things are never perfect. Maybe if we acquired that technology, we could not have to have lunch with our wives for sometime longer. And that's why we did it. We went through a—We visited DRC. We met all the people there. And we decided, well, we'll just take a shot at acquiring this company. It wasn't that expensive at the time. And we'll see what we could do with it.

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As something that would be more fun and interesting, again, than just continuing a bone density business. So we did, in a conscious type of, "Let's just give this a try," acquired the company DRC. And I am correct that you know about DRC, am I not? Just because you're collocated with a lot of the people from there?

Q: Yes. Actually, in the [00:56:17] origin days of this project that I'm interviewing you for, part of what I wanted to try to accomplish was to document some of DuPont's more modern arms, since Hagley has strong historic association with the DuPont company. I met Jim, and it led to where we are here now.

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A: Okay. So let's talk about that for a minute, then, because when we acquired DRC, we really did not know any of the people there ahead of time, or any of the details. We just knew that it had a technology that was related to our general x-ray imaging expertise. And it was a good technology.

[00:57:18]
After we acquired the company, and learned more about its history, and we got to know some of the people there, I have to say that I suppose every successful company and business owes a great deal of its success to what I would refer to as unsung heroes in the company, people who

made these amazing contributions, but did it at a level that never receives the public awareness, and frequently doesn't even receive company awareness.

[00:58:03]
And just because they're making a contribution at a level that many other people in the company don't understand, and in particular, the detector that DRC had been developing, was probably responsible for two mostly unsung, what I would— people who I would put the unsung hero category. I don't know if you're going to interview them or not, but Lothar, I think it's Jeromo.

Q: Yes, I spoke to Lothar about a week and a half ago.

[00:58:42]
A: Okay. Well, maybe in the wrong order. And another gentleman, Denny Lee. And both of these people made remarkable contributions to the technical development of that detector, which people who worked with them understood was amazing. But I don't think other people in Hologic who weren't involved on the technical side ever truly appreciated their contribution. But I believe both of those two people were previously employees of DuPont. And they were spun off from the DuPont body when this company, DRC, was formed. I'm not sure that's the right development. But you probably know as much or better than I do about that.

[00:59:46]
So DRC benefited from this—DRC benefited by adopting this DuPont-originated technology. And to tell you the truth, let's see, Lothar, Denny, and I may be the only people who understand this, is that the success of Hologic today ties directly to that remarkable talent that DuPont had recruited over the years, part of which they invested in this area. Now I believe DuPont's tie to this was the fact that they were a very large and successful manufacturer of x-ray film.

Q: Yes.

[01:00:36]

A: And so, when they saw the opportunity, or the—I guess you have to say, in a way, the foresight to recognize the x-ray film business was going to be threatened by digital technology, just the way the consumer photography film business was threatened by digital, they at least had the foresight to start an activity in the digital area. But I don't believe that DuPont today makes either x-ray films or digital detectors. But they certainly had the talent base that created the technology which Hologic succeeded on. I have to put DuPont, which is not something that's normally done, in my category of unsung heroes also. [laughter] But they're the unsung heroes of our company's success. That's certainly widely recognized.

[01:01:44]
There was a gentleman who worked for DuPont, whose name I don't recall, who I knew before DRC was formed, who I think was the inspirational person within DuPont that inspired DuPont's interest in digital. I don't remember this gentleman's name, but I had known him for many years, just by meeting him at conferences. And I'm sure he's another one of the—he might even be unsung to Lothar and Denny, I'm not sure. But he's the one, I believe, initiated DuPont's original interest in developing digital technology to replace film for medical x-rays. So there you go.

[01:02:39]
The beginning of all these technological breakthroughs are not when they're reported in the newspaper. They're unreported in the bowels of different companies and different people. But I'm sure this is not the only case of that phenomenon. I'm sure that applies to many things that we now take for granted. So that's how we got to DRC. And I don't know more than what I've told you just now about how DuPont's involvement, except that it was totally fundamental to what came after this.

Q: I'm just writing stuff down, so I don't lose my place. You had said that you'd wanted to check in and see where we were after about an hour. I have an hour and four minutes on my recorder time.

[01:03:56]

A: Now how much longer do you think we have?

Q: This is the only thing I had on my schedule for today. So I can be around for as long as I need to be.

A: Oh, I understand. How much longer do you think the interview would last if you had your—if we did it all today?

Q: Probably the best part of another hour, I would say. I'm trying to get a grasp of my notes with that question list I sent you the other week. Because I know we've worked and covered some stuff out of order. So we're further along than what I immediately think we are.

[01:04:48]
A: Okay. It's just that I sort of have a hard stop at one o'clock. I don't want to cut you off unnecessarily. What do you think would be the best thing to do? To finish up another time when there's no clock? Or try and get done by one?

Q: I think for Hagley's purposes, if you would be willing to give us more time to have a second half that was unrestricted, that would probably be for the best.

A: Okay.

Q: Okay with that?

A: Yeah, sure.

Q: Okay. Well in that case, I'll say for the recording, that this is the end of part one. And thank you very much for sitting down with me today.

A: Not at all. I'm glad all this communication stuff worked out. And I'll—Today is Friday, so I guess on Monday we could--

END OF INTERVIEW