Oral History of Harvey Jones

Interviewed by:
Penny Herscher

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Penny Herscher: So, Harvey, tell me a little bit about where you went to college and what you studied.

Harvey Jones: I went to Georgetown University as a math major and computer scientist. In high school I became enamored with a teletype connection to a timesharing system and taught myself BASIC programming, and from that point on I was enamored with computer science. Sold my chemistry homework to my classmates and that was my first entrepreneurial exercise. So from that math was one of the vehicles to get to computer science, so I studied math and computer science at Georgetown.

Herscher: So what do you think math has done for your career? Would you recommend it to kids looking at college?

Jones: I'm a long time out of college, Penny. The path to computers-- math is a magnificent major, but it's not necessarily the optimal path to computer science any more. Electrical engineering tends to be the better way to get there today, but if math is what floats your boat then that's great too.

Herscher: And so what did you go do after college? How did you pick your first job and what interested you about it?

Jones: I knew I wanted to do something in and around computers, but quite frankly I didn't know what, so I did quite a broad survey. My uncle had been very much involved in the early days of IBM, the founding of IBM, and so he pointed me at interviews at IBM and in fact I had a job offer to go to work as assistant engineer working on the Allegheny Airline's reservations system. And in my worst nightmares I still see myself, had I taken that job, in a basement in Washington D.C. working on that reservation system. But one of the other alternatives was I was introduced to a small company that was in the early days of doing computer aided design, a company called Calma who was based here in Sunnyvale California, but whose marketing headquarters were in Reston, Virginia very close to Washington D.C. And from the minute I saw computer graphics and what that was all about I became very excited about that and took a job as an application engineer at Calma really not knowing the difference between a printed circuit board and an integrated circuit, but knowing that computer graphics was a pretty exciting place to be.

Herscher: What was the problem Calma was solving for customers then?

Jones: In those days computer aided design was a very horizontal discipline. It was really computer aided drafting, and it really didn't matter what you were doing. Everything from well logs in a geophysical oil exploration, to mechanical drafting, drawings, to maps, to integrated circuits, it didn't matter. If it was graphic and needed to be digitized that's what computer aided design was all about in those days. So I got a very wide exposure to all sorts of engineering disciplines, and it was quite exciting. Over time, of course, the various disciplines started to narrow and focus and specialized systems were developed.

Herscher: So as Calma was growing back then who were the big customers that were using Calma computer aided design?

Jones: As I said, Calma was used in a wide set of disciplines. In mapping it was the oil companies. It was Exxon and Chevron, but in the electronics area it was the early semiconductor companies. Intel was the first electronics customer for Calma, and in fact the first Intel microprocessors were all digitized using Calma systems. Motorola was the company's largest customer and was being used in all of their various electronics disciplines. So companies like Motorola, Intel as well as various other disciplines.

Herscher: So then you left Calma to found a company, is that correct, with some friends?

Jones: Yeah. My early stage of career I migrated from engineering into sales and marketing at Calma, and some of my early mentors were there at Calma, and realized that I had a career in sales if that's what I wanted to do the rest of my life, but felt I wanted to underpin that with a little more education, and so I went back to business school and went to the Sloan School at MIT. And in fact, when I went to resign at Calma they were nice enough to offer me to basically pay my tuition if I'd stay in touch with them while I was in school with no strings attached. So I went through business school thanks to Calma, and I came out not expecting to go back to work for them, but they offered me the job as Vice President of Marketing for the Electronics Division, and my alternative was an offer to be the Vice President of Marketing for the Electronics Division of Computer Vision which was the primary competitor. And I had learned early in my career if you were in a monopoly market like integrated circuit CAD if you have the opportunity to manage the monopoly you're much better off than to go to work for the competitor. So I came back to Calma and moved out to California in 1980. But shortly after that Calma was acquired by General Electric with a very different mission. GE acquired Calma to drive, to be the front end of the factory of the future. Jack Welch was just taking over as the CEO and had a vision of robots being driven directly from the engineering CAD systems and acquired Calma to make that vision whole. The vision had validity, but it was not where my real interests were. And serendipitously a group of engineers were rolling out of Intel with a vision of creating the next generation of integrated circuit design automation, and that was a group of engineers that were founding a company called Daisy, and they asked me to join the founding team as the VP of Marketing and Sales. So I joined that founding team, and that's how Daisy was formed.

Herscher: And what was the vision? What problem was Daisy going to go after?

Jones: Daisy was about raising the level of abstraction, moving the engineer from the mask level where Calma was providing the design automation tools to a higher level, to the logic level, to the schematic level such that engineers could deal in digital logic and drive the mask design process automatically from a higher level, therefore being able to deal with higher levels of complexity in a manageable form. It happened to coincide with the coming of age of place-and-route software as well as what was known as application specific integrated circuits, so called gate arrays and standard cells. And those automated processes driven by companies like LSI Logic and VLSI Technology were tailor made to be driven from a generic CAD system at the schematic level, and that's what Daisy was all about.

Herscher: Can you talk a little bit about some of the early designs that you and the Daisy team worked on and what kind of products the Daisy system was being used to design?

Jones: The Daisy system was, as I said, it was in conjunction with LSI Logic and VLSI Technology and their gate arrays. Some of the early customers included Data General Semiconductor [Division]. If you've ever read *The Soul of the New Machine* a lot of that silicon was driven out of Data General

Semiconductor [Division] which was based here in Sunnyvale and used Daisy systems. But the range of customers were companies like Sun Microsystems and Silicon Graphics and others who were just getting started in creating their designs and needed a front end design system to drive the process.

Herscher: Now, Daisy went into the area of accelerators, correct, for simulation as the chips got larger, and for layout acceleration as the chips got larger. Can you tell me a little bit about that technology?

Jones: The company started the first products-- the company's first products were schematic tools that created net lists, but very rapidly it became clear that the value added for the engineer was not just drawing the schematic and creating the net list, but in fact aiding that engineer in the debugging of the circuit. And so that got us into simulators, also the place-and-route tools to drive the downstream process. There were proprietary tools from the various ASA companies, but there was also a need for a generic tool that could be used on a very broad basis. And so the business plan rapidly evolved from schematics and net list to include simulators and place-and-route tools. Then as soon as simulators came along there was a need to make them as fast as possible because the circuits just kept getting bigger and bigger, and finding ways to provide the engineers the instant gratification that they were looking for moved the company into accelerated simulation technology exploiting the fact that we understood how to put systems together, and to use digital logic to, in fact, simulate digital logic and do it cost effectively and in a way that could dramatically improve the price performance of simulators which created somewhere on the order of…. The first accelerator was a system called the Mega-Logician which was somewhere between a 10 and 20X increase in performance over a software based simulator. And the beauty of a hardware accelerator was it scaled with the hardware with each click of Moore's Law. The circuits were getting more complex that the engineers were building, but you could then use that technology to build faster simulators, so it was a virtuous cycle.

Herscher: So it was symbiotic between the tools and the chip capacity.

Jones: Absolutely.

Herscher: So then, as you left Daisy you saw an opportunity for the next level of abstraction before you joined Synopsys. Can you talk a little bit about what you saw before you joined Synopsys and then the vision you had as you grew Synopsys through those early years?

Jones: Sure. The schematic level served engineers to a certain level, but it was clear that Moore's Law was outpacing the design tools that were available. Not just from Daisy but also from Valid Logic and Mentor Graphics. So the race was on for where was the next level of abstraction for the design engineer. And increasingly the research literature focused on a technology called synthesis, which was the ability to compile from a high level language similar to a software language the actual logic, the digital logic, and to optimize that logic for a specific circuit implementation, and the algorithms to enable. The concept of compilation was not a new concept. It had been around a long time, but the magic technology of optimization, enabling those compilers to create circuits that were competitive with what an engineer could do manually by hand, brought on a new age of design automation. And it showed up in the literature, I read about it in a number of places and started to explore it as a venture capitalist, actually. After leaving Daisy I spent time on Sand Hill Road exploring what the next generation of design automation was going to be, and went out and between the various conferences, and reading the

literature, and going to interview various engineers in different places started to focus on synthesis as the next major breakthrough in design automation. In fact, I approached an engineer who you know well, Kurt Keutzer at Bell Labs. I flew out to Bell Labs, met with Kurt, and tried to convince Kurt to start a company with me to go after synthesis. He thought it was a great technology, he was very much in the middle of it, but he wasn't prepared-- he didn't think you could make a company out of synthesis, but he did point me to some friends of his, some colleagues of his that were trying to do that same thing, which were Aart de Geus and his team that were spinning out of General Electric. And Aart and his team, one of the conditions of getting financed was that they be prepared to bring in some commercial expertise and a CEO to lead the company. And so after meeting Art and Dave Gregory and the other cofounders of what became Synopsys it became clear that they had the experience and the vision of what to do, and I brought my own experiences to the table, and so that's how we got Synopsys off the ground.

Herscher: So it was a pretty revolutionary technology for engineers. How did you go about convincing the engineering world that they should change the way the do design?

Jones: Engineers have to deal with high risk, make high risk decisions all the time and so the number of variables that they can keep constant while they're taking those high risk decisions makes their design process more predictable. And so the idea of a revolutionary technology, like synthesis which would put their schedule at risk, and when they're betting their company that's a very big risk. The dilemma was how did you get those engineers to adopt a new methodology without putting their companies at risk? And so what we recognized at Synopsys that was, quite frankly, different than what other companies getting started and trying to pursue the same mission, was that we wanted to approach them with what I called-- with a blue collar solution, something that not only didn't add risk to their schedule but in fact reduced risk. And so instead of emphasizing the high level compilation of the circuit we emphasized the optimization of the circuit. And in fact, went in saying, "You don't have to design anything new. We can take your existing circuits and we can make them better." And we developed the confidence. We generated the confidence of those engineers in our technology by allowing them to take their existing circuits, put them into what amounted to a black box optimization tool and create a better design, and they were no worse off when they did that. That was really the pitch to them. They didn't have to worry about falling behind on the design cycle. They could, in fact, do it in parallel and if our solution was better they were welcome to use it. That was very appealing to these engineers to build on the optimization base. And once they developed a confidence in the optimizer, quite frankly, the compiler that sat on top of the optimizer that created the overall synthesis tool was a very short jump. It was no longer revolutionary. It was evolutionary because they developed the confidence in the underlying technology.

Herscher: So Synopsys tuned into one of Silicon Valley's big success stories, but for entrepreneurs many years from now who are trying to learn what was good and bad about it, can you tell me a little bit about the kind of risks that you faced? And as you went through the first $50 million in revenue of growth what were the unknowns that you had to think through or manage through, some color on what it's like to build a company from grassroots to a juggernaut.

Jones: Well, it starts with building great teams. Having been a part of a very good team at Daisy I brought that experience to Synopsys. Aart had a first class team of engineers that he had built, and the combined mission that Aart and I had were to take that engineering team and flush it out into a company. And we set as goals very early on not just to create a working technology, but to build a great company. And as such we set out to fill in the blanks in marketing, in operations and in all the other disciplines of

the business such that we could establish a foundation we could build a truly great company on. And lucky, there's always a little bit of luck involved, and it's a lot of work too because you sacrifice. You don't want to make the expedient decision to just fill a requisition. You want to find the right person for the job. And so for example for, I think, the first nine months of the company's existence I was the CEO. I was also the VP of sales because I couldn't find a VP of sales that I thought suited the business, so I had to go out and hire the individual salesmen and you know the story, motivate them and give them all the tools to get it done. So being the VP of sales and trying to build the company was not easy to do, but it was well worth doing because by the time we did bring in the sales executives we ended up with a team that was well suited and well matched to each other. So the biggest challenge of any business is putting a team together that works well together, is well led, has a clear focus on what they're trying to accomplish, and so a lot of the travails were around doing that, but we stayed focused on what our mission was and it worked out very well.

Herscher: That was the exciting time for Silicon Valley because a number of computer companies were growing up. Who were the early customers of Synopsys who were formative in the technology?

Jones: Sun Microsystems was our first critical customer. The workstation business was in the midst of proliferation. Sun was at the vanguard of that revolution, and they were using silicon in a big way, and wanted to innovate and differentiate themselves based on very advanced processor designs and application specific integrated circuits, and as such were very interested in finding tools that would give them an edge. And so Sun was probably-- and it just happened that we shared the same office complex with them, and so they were right next door, easy to work with, had the same vision that we had, and were very influential in Synopsys' early success. Their competitors were also very much involved in the business, companies like Silicon Graphics and the other computer companies. It was very much a systems oriented business at the time.

Herscher: So there was another company coming up at the same time doing simulation that was complimentary to Synopsys called Gateway, and history says one of the key moves was developing the market with a partner. Can you speak a little bit about finding the right partners to develop a new company with?

Jones: Sure. It started with the technology base. As I said, we built the early Synopsys on our optimization tools, and as we looked at what it was going to take to migrate the engineer up to the higher level of abstraction of a high level language, picking the right language and how to introduce that language to the market was very much on our minds, and it was not an easy decision. There was what amounted to an industry standard language evolving which was called VHDL. It was driven out of a major government program, but because it was out of the government it was public domain. It was accessible to lots of people and there was a lot of interest in it, but there were no tools associated with it. And just as our synthesis strategy was based on industrial strength optimization as we looked for a language to use as a first langue for synthesis we wanted to find a language which had complimentary industrial strength tools in the form of simulation to go along with our synthesizer. Verilog, as a gate level simulator, had become the standard gate level simulator. It was considered the fastest software simulator around. It included the most modern techniques for modeling and was being used by the most advanced engineers. The Verilog language, high level language, was considered an elegant language, but it was not getting very much use. We went to-- Synopsys approached Verilog and said, "If you'll let us synthesize from your language,"-- oh, by the way, it also proprietary. It was a closed language. It was

held very closely by the company Gateway Design Automation. We approached Gateway and said the essence of a strategic partnership is one where there's very little economic value passing between the two partners, but the success of one drives the success of the other, and that we expand the market for both by leveraging off each other. And so we went to Gateway with that proposal that if they would open up their language to us and allow us to synthesize from the language we would in fact grow their market for them. It took them a while to understand that, but when they did and as we got to know each other and realized that literally when one of our salesmen went in and made a call it was followed by a call by one of their salesmen and vice versa, and we didn't step on each other's toes, it worked incredibly well and in fact propelled both companies to do great things.

Herscher: So it fueled a lot of opportunity, and I know before you took Synopsys public one of the structural moments in EDA that led to having two giants was a discussion to potentially merge Synopsys and Gateway that didn't come to fruition. That must have been a very big decision for you at the time. Can you speak a little bit about what that was like? Joe spoke a little bit about it. Nothing that you think is inappropriate, but just for the way that the industry developed. How did that discussion come up and how did you look at it strategically whether you should merge the companies or not?

Jones: Sure. Now, when you say Joe spoke about it you're talking about Joe Costello, the CEO.

Herscher: Yes, sorry. Joe Costello, CEO of Cadence Design.

Jones: The CEO of Cadence.

Herscher: Which was then SDA. Sorry, yes.

Jones: Which was then SDA, but the discussions to merge Synopsys and Gateway preceded Cadence and Joe Costello, and in fact were discussions between Aart and I; Aart de Geus and I, and Prabhu Goel, the founder of Gateway, and there were quite a few discussions along those lines in lots of hotel rooms, quiet discussions. In the end it was not a matter of-- it boiled down to the fact that Gateway had started earlier than Synopsys. It was an older more mature company than Synopsys, and as such had been in the market place and had created a revenue base at an earlier stage. So they were larger in an absolute revenue sense, but in fact we were growing faster. And Aart and I were very clear and understood very well that our value was not correlated to the revenue that in fact it was more correlated to our growth rate, and that it was a matter of timing. Quite frankly I think if Synopsys had been founded earlier or Gateway had been founded later and the companies were perceived to be closer to the same size we probably would have merged the companies, but in fact Gateway was ahead of us. And quite frankly the other aspect was that Prabhu Goel-- the companies had been formed with different financial structure. Prabhu had bootstrapped Gateway. He had never taken, or I shouldn't say never, he had taken very little venture capital where Synopsys had taken not too much venture capital, but more venture capital and was a more distributed ownership model where Prabhu owned 90 percent of Gateway or something like that. And one of the tricky things, Aart and I had very clear sense of building a great company and viewed the relationship with Gateway as a little bit tricky because we were dealing with what amounted to a closed company owned by one person and the decision making processes could be pretty difficult. And that panned out, quite frankly, because it was only a couple months later that Prabhu called up and said, "Sure you don't want to merge? I'm about to take the company public. You can join me." And we said,

"We're just not ready for that." And then, quite frankly, he never did go public. He then sold the company to Gateway Design Automation.

Herscher: To Cadence.

Jones: To, excuse me, to Cadence Design Automation. Then we had discussions with Joe about possibly merging with Cadence and we may have been full of ourselves, but we thought we had a different world view of where we could go as an independent company and chose to take that route.

Herscher: Yes, it's a very interesting history. So you took Synopsys public as then the strategy began to grow, to be bigger than just synthesis. How did you decide what avenues to take to grow? Were you working with customers? Were you scouring for technologies? You went through some big steps to broaden the strategy from synthesis. Can you share a little bit about how you thought about that and how you made those decisions?

Jones: It was clear that synthesis was the newest what I called active design automation technology. It actually created value for the customer, and as such it did change the design methodology for that customer. So from a strategic point of view, from a company building point of view we were in a unique position to build off of this new methodology that was anchored on our own technology, and so as such we started to figure out how to exploit that active technology which we controlled, 80 percent of the chips in the world were being synthesized with our tools, and adding complimentary simulation technology, place-and-route etcetera, that exploited the fact that the intimacy with the synthesizer became the essence of the strategy. And so then it became what were the tools that were available, that were most valuable to the customer, and one by one we began to pick them off with the intention to build a broad based design automation company where synthesis was the anchor technology.

Herscher: What was the hardest thing about building such a successful company?

Jones: Managing growth. You've heard that before, I'm sure. Managing growth is always hard because as you grow the processes-- you worked very hard to put in processes at one stage, but eventually you outgrow those processes and staying ahead of having your management processes stay one step ahead of your growth is easier said than done. Also developing your human capital, the team that served you well as an entrepreneurial entity may or may not be the same people that serve you well at different stages of growth. So growing a company is a very hard thing to do because you have to continuously reshape the company for the next phase of growth. So lots of hard decisions are made about whether you've got the right people in the right jobs, your investments you made in the past whether cutting loose of certain things and investing in new processes is not an easy set of decisions, but when you do it well the results are good.

Herscher: So you've been an entrepreneur in the Valley for a number of years now and involved in other companies apart from Daisy and Synopsys. Can you talk a little bit about your role and Synopsys's role in Nvidia early on and the observations you have of Nvidia going through similar rocket ship kind of growth.

Jones: Well, as the CEO of Synopsys I was exposed to lots of different businesses as customers, and the founding team of Nvidia were, in fact, the core engineers that were our first customer at Synopsys. So we had a very, very close relationship, we Synopsys had a very close relationship with the team that founded Nvidia. But before we get to Nvidia, as the CEO of Synopsys, and working with my own board of directors, the board recognized that Synopsys, not just to my credit but to the credit of the entire team, was a very well managed company, is a very well managed company. And the board, individual board members came to me at various times and asked me whether I'd be interested in sitting on other boards in their portfolio companies to help their young entrepreneurs get off the ground. And quite frankly at first it was a hobby. It was a learning experience as a way to see how other businesses operated, but over time I started to spend more and more time working with young entrepreneurs getting their businesses going. And as my own role evolved at Synopsys I eventually morphed into a private venture capitalist. And so the rule of thumb I tended to use in picking companies to work with was one, did I like the team because in any circumstance it's about who you're going to work with. Did I think I could add value to the enterprise? Would I learn anything from the enterprise, and fourthly could I have some skin in the game? Could I make an investment, take risk along side of the venture capitalists with the result of building great businesses? So it was a migration. As my time as the CEO of Synopsys started to wind down I started to gear up as a private venture capitalist, and fortunately had quite a few successes, one of them being Nvidia. Nvidia was founded by this young group of engineers from Sun, the graphics group from Sun, and they raised high quality venture capital from Sutter Hill and Sequoia. Those venture capitalists encouraged the founders to find an operating guy to add to the original board, and so in fact I was approached by the founders to see if I wanted to join that board. And that was in 1993, so that's 16 years ago, and Nvidia's been through-- and it's been a great ride. It's had more than one near death experience along the way, but it's a credit to the entrepreneurs that they not only survived those near death experiences, but built truly a fabulous company that's serving the world at large with visualization technologies.

Herscher: Do you think near death experiences can make a company and their management team stronger?

Jones: There's no question about that. Managing through adversity is very much a maturing process. There are those who don't survive it, but those who do and learn from the experience come out as better managers. There was a point in time in the early days of Nvidia where Microsoft decided that they wanted to put Nvidia out of business. We were a small company to begin with, but we had a very promising technology. Microsoft felt somewhat threatened, I think, and approached all of the various OEMs that were interested in Nvidia and said, "Interesting technology, but we're not going to support them." And those OEMs just said, "Okay, well if Microsoft's not going to support them they're not going to go very far," and so we were in tough shape. And arguably we might have had an action against Microsoft at the time, but Jen-Hsun, Jen-Hsun Huang the CEO, was smart enough to recognize that that would be a hollow victory because we'd be 10 years in the fight and we wouldn't have a company. And so he said, "If we can't beat them join them." He cut the company back from, I think we were about 100 people then, and he cut it back to five people. And we basically restarted Nvidia after the first generation of product, and based on making Microsoft successful in their efforts to get into the graphics business and then rode that curve. So that's what I mean by a near death experience. And Jen-Hsun, it was a very tough decision to make, but it was the right decision to make and it worked out very well.

Herscher: And there was more than one at Nvidia, you were saying.

Jones: Well, the culture of the company has always been to not get complacent. It's pretty challenging when you're designing the largest integrated circuits in the world. I think the most recent generation is something like 5 billion transistors or something on the die. When your design cycles are 18 months and your product cycles are six months your every product is a bet the company decision. So the story I told was our only, I think, real near death experience, but the culture of the company is that each product cycle is a life or death set of decisions, and Jen-Hsun does a wonderful job of keeping a spirit in the company that is we can't get complacent because we miss a cycle and we're in big, big trouble.

Herscher: Great. Can we stop for a second?

Herscher: So, Harvey, can you talk a little bit about your perspective on the evolution of design automation as it relates to Moore's Law and how the two have interacted as Silicon Valley has grown up?

Jones: The earliest design automation tools were geared towards engineering productivity, making designers more productive, more gates per unit of time to get their chips designed. But rapidly as Moore's Law became evident, and for those who are-- if you're not aware of what Moore's Law is it's about the fact that the complexity of integrated circuits is doubling every two years. And Moore's Law, Gordon Moore expressed that law 30 plus years ago, and the complexity of integrated circuits have been doubling every two years. And design automation has grown up along side of that unbelievable increase in design complexity. So, as I said, in the early days design automation was about productivity, but rapidly it became how to enable engineers to deal with this unbelievably exploding level of chip complexity. And rapidly the design automation paradigm became, move the engineer to a higher level of productivity and let him or her get a higher level view over the design process, and therefore deal with complexity that way. Give them the tools to compartmentalize the complexity. And so with each stage of design automation, moving the engineer from the physical mass up to the schematic and from the schematic to the higher level languages, it was about managing the design complexity. The productivity was there. The productivity was huge, but it was secondary to getting one's arms around complexity.

What's happening now is, and that march continues to march on, but what it's done is it's now taken a leap from productivity and a design abstraction at the chip level to what many people refer to as a platform level. That is the engineers are no longer dealing with gates and don't want to deal with the silicon if they can avoid it. and so companies such as Qualcomm and Broadcom and Nvidia and Marvel have developed what are called application processors that enable engineers to write software for application processors to effect their, to implement their designs without having to get their hands dirty in the silicon. And so the most fundamental change that's gone on in design automation in the last ten years is that in the past where design automation had enabled more engineers to design chips, now design automation is focused on enabling more engineers to design systems. And the costs of chips-- chips continue to get more complex, but there's fewer number of designs being used to shoulder a broader number of designs. And so from an industry point of view the electronic design automation tools, chip design tools, the market has actually shrunk because the number of design has, in fact, decreased. But design automation in its broadest sense, tools to make engineers more productive and to handle complexity, has continued to expand. Embedded systems companies such as Wind River, which is a company I was associated with, Tensilica, a company I helped cofound which is building configurable microprocessors to allow engineers to build those platforms and to build on top of those platforms, is another approach to getting at that productivity. So the productivity march goes on and the level of

abstraction gets higher. Design automation as an industry has had to change to step up from pure hardware into the software realm.

Herscher: What do you think is going to happen over the next ten years?

Jones: The platforms available from companies like Nvidia or Broadcom are going to continue to get more complex. The tools available to engineers to employ those platforms will get better, and more of the same.

Herscher: Do you have any observations on Silicon Valley, how Silicon Valley has changed over the last 20 years.

Jones: Silicon Valley is a shorthand for the technology revolution, but Silicon Valley has now outsourced a big chunk of itself around the world. Probably the biggest change in the 30 years that I've been here is to watch Silicon Valley go from a fairly compact design community to one based on global communications. Global engineering talent, has been one of managing engineering resources around the world. And the flow of intellectual property in and out of the Valley to China and India, Russia, everywhere, everywhere where engineers are being trained is quite fascinating to watch.

Herscher: So, Harvey, can you tell us about some of the most satisfying experiences of your career?

Jones: I think what I've always taken the most satisfaction from is working with young entrepreneurs and helping them, leading them and helping them shape their ideas and seeing it manifest in their own success whether it's been from an operating point of view at Synopsys or more recently in various entrepreneurial enterprises. I worked on a number of companies in a number of disciplines, everything from various design automation disciplines. Simplex Design Automation was one company, Tensilica another where working with great young entrepreneurs who were motivated to go out and conquer the world I've been able to share with them my own ideas and seen them take those and with their own experiences turn them into very successful enterprises.

Herscher: Great.

Jones: Was that enough?

Herscher: So then my second question would be, through all the experiences you've been through could you share an example of one that was a great learning for you and that if you knew then what you know now you would do it differently?

Jones: One that comes to mind is in the early days of Daisy we were the first company to bring out an engineering workstation, and as such we were well ahead of the pack and didn't have the ability to build on general purpose workstations, and so we have to be totally vertically integrated and build our own workstation as well as the entire software suite. That served us well because we were able to get to

market quickly, but when generic workstations were available and people were able to build, our competitors were able to build solutions on top of those general purpose workstations, we were put at a disadvantage. We worked to make the transition over towards general purpose workstations, but it took a long time. We had an installed base that we felt responsible to migrate along with us. And there's the old story that the reason God could create the world in seven days was he didn't have to deal with an installed base. We had an installed base and we had a responsibility to carry that installed base with us. They were one of our greatest assets. But the legacy of that installed base kept us from migrating quickly. If I had it to do over again I think I probably would have done something like create a parallel program to build an alternative solution. If you don't obsolete yourself somebody else is going to obsolete you. So you might as well obsolete yourself, and we probably should have made some harder decisions then.

Herscher: That's great. Thank you.

END OF INTERVIEW

