

Law, Policy, and the Convergence of Telecommunications and Computing Technologies

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DEAN JEFFREY S. LEHMAN: He returned to Ann Arbor to found Avalon Investments, a technology-oriented venture capital company and Ardesta LLC, a venture firm that is focused on the microsystems industry. I should say that Rick has been a real powerhouse in Michigan's business community ever since he returned and he has really single-handedly changed the environment for entrepreneurship in Southeastern Michigan. Please join me in welcoming Rick Snyder to the conference.

RICK SNYDER: Well, thanks for that nice introduction Jeff I'm very happy to be here today. One positive was actually getting a chance to come talk here. Because every time I still go back to Hutchins Hall I have this flashback of the night before that I have to study or I have to do something. So this was a little bit less stressful by not having to think about those things even though it was almost 20 years ago. What I'd like to talk about today is tech transfer and investing, tech investing.

Why two topics? I thought it would be interesting, they actually tie together. First of all, I'd like to spend a few minutes talking about tech investing, the current environment, and what's going on. And then I'd like to talk about tech transfer. And to put it into perspective, why talk about tech investing. Well, everybody wants to talk about tech investing. In a lot of ways it's a fun topic now that I can socialize with people because it's right up there with the weather, sports and technology. For those of us from the Detroit area, the way the sports teams work, other than the football team, tech investing is usually a much more upbeat thing to talk about believe it or not, even in this market environment. So I'd like to cover a few comments and thoughts there and then I'd like to get into tech transfer. And why tech transfer when you talk about tech investing? Well, you talk about the long-term, of tech investing and when you talk about technology investing over the long term, you have two issues. You have supply and demand. In tech investing, the demand drivers are a couple of things--one, productivity and two, quality of life. In terms of productivity, we've seen what happened to the economy over the last dozen years or so. In large part productivity was a major driver of that and it was in terms of people's knowledge base but also technology. The other piece is quality of life. In some ways that's a tough question. It's a value judgement to make whether this technology has actually improved our quality of life very much. In many respects I think it has, but if I took a poll and asked for all the hardware to go in a pile here on the floor I think we could make a big stack of phones, pagers, other kinds of electronic devices, which in many respects are great things but you can't escape them in today's world.

On the supply side, that's the side I really would like to talk about tech transfer in that context. You have to ask, where does the supply of technology really come from? And in terms of there

are many sources of that, but terms of the largest single source of technology being developed, that would be our universities and research that takes place in those environments. So when you talk about technology in the long term, you have the demand side and the supply side. And on the supply side the majority of that, in large part, at the core is coming from universities, national laboratories, and other research facilities around the world. So I think that's the relevance of tying those worlds together.

Let me jump into tech investing. The year 2000--talk about going up a roller coaster and coming back down. Clearly that was the peak of the cycle we were in and that phase of the environment. 2001, the way I describe it, we're in search of the bottom and I think we're still looking. In terms of seeing companies going out of business, last year in the technology industry I think we're going to see a multiple of that this year in terms of who won't survive. Why did this happen? A lot of it, if you get to it, is we finally came up to looking at the greater pool theory about who's the next buyer at the next wildest price and saying this system doesn't work anymore. Because the prices were truly outrageous. If you get to it, it's really economic reality returned. Things were so good; there was a lot of great things going on, but at the same time things clearly got out of whack. So economics means something. That old thing about, P-to-P is a new hot term in technology. How many people know what P-to-P is? Fair number. It means path to profitability. Did you ever think that should be kind of a hot buzzword? Most of us would have thought that should have been common sense. So if you think about it, good things are going on.

The other piece is tougher economic times and you have to wonder how much the two interrelate. But the economy is slowing down; times are a little bit tougher than what people are used to. And it's really interesting to see young people in the technology industry that have never been through tougher times or a recession. It's really an interesting experience. If I go back to when I graduated from law school from here, it was 1982 and I took my first job in Detroit. The next closest thing would have been going to work in 1929. So some of us have a different perspective, and it's interesting to watch people react to their first tough times in terms of an economy. The flip side of it all, I wouldn't underestimate all the great things that took place and the crazy valuations. There were a lot of really fabulous, terrific opportunities created. Really paradigm-shifting companies that are going to do great things. The real question was what were all the wannabes created around it that managed to get funded, supported and put in the public market place.

What's the current investing climate like? Let me switch into that in terms of getting pragmatic. Say you're out there trying to look in the equity markets today. First of all, obtaining VC is really tough these days. If you want venture capital to fund your company, good luck. In terms of why this is happening, I would describe that as the food chain is fundamentally damaged at this point in time. And there is a food chain out there. And the food chain sort of works like this. It goes from entrepreneurs to angels to seed capitalists to first or early-stage investors to later-stage investors to mezzanine investors to the public market place. And to the extent that food chain gets broken somewhere, it has real ramifications on everyone. If you look at now and think about the public market place, the public market place is really not supporting a lot of new technology investment. There's not a lot of IPOs (Initial Public Offerings) coming out, so what happens is that food chain gets jammed up and all those people that were supporting the earlier stage of that path are taking most of their funds to reinvest in the companies they had already supported. So there's quite a bit of investing going on, but a lot of that investing is people looking at their own

portfolios instead of saying, "I can count on someone else investing in my companies," "I need to save my funds," and write those checks to the companies I've already backed. And as that happens at each tier, it creates a starving off effect going right down to the entrepreneurial level in terms of who can obtain funding. The other part that's interesting is just watching companies that actually got out and made it to the public market place. Everyone always thought that was the brass ring. Once you're a public company, you've made it. I think this is a unique time when you can look out and actually watch companies literally die because they're public companies. There are a number of companies that I've seen that if they were private they would probably survive. They would actually get some capital. But because their stock market values are so low they're down to the point of literally getting delisted from exchanges. And you're finding groups spring up now to literally make a business out of how to take those companies private again. So it is a very very tough environment.

In terms of how I see that going, I think it's going to continue for some time. I don't see a real quick turnaround coming. Obviously I wouldn't take my advice too far to the bank. If I had the right answer I probably would be retiring in the next six or 12 months. But in terms of looking at the future my guess is that it could be as far out as the later part of 2002. One thing in the technology industry I'll tell you is it tends to follow seasonal trends, believe it or not. And the best times tend to be as you go into the holiday seasons and right after the turn of the year. And I don't see a lot of dramatic things happening this year. I see improvement coming, but I think it could be another year after that before we see significant changes.

And what's going to make that happen? There are a couple drivers, which will eventually get me back to the concept of tech transfer. One of the things that will change is, obviously, the macro economic environment. As we find where the bottom really is and people start regaining some degree of confidence that they know where the bottom is, things start improving. So the macro trends will make a difference in deciding when tech investing becomes popular again. The other corollary of that, the other thing that traditionally makes things pop, is people identifying what they think is the next really hot thing. Because generally it's not tech coming back as a wave; when it's been down it's really leadership in two or three industries or sectors that really stand out as the really cool, neat next thing. I'm thinking about the Internet. The Internet took off, there were a lot of other sectors that were in technology that didn't follow at first, but followed later. So I think a lot of people will be looking around to say, "What's the next hot thing?" Examples people would already look at but are having their own issues would be in the telecom area. Either it be the optical side or the wireless side. Biotechnology is always a good one to look at. I like to joke that biotechnology goes in five-year cycles. It will come back every few years because there's always people and people always need solutions.

And then are there new things that we haven't identified yet. Just to tell you a personal bias, I've structured a whole company around microsystems of all things. Most people don't even know what a microsystem, is but just to give you an idea, there are new things being created out there all the time that could be one of the next things popping up. And as those things come about, that will be one of the key drivers in deciding when tech comes back.

So you really get to the question of tech transfer now and tying this back together. When I talk about the next hot things being the drivers, where would those come from? Those next hot things, in large part, will come from a tech transfer environment. Again they're not going to be

things that came right out of a university. But the next hot things that show up in 2003 may be things coming out of a university today or things that came out two years ago or four years ago. Those seeds were planted then and they're starting to flourish in the background behind these tougher times, and their moment will come where people will realize their fundamental value and you'll watch them take off.

Let me give you a little background on tech transfer because I think that can be useful and that's where I have a fair amount of experience over the last few years. When I define tech transfer, I really talk about taking technology in terms of either licensing or starting up a company out of either a university or laboratory and some non-profit environment, and create a new entity. And I'm just curious how many people here have ever been involved in that kind of tech transfer? If you look around it's clearly a minority group. I wasn't sure if I'd have to ask if you ever licensed or done a startup. But it's a very small number. And that's the one thing I'd mention to you. When you talk about tech investing, there are extremely talented tech investors out there, but when you really ask who can take technology or people that know how to do tech transfer out of a university, you're probably talking at a subset that's probably less than 5 percent of experienced tech investors. So that's an even more challenging environment. I think that number is growing pretty quickly, but it is a pretty small crew.

Again, who cares about tech transfer? I've talked about the macro side, let me talk about some of the constituents and why they're interested in tech transfer. The first group would be the universities. Why do they care? Two or three reasons, there's multiple reasons. One of which is they get some revenue out of it. In many respects I would say that's not the major reason they're doing it. Again, universities are always pressured to come up with new revenue sources and they're important. They need to be supported. So they make money off royalty streams, equity interests, and things like that. More importantly though, doing tech transfer really is a magnet for the future franchise of that institution. It's really the key to attracting the best faculty, the best students, finding positions for those students to go into the long term, and really creating a relationship where the university can grow and flourish by being partners with its neighbors in its community.

In terms of the private sector, why does the private sector really care? Well as a practical matter, if you look at our economy today, most of our basic research is taking place in the university environment. Companies can't survive; again profit is a drive, they're pushed to achieve. And they can't be profitable if they have to do all that basic research. They can take it, they can make it into products, but they can't afford that basic level. So they really are dependent on the universities in large part for, again, I would describe as the majority of the true innovations at the basic science level. The other part is, where's the talent coming from? Where are the future scientists, the engineers, the management talent? They're coming out of the universities. And by building those relationships, that's a core use there.

And the other piece I would throw out to you is that I think the communities, government, and the public sector in general really cares about tech transfer. I think the evidence is still growing, but if you talk to most people that are involved in economic development, they'll tell you over the long term, tech transfer is one of the greatest single drivers of future economic development. And it won't be the only single source, but again it's that spark, that seed that really creates the nucleus for later things. And the most obvious example is the valley. There's really a case of

Stanford, different universities like that, and the seeds that were planted there and what came out of those places really evolved into what everyone just calls the Valley today. But it went back to educational institutions at its core.

The other one is the general public starting to learn what tech transfer can really mean and what universities can do. Most people still don't think about, did the university come up with this initial technology, where did it come from? There is a great obvious one that's sitting out there that I think most people finally did appreciate the universities as developing. And that's the one we're so excited about and it has changed our life in the last few years and that's obviously the Internet. First and foremost, if the universities hadn't gone out and done it, the Internet would not exist the way it does today. In fact, the universities are the key driver on Internet Two, which is headquartered right here in town. So you can see there's a lot of needs besides just the investing cycle that's important. There are a lot of players in this that have key concerns and issues, but good drivers to say, "Let's do this really well."

Let me talk about the size of tech transfer because I'm not sure most people would realize that either. How big is tech transfer out there? In terms of the research done by universities, in terms of sponsored research by a segment of the universities that actually report this number, the number in 1999 was about \$23.5 billion of research. That's a staggering number if you think about the investment in one year in research. And again when I give you a research number like that, that includes everything from the humanities to engineering to law, all the different fields of sponsored research. But it's an incredibly large number. If you think about it, the stats also show in terms of patents issued and licenses given, they're both over 3,000 a year. So in terms of new things going on, commercial relationships being started with licenses and different things, over 3,000. The number that did surprise me when I looked at the stats, is that they showed 275 startups. I actually expected the number to be several times that. So I would describe this as an industry when you talk about tech transfer that's got a tremendous core, but if you think about it, we really shouldn't be surprised to see that startup number grow into the thousands over the next few years. And I'll talk about how I think some of that's going to happen next in terms of some of the issues that are out there that you'll face if you're doing tech transfer and what I think some of the kickers are to make that number go up significantly more than it is today.

What are some of the key issues? Because, again, this is a group, from a legal perspective, a lot of lawyers in this group, and you always want to know what are the kind of contract issues you'd get into if you're trying to get something out of a university and into a commercial enterprise. Let me just walk through a few because I don't think most people would have thought of these in terms of key concerns. One of the first issues you face is the issue of publication versus secrecy. When you talk about universities, they're there to disseminate information to the public, is one of their key drivers. If you think about building a profitable business, do you want to go give away your best secrets? No, so you really get into this issue about striking a fair balance between publication and secrecy. Again this isn't a binary thing, there are ways to strike that balance. But in terms of issues you'd normally face you really have to address the issue of fundamental knowledge that needs to go to everyone versus key pieces that really are key drivers to make a business successful that if everyone had you'd be a commodity.

A second issue that I throw out to you is the thing of cash versus equity and fair compensation; valuation. It's really amazing, I have found, and again you're getting kind of a biased perspective

because I'm on the private side, but you'll see technologies come about and sit there for several years and no one will put a value on them in terms of the university, no outside party. But all of a sudden when the phone call comes in to say, "We'd like to license it," to watch that value change very dramatically in the course of one phone call. The funny part is, if two parties happen to call it doesn't double, it can go up exponentially. And again I'm not trying to pick on the universities. I think they do a good job of making a tough evaluation. The main point I'd make out to you is there's not a good benchmark or place to get information to say what's the history of fair value. Again when you talk about 275 startups in a big year, you don't have 20 years of experience or thousands of data points to say "when we do this next time here's the normal range." So it's almost a one-off negotiation out of the gate when you start these discussions about what is fair value. And then what should be paid in cash and royalties or what should be given in equity.

The next one is exclusive versus non-exclusive. This is always a challenging one because a university, particularly a public institution, has an interest in non-exclusive arrangements. Again disseminating information to the public. If you're a business, in large part, obviously you want an exclusive arrangement. In some fields fundamentally the technology won't have any real value, even a patent, if it's on a non-exclusive basis. If you look at areas like pharmaceuticals, think about the pharmaceutical business, they live and die whether a particular product is under patent coverage or not. Because the day the patent runs out it goes generic. And these can be worked through, too. The universities do a good job, but the way you normally solve that problem is through what I would describe as a system of milestones. The university is not going to give an exclusive right to a company or an organization without actually believing they could get out in the public good in terms of having things happen. So you get over the barrier of saying how do you strike that balance by negotiating in milestones. To say the company has to do certain things with this technology over a set period in terms of either investing so much money in it, in terms of achieving so much in sales or revenue, in terms of getting it out to so many people within a set timeframe, and if they don't, it can revert back to a non-exclusive license or they could lose the entire license.

And then, finally, one of my favorites is the cultural side of negotiations. This is a personal favorite because again there is no set answer but this is where experience is key. Think about people in the university environment. What's the normal timeframe for decision making in the decision-making process in a university? I don't know if I need to say anything more. That's probably the safest answer for me other than hearing some of the humor. Typically it's a multi-part discussion where it involves group decisions, multiple layers going through this thing. For example, licenses here have to go through the Regents in terms of ultimate approval. But you're used to private companies that quite often can have the person sitting there saying, "Where do I sign, where do I sign?" And then you get the other fun, cultural issue, again no value judgements, that because of the decision-making cycle, universities are very deliberate and thoughtful about it where in the private sector, I'll admit it, we're fairly ADD (Attention Deficit Disorder). So it's like watching the tortoise and hare in a box go at it, in terms of picking on both sides. But you can work through those issues.

And then finally, another of my favorite ones that you get into, is in terms of the companies themselves. Usually there is a scientist, a technologist, and an engineer involved with the technology. And you have to ask the fundamental question, in many cases in startup, what's the role of that person? I can tell you from the private sector side, I usually want that person to

remain being a great faculty member, but be available to be a consultant or advisor, something like that. The university, typically, wants this person to stay and be a great faculty member. A strange thing happens, it's much like that phone call I mentioned, things happen when that phone call comes. When the scientist learns that they can be part of a startup, they're now Jack Welch in terms of thinking who they are. They think they can manage the largest multi-billion dollar corporation out there. Or they're Bill Gates in terms of being CEO. And it's one of these things, and I often joke, and I'm really going to get it done, I think they need to rewrite the stages of greeting for the stages of entrepreneurship. For faculty people in particular, where they go through this whole thing believing they can be CEO, then they deny it, then acceptance comes, and you go through those things. I will tell you if you're going into that business, you literally need to build in about a six-month to year-long window for them to work through that process in most cases. So just to give you some fun background, those are some of the key issues.

What are some of the key trends in terms of looking at tech transfer? One of the things I think you can tell from my comments about key issues I would describe in this field, and it's kind of interesting because we're talking about typically science and technology. This is an art, not a science, in terms of doing technology transfer. This is a case where it's building people relationships and it's very much analog where it's fuzzy and you have to tune the dial versus being digital. So the funny part about this is, we're working hard to get out exciting technology that people think is digital; it's true science, it's hard science and the only way to make that really happen is being fuzzy, and thoughtful, and people oriented. In terms of what else is out there, I think over the last three or four years there's been a realization about how important this field is. This was a sleeper in terms of the missions of universities, in terms of how the private sector viewed tech transfer. Most people from the private side didn't believe it was that necessary and I think that view's changing. So a lot more importance, a lot more quality is going into this. And I think if you look at it, where's that happening? The quality and quantity of stuff going on and what's taking place at the leading institutions has gone up exponentially in my view over the last three or four years. And I would use the university here as an example. I mean if you look at the sponsored research dollars, they've exploded. There's nearly \$600 million in sponsored research at this institution. If you look at the number of startups, licenses and patents, they've gone up dramatically here. In terms of the staff and the support from the technology transfer side, that's gone up dramatically. And also what they've done, is they've brought in people from the private sector and that experience base to be on their side, which has helped tremendously. So I think we're seeing vast improvements in terms of what's going on at the leading institutions. The tough part, like I said, there are not thousands of data points out there for institutions who don't have large budgets or huge expenditures in these areas. It is still really tough and there are still islands that need tremendous help. The hard part is there are not a lot of groups that can reach out and help them. So that is a challenge that I think we're going to have to address collectively. Because I view it as one of those things people think about, the top institutions, and I would put to you in some context that virtually every large major research institution in some ways is the world's best in at least one thing. So when you hear about the top 10 or 20 schools they may be the top thing at two or three things, but even those other schools quite often may be the world's best at some field that could really revolutionize things.

What else is out there? We need to create this symbiotic relationship. If you look at where the universities are going and the private sector, we want to really create more centers of tech excellence. It's a community thing. The universities cannot make this happen in terms of driving

tech transfer by themselves. The private sector can't make them happen by themselves. People want economic development so what I think we need to do in terms of this country is figure out how to continually create new and flourishing clusters of technology, these real tech centers. And to give you a few thoughts. If you look around the country, it's fairly bifurcated in terms of where the country's at in terms of technology centers. Clearly there's the Valley. I would actually not call it just the Valley, but the Bay Area. If you had to create a tier one, that's tier one. And I would actually suggest to you, after that, you're in tier two. There are some areas that have done very well and are flourishing. Two or three examples there; Austin, Boston has done it for many years, Seattle is flourishing because of the software industry and different things up there, and telecom in Washington, D.C. is very strong. There's a lot of places trying to emerge and join this second group. I don't know how big the second group might get, but there's more to be brought into the fold. I would argue Ann Arbor's on the cusp. It has a lot of the aspects in terms of the field but we have to get more belief in ourselves and a little better organized. But there are things that are happening to say how can we push this so we really can create these centers around the country. And it's funny, you may not think about it very often, I actually made that joke when I first came back in '97 and created Avalon. People asked me what I was doing, and I used to joke with them. I called it, I said I was doing venture capital in the hinterlands. And the point is, I didn't view that as a value judgement; it's really outside of two or three of these spots in the U.S. Virtually every place is the hinterlands. That will change, it has to change, and the question is where are those few spots?

Instead of just speculating as to where those few spots are, I would near the end of wrapping this up. I would like to share with you the five key criteria I think a community and area needs to have to be viewed as a tech center. It's really a balance of these five key criteria that need to be pulled together if you want to be one of the outstanding places. The list of five goes like this. The first thing on the list and, again, they're not in order of importance. The first thing on the list would be technology. Again, that's one of the critical aspects of having a university, and you'll find virtually all of these centers are centered around universities in some fashion. The second piece is capital. Where is there a cluster of capital? And I was joking about this, they came up at lunch and one of the people I was saying, was joking about how the attention span of a venture capitalist, if it's not 20 minutes away they're not going to look at it. And in the valley that's true. So you need to create a center of capital. To give you some idea just in terms of stats, when I came back to Michigan, Michigan was ranked 38th in the nation in venture capital. I haven't seen the most recent number. My guess is we're probably about 12th to 10th now. In three years it's changed that much, and it's made a tremendous difference in the environment here. Next is infrastructure. You need an infrastructure of attorneys, accountants, and bankers. Real estate isn't the key driver. It's really creating that society of people who know how to get things done and create that buzz. People would be the fourth point. And clearly you can see it's not in order of importance when I put people fourth. In terms of the people you need, one we've talked about is the technologists. The biggest missing link in most of these communities that you find are the CEOs, and probably the VPs of marketing. I would argue that in most places to create a real tech cluster you don't need hundreds of these people. You probably need a dozen or so to get you kicked off. Typically it's not a long-term problem because over the longer term the institutions, the very schools that are creating the research, are probably turning out outstanding business candidates or candidates that can go work in businesses. And the last one is culture. It's really having that culture to say, "How do you think out of the box? How do you push things along? How do you challenge the norm?" In some ways I would postulate to you that the success of the

last decade or so is not a positive in making that happen. If you think about it and look at most people, most people were very happy, very content over the last decade or so. The best time to change your culture to get that buzz, to get that fire going, is when times are tougher. So in some ways, to the extent the economy's slowing down, this is a good chance to address that cultural issue to see if you can get people to say, "What new do we have to do? How can we think about things a new way? How can we challenge the norms? Are we content as we should be? How can we get out and cross some new bridges?"

So those are the five points I would throw out to you and again, it's like linear programming. You almost have to strike them up in some balance and always go against the one you're doing the worst on. Let me just summarize the things that I've covered today and hopefully you've found them to be of some value.

The first thing is, we're waiting for tech investment to bottom out. Not a fun adventure if you're a big tech investor or you're a venture capitalist like I am in some fashion. At the same time it creates new opportunities. The other thing to remember though, is the next cycle will start. This is a cyclical thing. This is the way it always works. In terms of what's going to make that happen though, I would really be looking for what are some of the next hot things? Because, again, the macro thing is an issue that we can all address. You'll read about it in the paper or you'll see just from your own life or talking to people. But helping pick out what could be some of the next hot items to really go after. The other thing is tech transfer is growing in importance. And people are starting to realize how important it really is. In terms of the number I mentioned before, the \$23.5 billion and the startups and all that, I think you're going to see that number go into the \$30-plus billion range with the investment in the future, but I hope to see that startup number go up several fold. So we're making great progress there.

And the final point I'll leave you with is that I admire the Valley. I think they've accomplished just incredible things. I mean, this is something we'll be talking about the rest of our lives and our kids will be reading about in history books. But for the long-term benefit of society, our economy and the world, other clusters need to develop and evolve. And the real challenge will be how can we take tech transfer, how can we take that basic demand question that people are looking for--change--how can we create some new additional centers for innovation where we can create that bonded relationship; not saying it's a university, not saying it's the private sector, but how do you create a public-private partnership where you can have students, business people, faculty going back and forth on a daily basis and an hourly basis talking about the great things that can happen in our future. Thank you.

(APPLAUSE)

DEAN JEFFREY S. LEHMAN: Thanks very much, Rick. That was wonderful. We have a half-hour of break time now before we reconvene with this afternoon's panel on the maturing of the new economy, which we're back in room 100. So please finish up, enjoy your conversation and we'll see you back in Hutchins Hall.