

## **Small Business and Entrepreneurship during an Economic Recovery**

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AMY WILKINSON: (Applause.) So let me adjust this. So, ladies and gentlemen, we've heard absolutely fantastic panels, conversations, discussions, speeches in the last couple of days, and I think one thing is clear. And that is if we want to create jobs, we have to look to innovation, and we have to figure out how we're going to foster entrepreneurship in America. That's on a the big, overarching conclusion, obviously, as a conference.

I have spent the last three years doing research on high-impact entrepreneurs and the criteria set around those people. I've looked at them as leaders. I've looked at the characteristics that make them able to scale businesses up over a hundred million in revenues in less than five years, or social entrepreneurs who are scaling nonprofits to reach more than a hundred thousand people, customers in that same amount of time.

So I can tell you about the skill set. It's identified in terms of six kind of key things. These high-impact, Schumpeterian-type leaders. They can spot opportunities that others don't see. They can manage speed and complexity faster and more effectively than most of us can do that. They iterate ideas so the art of iteration is really fast cycle. This has to do with revamping your business plan over and over and over. They experiment and fail wisely. There's quite a lot about failure and the idea that being resilient matters most. They network minds so this is the idea of more than social networking. Its network solution sets. We see this a little bit in this room of cross-sector backgrounds coming together to try to solve problems in new ways. And then the final characteristic is really about unleashing generosity. It's about reciprocity theory in a networked world.

So that's the skill set. I'm happy to talk more about that in the Q&A, but in terms of knowing what we should be doing here, especially as policy makers, industry experts, and academics, I think we should sort of turn to what's the missing ingredient. If we know we have people and skills out there that can scale businesses, what can folks in this room, how do we create sort of the context, the landscape, the environment in which we can unleash those kinds of high-impact entrepreneurs?

So the conference, I have been here. I've really enjoyed participating. We've talked about a few things. We've talked about the Small Business Administration potentially needing to be the New Business Administration, right?, and the Kauffman Foundation data that we're all citing about firms less than five years old are creating the net new jobs.

Yesterday, the first panel had some worrying kind of conclusions that some of these smaller companies are starting smaller and staying smaller. So what happens when our GDP numbers are consistent and we still are seven million jobs short? So that is that is a real question. I think the people in this room hopefully can help solve what we do about that. What do we do if the U.S. economy is not as dynamic? I think that's a real worrying thing that was raised yesterday in that first panel as well.

Here are some ideas on how we can look forward and address those things so I've got kind of four ideas. They come out of this conference. They also come out of some of the research that I've done over the last

three years. You heard the first is welcome foreign-born innovators, right? These are our newest entrepreneurs. You heard Carl Schramm say this yesterday. The data does show, especially in tech companies in the Silicon Valley that over 40 percent of founders of technology companies in the United States are foreign-born.

I spent seven years at Stanford University, and I'll tell you lots of those companies do have -- they're companies we're familiar with, they do have foreign-born founders. So Google, this is Sergey Brin right? He is originally from Russia. It's Sergey and Larry who started Google. It's eBay so that's Pierre and Jeff Skoll. Both of them are foreign born so Pierre is from Paris and Jeff is originally from Toronto. That's the original eBay set of people. Yahoo, that's Jerry Yang. He's from Taiwan. I mean these guys were all at school at Stanford when I was there either as an undergrad or later in Graduate School. They are products that have produced a great number of jobs for the United States and came right out in that university. And so one of the sort of policy prescriptions and Schramm did say this yesterday was: What about an entrepreneurship Visa? This is being talked about on the Hill. The question mark is: Do we give foreign-born innovators immediately green card status or do we try to put parameters around it that they have to create a certain number of U.S. jobs or they have to come with a certain amount of capital in order to get that entrepreneurship Visa? But that to me is a really strong thing that we should be doing really pretty quickly in order to see some of these people and help them stay in the United States. There's also data that says if we would staple a green card to the back of diplomas of STEM graduates. So this was mentioned yesterday as well this is science, technology, engineering and mathematics graduate degree students. If we would give them a green card when we gave them a diploma we would have 70,000 innovators staying in the United States.

Really I don't think we want to educate those people and send them away. Right? Because they are going to other Shenzhen, or Shanghai, or Bangor, or Dubai or name any other place in the world that they are going to start their companies. We don't want to have educated them in our universities and then kicked them out.

So those are immediate sort of policy things to try to support the people who are who are educating. And I also want to say it's not just technology people. So I did move from San Francisco to Washington, DC and Levi Strauss was a German-born immigrant right? The quintessential American jeans. That is definitely not a technology story. In the last couple years you see a lot of cupcake makers you see a number of you know green tech clean tech businesses, there are a number of consumer based businesses that are not technology-related. And those people as well could be foreign-born and we want to have them doing whatever they're doing, especially if it's scaling high growth businesses inside our borders.

So that's the first point.

The second is to advance entrepreneurship education, and this was talked about even this morning. I believe the questioner came forward and said: The good news -- there is Kaufmann statistics on this as well the Kauffman data basically says 40 percent of young adults, this is age 18 to 24, they have an interest in starting a business. That's really good news for the United States. Seventy percent of new college graduates, they want to start their own businesses. Sixty percent of GenY business owners consider themselves serial entrepreneurs. These are people who have already started one business and they basically believe that they will continue to start businesses and that's what their future will look like. That's really encouraging that our young people are going to take hold in that way. But one of the things

that we need to do is make sure we have the right education system that is actually fostering the right skill set. And there is this kind of crazy mythology going on that it's good to drop out of our education system. Right? And so this is Steve Jobs dropped out of Reed College, Mark Zuckerberg drops out of Harvard, Bill Gates drops out of Harvard, and it's oh so glorious to be a drop out. That's, in fact, not the case, and there is some data, I'd be real interested to see if we could, you know, in this room or if the government could try to marshal more data. There's some technology accelerators, YCombinator and TechStars, which have produced some of the best technology businesses in the valley. They have put together a survey trying to look at this question. It does use some Bureau of Labor Statistics data, but it uses some other sources of data that they have as well and you know so here are the results: 46 percent of founders have an undergraduate degree. Forty five percent have a master's degree in this data set, only two percent have PhDs – so I'm sorry to all of you PhDs in the room you're dark horse candidates for starting a high growth, high-tech business. Seven percent have less than an undergraduate degree. And so this is very different from what we hear. Right? Only seven percent of this data set has dropped out or has started something without a college degree or -- or higher.

And so, what do we do about this?

The network for teaching entrepreneurship is a really fantastic program in the high school age for teaching entrepreneurship skills; I think we should be boosting that, fostering it. Every student in the United States should know about it. First, robotics is a competition that is taking hold really across the United States. And Dean Kamen is one of the people that I have interviewed in my research said, I love this quote - He says: "Critical thinking is the sport in which every student can go pro." Because this is teaching critical thinking skills of how do high school students take a box of stuff and make a robot out of it. And then how does their robot play basketball or this kind of ball sport with other robots?

And it's got unbelievable ability to learn about team work, to learn about collaboration, to learn math, to learn engineering, to learn about robotics. That's a model that also I believe we should also be trying to foster at a greater level. At the university level, MIT has got the Venture Mentor program. It's one of the most successful models in the United States, we should be trying to replicate that or seeing other universities pick something up about that.

And in this conversation we talked about community colleges.

There is a massive amount of value there as well. Whether it's at the community college level or after-school learning centers, you know, we really want to be infusing the curriculum of entrepreneurship, and some of that is blocking and tackling skills, right? Some of that is just accounting: How do you read a balance sheet?, How do you read an income statement? How do you assemble a team? How do you market a product? I mean, some of it is real sort of basic skill sets that we can be diffusing across a number of different platforms.

So, the education piece I think is under-talked about in terms of how to solve this problem.

Third point is building ecosystems. And obviously, we had panels talking about the infrastructure of ecosystems or ecosystems in different cities. I think that this conference, I'm very, very grateful to the Federal Reserve Bank of Atlanta and the Board of Governors and the Kaufmann Foundation for putting something like this together. I think this is an example of building an ecosystem. I think we should all be

trying to carry this conversation forward, not only yesterday and today, but in collaborative networks. That is something I see quite a lot if my research doesn't matter where you live. We are all networked together, and this is an ecosystem now of people who have participated in this very conference, for example.

The point was made that we can't stay in silos. I see this quite a lot in my research as well. And so this is how do universities collaborate with businesses, collaborate with government? How do people talk to each other? There is a language, often, in each one of these silos. And you need to understand and speak the language that the other people speak in a different silo.

My background has gone across sectors, so I was a McKinsey consultant and a JP Morgan banker. Started a company and then came into Washington as a White House Fellow. And I'll tell you like in the White House nobody knew what McKinsey Consulting was. That was crazy, but it was very, very true. I mean, and out of business school that was kind of a big deal.

In the political world, people thought it was Baker & McKenzie law firm. I was like, okay, that's fine. But I mean, it really is even -- even within that, like it's crazy that we don't talk to each other, regardless of what the silos are.

So, I think that we'll see a lot more of this tri-sector leadership or hybrid leaders is something that I'm calling the people who will cross sectors, whether it's their backgrounds will cross sectors or they will just communicate and talk with people in different sectors. I think that is increasingly important in building ecosystems.

To the data point, so there's been a huge amount of talk about gaps in data, data. One of the things that I see, and I'm not exactly sure how this can work or if it might work, but in the Silicon Valley there's massive amount of data collection. And it's going on at places like Google and Facebook. And data mining and, you know, data analytics. The people who have the most data in the world that I know right now are -- are those people.

Palantir Technologies is an example of a start-up in Silicon Valley that come to do quite a lot of data mining for the CIA. Now the Treasury Department has picked them up a little bit. I mean there are examples here of the collaborative efforts, where I throw that out as a question to people in this room is how can we, especially where there are gapes gaps in the data here, how can we sort of work together and figure that out. Because there are certainly other sources of data that are increasingly powerful.

So, to this ecosystems point, one of the things that was talked about in the nanotechnology point. Half of all nanotechnology firms have been started by professors. So an immediate policy recommendation here and the Kaufmann Foundation does write about this and talk about this. But it's trying to commercialize or opening technology licensing offices on university campuses for faculty.

And so the Wydler Act of 1980 requires faculty innovators to work through their own university technology licensing offices. The licensing technology offices often create delays. And the question is, you know, is that a policy that we can change? And can we change it pretty easily and pretty quickly, so that in the nanotechnology field or other fields if there are faculty members who can commercialize technologies can we make that easier? And that that's just -- you know one way to do it would be to mandate Federal research grants that go to universities, that go conditioned on the idea that faculty

members could choose their licensing agents. That would be one policy prescription that could be made to try to help facilitate this this collaborative effort.

So, an anecdote which I love to share about the Palo Alto effect is the case study of PayPal. And I'm not sure how many people are familiar with PayPal, but it is a company that in 2002 went public and then sold to eBay.

And I graduated from Stanford Business School in 2002. That was a time of doom and gloom. I mean, if people don't remember it, it was the end of technology in Silicon Valley. Everybody, the tech bubble burst and there were no more good ideas and there were certainly no opportunities for the future of tech companies. So PayPal is an example that I love, because in 2002 they, in fact, iterated a business model eight times in 18 months. So this is to the fast cycle iteration process.

They sold to eBay, and then the more miraculous thing is that original team of people went on to basically found the whole Web 2.0 next wave.

And so this is to the ecosystems point. They went onto start LinkedIn. They started YouTube. Yelp, which is going public. Dig. Tesla Motors, Slide, Clarion Capital. It's Kiva.org. a nonprofit side. They put the first \$500,000 into Facebook. A lot of people don't realize that is the "PayPal Mafia" as they're called in Silicon Valley. And it's a group of 12 or 15 guys, now; I say that specifically because they're mostly guys. They do come out of Stanford University and the University of Illinois, Urbana-Champaign. So Max Levchin is the technology genius kinda in that and Peter Theil is the manager CEO. But they've all gone on. There's a great story in last weekend's New York Times about Reid Hoffman. He came out of this network. He's the LinkedIn founder. The point about the PayPal Mafia is they stayed in Silicon Valley. They funded each other's businesses; they were "angel funders" a lot of them to each other's businesses and a number of other businesses there. It's a real ecosystem effect that happens. And the question mark is: Can we take that and replicate it, can it happen in other places? And there has been a fair amount of research done on this. The case study that I find more interesting right now is Roosevelt Island in New York City. So Mayor Bloomberg is trying to figure this out. Right now there are seven universities vying to bring technology campuses into New York. Stanford University is one of them. Cornell is another one, NYU and Columbia. And that is something that people in this room, I think we should all be watching and trying to figure out, what happens at the local level, what happens -- what does the Mayor do, you know, what are the regulations around that, how do you get the right universities in there to invest their money? How do you get the students trained? I mean, this is a pilot case study right now of: Can you take kind of this Stanford, Silicon Valley effect and can you move it into New York City? And can we have Silicon Alley be stronger is what people are saying than Silicon Valley. So to building ecosystems I think that that's critical, and we have to do it across. This is the trisector leader idea.

And then the final point that I'll make is about supporting women.

And this -- I was an investment banker. I think this is a very undervalued asset class.

And we've talked about it a little bit here with women and minorities. We've talked about how we don't have very good data. Certainly, and I think it was mentioned that maybe the funding is going away for this.

I really would hope that we would be pushing women forward. You see individual efforts, Goldman Sachs, for example, has the women hold up half the sky initiative. That's the report that they did ten years ago about women in the emerging markets. That's done quite a lot to support women. The 10,000 women initiative that that bank did. But a lot of other investment in women in the emerging markets. I think we need to look at this for women in the United States.

And so, there are -- there are some statistics, and I'll give you one out of Babson College if women entrepreneurs in the United States started with the same capital as male entrepreneurs they'd add a whopping six million jobs to the economy in five years. And the data from out of Babson College goes on to say two million of those would be in the first year alone.

So there are people who are out there studying this. There's a venture capital fund that was just stood up in Silicon Valley called Illuminate Ventures. They have a white paper out. And some of their data basically say that female led high-tech start-ups have lower failure rates and they have greater capital efficiency than comparable companies led by men.

So, you know, there's a question mark: Can women do more with less? Or have they in the past because they've had less access to capital?

The average venture backed tech company run by a woman is started with one-third less capital and it has annual revenues that are 12 percent higher. That's out of that white paper that illuminates ventures has put forward.

Women do launch nearly half of the new businesses in the United States. And women, increasingly, are getting more college or university level degrees than men.

This is one of the things that we can observe is: We have an educated workforce here. Can we tap into that in a different way?

And the angel, so here's a little bit of angel funding statistics. In 2009, 17.6 billion in angel investments were made; only 10 percent went to women.

Now, the question is: Is this industry specific, is it company specific? It may not be gender specific and this is where I think we need to study this a little bit further.

The Dow Jones VentureSource, basically, the site of this data, says that 11 percent of U.S. firms with venturing backing in 2009 had women founders, now, why is it only 11 percent of the venture backed firms in the United States have a woman involved?

Not sure. Not sure. But it's definitely a question to be asking, going forward.

Some of the reasons – excuse me – some of the reasons put forward of why are women not accessing early stage equity, one reason is that women don't ask. There are some sociology studies that basically say that women are just afraid or they don't come forward and they don't ask. That women are twice as likely to use debt, use their own money. And they just aren't going forward to try to find out what else would be possible. Another reason is that the old boys' network still exists. So if you look at the venture capital funds or the angel investors nearly 80 percent of them are men.

And so this is a conversation going on in Silicon Valley right now about a number of women trying to stand up support networks. One is called Astia, it's a women venture backed accelerator it's an interesting module to look at. Illuminate Ventures is trying to fund women the co-founders, Sheryl Sandberg who is the COO of Facebook and Gina Bianchini who is the former CEO of Ning, both interesting women in Silicon Valley they just about ten days ago did angel investments in something called the Levo League which is a nonprofit trying to support women in with professional skills.

And so when you see, they don't make angel investments, you don't really see Cheryl or Gina making these kind of investments, so it's an interesting thing to observe. And the question is especially out of a high-powered group like this is could we study this in a more sort of scientific way?

So, that's -- that's a little bit of -- of what I think on the four prescriptions are to look at.

I -- I would say the conclusion here is that entrepreneurs are probably the best suited to lead us out of uncertain times.

So back to the leadership characteristics of how -- how come entrepreneurs succeed? They handle ambiguity. They're extremely resilient. The example of Google, I was at Stanford when both Sergey Brin and Larry Page were students. They were going around campus talking about an algorithm-based business. I had no idea what they were talking about. This is a total miss. I was like that's a weird mathematics company. Like it clearly wasn't about math. Right?

All these years later, who could live without Google? I mean, that's about ten years ago.

And I will say that when they started they were just two guys. They were just two guys. They were two students; they were told there was no need for another search business. They were told Yahoo owns the market. They were told that their technology really wasn't that great.

And yet, I mean, look at what's happened there. And so it's a story that you hear over and over about, you know, what will it take. It will take people who will be resilient and the entrepreneurs I think are probably the best ones to lead us forward and to lead us out now, and so we need to do what we can do support them.

I'll close by saying: I grew up in Seattle. And Seattle as a city, and it was talked about a little bit here in one of the case studies, but for the future of how to compete in a world economy, it's an interesting study.

Because in the '70s in Seattle my family was in the timber industry so it was typically timber and Boeing. And Boeing was pulling their people out of Seattle. And it was really terrible times for the Pacific Northwest. And there were two guys that put a billboard up along I-5. I mean, which was our freeway. Right? And it basically said: "Will the last person leaving Seattle please turn out the light?" Because everybody was moving. Because Boeing was pulling all of their people out and the timber industry really just wasn't doing all that great.

And so, having grown up and seen that, and now, when you go back to Seattle, it's phenomenal. I mean, it's Microsoft and Amazon and Starbucks and Nordstrom's and Costco and so many of the biotech firms. It's a really vibrant city, it's a so much better city. It's a great place to live and it's an entrepreneurial city that when you can look at it 30 years later or close to 40 years later and say what really happened here. It's

something that we should be studying and it's definitely this cross-sector concept. Right? Its businesses that went in there but its government regulators and industries and other things that also took hold in the City of Seattle between May, 2010 and '11 Seattle added more jobs than any other metro area except for Dallas and Houston. So just in the last year, we see it as one of the kind of job centers for the United States.

And less you think this is just Amazon and Microsoft because they are driving a certainly big technology trend out of Seattle. The companies I like to point to are Costco. Costco is not employing hugely highly skilled workers. They are training workers and they're making lives a lot better and they're creating jobs in Seattle. They've created 150,000 jobs in fact as a company. That is not high trained, high skilled labor. And Starbucks is another example. They've employed about 140,000 people.

And so, again, the -- one of the factors when you look at Seattle is that half of the population has a college degree. And so that is one of these things about let's have entrepreneurship education at the university level. But when you look at Costco and you look at Starbucks as big job generators in Seattle, it's not highly skilled. It's highly trained.

And so we should be thinking in those terms, as well.

So, I'll close by saying that pioneering entrepreneur a competitive visionary risk taking entrepreneur they bring out the best in America and that's what we need. We got to bring out the best right now. So I hope this starts the conversation instead of ends the conversation. And I'm happy to take questions but I really am happy, too, just to stay in touch with people and I hope you all will stay in touch with each other. That's it.

(Applause.)

AMY WILKINSON: So are there any questions? (Laugh).

MALE VOICE: A statement that you can then turn into a question 'cause I'm interested in your view. You know, one of the really special things about the Silicon Valley ecosystem is the tolerance for failure. Among young people, I am told, you're not a real woman or man unless you've gone out and started something and many of them or most of them fail, but it's no big deal. You -- you land on your feet. You go to work for another company. You try another one. The whole entrepreneurial experience over time is trial and error. That's really what so many entrepreneurs do. So I know this is a little whacky, coming from a Fed president. How do we celebrate failure? How do we essentially encourage young entrepreneur, who may be spectacularly fail, but build that culture in which failure is not fatal. It's just a part of a learning process.

AMY WILKINSON: Uh-huh. Yeah. So that's a great question. And it is something that I've studied a little bit.

There are definitely -- there's one named Amy Edmondson at Harvard Business School who's studied a lot on this topic, on failure, and making it a learn -- a learning skill. Right? And so that's one of the things. You see organizations that encourage and foster innovation. They will say a failure is not catastrophic, it's incremental. And so that's one of the mind-sets around I'm happy to fail incrementally. And in fact in the research that I've done the high impact entrepreneur will set a failure ratio. And so, if you're Pierre



Omidyar, the founder of eBay, he will say I really want to fail 10 percent of the time or 15 percent of the time or 20 percent of the time. I will strive to do that. It's not catastrophic. Nobody wants to like, you know, completely wash up and young people do, and then they come back from it. So there's a whole bunch of research on resilience. But on the mind-set of failure, I think one of the things we need to do is try to set these targets. Back to the founder of eBay in his philanthropy, he does this as well. He wants 10 or 15 percent of the dollars he gives away to not work.

And then the idea there is because if -- if he's not pushing the envelope in that way, he's not actually getting the upside of an innovative approach. And so, Silicon Valley is a unique place for this kind of thinking.

I -- I believe it's starting to trickle across other organizations. I think DC is one of the last places that it probably reaches. And in some cases for obvious reasons. I mean, we don't really -- I mean, there are different things to think about when you're running a large institution and a Federal institution. If that's a lot different proposition than if you're starting up a 5-person start-up. Right? I think the mentality of trying to figure out, hey, can I set these targets and can I push the envelope in this kind of way is the same mind-set.

But, you know, I think there are differences in the -- in the failure thing. I'll give another anecdote which is I interviewed Gilman Louie. He is the founder of In-Q-Tell. This is the CIA venture arm. And he is a venture capitalist. He came from Silicon Valley. He was also at Mattel as the Chief Creativity Officer. He's basically a video gamer. For those of you who haven't followed that it's a massive industry. So George Tenet brought him into the CIA a number of years ago and said, hey, we need to be more innovative. And one of the best quotes in my research. He said: He couldn't believe it. He couldn't believe that when in a room like this that CIA officers would throw their bodies, you know, if there was a grenade that came into the room. They would do anything. I mean, that seemed like a really high risk proposition. And yet, if you asked them to raise their hand and disagree or make a decision that would be controversial, they would never do it. They'd run for the door. He was like, you know, how does that work? How does this risk tolerance equation work? In an institution like the CIA, in particular, as an example.

But I think it's mentality to try to think differently.

Yes.

FEMALE VOICE: I have a microphone.

SHERYL WINSTON-SMITH: I'm sorry.

FEMALE VOICE: I was wondering in your research, just you brought up nanotechnology and now with video gaming, just the tech industry in general whether patent reform or some kind of change to the patent laws is necessary for entrepreneur to -- to continue to come out of those industries? I know right now there are some patent wars going on between some of the really big tech companies but how does that filter down to the entrepreneurial level if at all?

AMY WILKINSON: Yes. So this is part of the conversation that I hear a lot about, especially with patent reform having, you know, the first to file, first having been just something put forward. For entrepreneur

and for venture funders, a lot of people are unhappy about that. Not everyone, but there are a fair number of people who are not happy with the first to file.

And the idea is that big companies can hire big lawyers to just file every single patent that could possibly be out there. And if you are a small entrepreneur, it's -- it's reasonable doubt had a. It's hard to mobilize that as a resource or it's hard to get there as quickly as a big company could get their lawyer to file a patent.

And so I'm not sure it's definitely in the dialogue right now, I'm not sure what to say the solution is. But I do hear especially, you know, the kind of start-up, people who are trying to file patents feeling unhappy or concerned, certainly.

There was a dialogue around, you know, in order to raise capital in many cases you have to have a patent, it's the chicken and the egg problem. But you might not be able to be first to file if somebody with a huge amount of resources has filed before you can get your prototype going. So I mean, there's a real tension there.

FEMALE VOICE: Jean Horseman at (inaudible). So I want to pick up the cost collaboration question a little bit. And to look at the examples you might know of or potential you might know of for how government can partner with entrepreneurs to learn to be more nimble about seizing opportunity.

We -- in America we know big knows how to work with big, big government works with big business. It works with big universities, but what you described in Silicon Valley and what a lot of us are experiencing which is a new big which is about being small, smart, connected and networked. So how can members work with this new big to take opportunity and be nimble.

AMY WILKINSON: So, Michael Bloomberg is a great example of this in New York City. He is an entrepreneur. So he is the entrepreneurial Mayor so that gives him a potential of thinking that maybe other people have not thought about in the same way. He's brought a number of young people into his administration, there's a woman who does his social networking strategy who is I don't know 28 years old. In the big hurricane that we had and New York had as well that was an experiment of how do you mobilize and connect and you know, tell citizens where -- where the hurricane effects are happening or where to go or you know, the power-outages and all of that. So I think bringing in young, nimble entrepreneurial people into what would be traditionally thought of as sort of high level government positions is one way. And I think New York City, you see that happening. Gavin Newsome is another example, he's the Mayor of San Francisco now the Lieutenant Governor of California. Plumjack and hospitality it's a hospitality business. You see him as a mayor and now a Lieutenant governor doing that as well. But there has to be a new way of thinking about talent. So much of government is working your way up. And in the newly networked world, it is not that. It's about collaborating, and it's really -- there is -- there is a power a dynamic happening where 25-year-olds are hugely valuable. And in the kind of new economy and the new networked system government leaders who maybe didn't come up with these same sort of sets of skills need to really understand that the killer combination might be coming from a 25-year-old.

So I think that there is -- we just need to think about things in a different way and bring in the people who have the skills.

MALE VOICE: Teri Gardner, Small Business Majority. Do you see a connection between your idea about the supportive ecosystem and our decline in manufacturing? I mean, what we can do to revitalize manufacturing as your theory of line.

AMY WILKINSON: So, this is a tricky one. I'm not exactly sure. And I'm not sure, in some cases, and not in all cases but in some cases of manufacturing I'm not sure we want those to be revitalizing those jobs. I mean, I would say from the research that I can see is we want to in some cases, not all cases but in some cases we want to retrain and -- and not invest in old industries. And so if there are manufacturing jobs in industries that potentially are not competitive or going away, I don't think we need to be spending as much time there. And I do think we need to be thinking about the next. Right? And so to the ecosystem effect. I mean, Detroit is an example that I know a little bit about. It was talked about here. And that's certainly a manufacturing base. The question mark that I have for Detroit is: Could you bring in entrepreneur and could you have or could you foster a culture there that is not just boosting up the old? Could it be, you know, Tesla Motors is an example, right, that sits in California. Why does it not sit in Detroit? I'm not sure. But that's a little bit of the ecosystem question is: Could you get some more of these innovative people to be spawning off of manufacturing but not just revitalizing old manufacturing?

MALE VOICE: Yeah. So, Amy, you gave us some great insights about the behavioral characteristics of the entrepreneur themselves who build these impressive organizations. Can you -- can you give us any insight into the -- just the structure of the businesses and the architecture that they use to scale them, were there any kind of commonalities that you noticed across the various businesses that you looked at?

AMY WILKINSON: So I will condition this and say that all of my research is basically on the leadership skills. So it's on the people element. I can observe some of the way that they structured their businesses. But I don't have scientific data that says that they scaled in a certain way or that they had this much capital or they've received capital. I mean, I'm very interested in Sheryl's study out of the Kaufmann Foundation and trying to understand that more. But I can't speak as effectively to how they structured companies. I can speak to as leaders what they did and what their mind-sets and skill sets were.

FEMALE VOICE: (Off-mic.)

FEMALE VOICE: The cost of a college education is really out of reach for many, many people. And I've heard that community colleges struggle with technology education programs that constantly fall behind because technology changes so quickly. So do you have a sense or ideas about other ways to get skills to people, to broaden the base of folks that were participate more fully in entrepreneurial activities?

AMY WILKINSON: So one of the things that's talked about quite a lot is virtual education. And so you're seeing Stanford University is experimenting with this, instead of paying, you know, \$50,000 in tuition, can you get the same sort of classroom experience in a virtual way. I think we will see this revolution of university education go online. We're already seeing it. I think that's a way that it's successful to a lot greater number of people at a lot less expense.

I don't think -- I personally don't think it replaces classroom learning, but I completely agree with you, that the cost of a college education is -- is out of reach for a number of people. And then the debt burden

that many students carry afterwards is also, you know, a real -- a real problem for the United States. But I think that one of the potential solutions is online learning. And we see more and more and more of it all the time, to enhance skills. Not only for young people but for people who are trying to update their skills.

I mean, there's a huge market for this in the age of 30 to 50-year-old executives. Right? Or mid-level managers and companies.

Because in many cases, they're also getting out of date very quickly. And so can you do online modules to keep you up to speed in terms of being more technically adept or more nimble. So I think that's one of the potential solution sets.

Other questions?

All right. Oh, yes?

FEMALE VOICE: Hi. Kind of just to piggyback on that question, you definitely touched on education entrepreneurship and with the global competition of innovation and whatnot. How do you see the U.S. competing when there's such a disparity in the K through 12 system in education? Do you see, you know, that would be the optimal choice if -- if you did have the ability to bring entrepreneurial classes in high schools and middle schools. But do you really see that when there's so much testing on math and reading, not really critical thinking? And do you think that that's a -- another avenue that the government can kind of look at, or do you see that actually happening? Oh, my name's Ashley, I'm with George Washington University.

AMY WILKINSON: So I think that's a really good question. And I think that's part of the conversation we need to have about education in the United States.

And it's also one of the reasons why you see such a strong move towards charter schools I think and social entrepreneur who are trying to infuse other solutions into our U.S. education system.

So in my data set, for example, I've interviewed Wendy Kopp at Teach for America. That model has been around more than 20 years. That's not a new kind of response, Teach for America and it's controversial, it's not always thought to be you know the best way forward for education. But I think you do see a number of social entrepreneur, social innovators trying to tackle this question from a different angle. I think you do see a number of leaders in business saying: We need a different education system now. We need a different set of skills. And in order for businesses to hire people, they -- we do need to reform the K through 12 system.

I -- I think that's really the -- I mean, you hear Tom Friedman saying this, you hear a lot of people saying that that is the quiet crisis in the United States is that our education system doesn't seem to be urgent and yet it's so hugely important for all of us to be focusing on from every single angle. Right? I mean, it's great to have this conversation at the Federal Reserve Bank, I mean; it's great, because I think that we are seeing that the U.S. education system really does need to be infusing new skills and different skills and testing students in different ways.

And in the global system, my research has also gone, you know, I've done a number of interviews in China, in Asia, particularly, and other emerging economies.

And the education systems are different. We do have probably students who are more creative and in that way in some cases more willing to be entrepreneurial than some of these other systems but we're really rapidly falling behind in skill sets. So it's a good question and it's something that we definitely need to be focusing on. And I -- yeah, I think bankers of the world or government policymakers of the world or entrepreneur of the world, we all need to be weighing in on this. I mean, this is not to be left to educators or education people alone.

FEMALE VOICE: I don't know if that there's someone on the other side.

I'm (inaudible) also from George Washington University. I'm a student at the Law School. And we've talked a lot the last two days about the gap between GDP and unemployment. And you alluded to it again, too. In terms of closing that gap, it seems like a lot of the causes of it is that particularly with increased accessibility and advances in technology, businesses are doing more with less. And so I mean you see it especially in manufacturing, where you have technology doing the work of laborers and so I was wondering how -- if you perhaps envisioned that those types of people who would ordinarily belabor borers can be retooled to be entrepreneurs, themselves and using increasing technology for them to create services and commodities more locally as opposed to being -- having the ambition to be these huge companies. And, for instance, I think one example is you see -- actually in DC, people aren't opening restaurants anymore, they're buying a truck and an iPhone to use as a register. And all of a sudden they're in the food service industry. So is there a way to take that model of skill sets and infusing it with kind of everyday people? And I think the -- the -- what was said earlier about people thinking of entrepreneur, as the Steve Jobs and sort of this unique figures, if culturally there's something intrinsic that perhaps we have difficulty changing perception as to what it takes to be an entrepreneur, especially locally.

AMY WILKINSON: Sure. So I think that this is -- its part of the reason why I'm writing a book is that everyone needs to be an entrepreneur regardless of where you plug in. Meaning if you're in government you need to be more entrepreneurial and adaptive and nimble, if you're starting a nonprofit, if you're starting a business. To your example of if you used to be in manufacturing or you thought about starting a restaurant and now you can use technology in a new way, I believe that we do need to have everyone think that entrepreneurship is accessible to them. One of the ways is, you know, Community Colleges, updating skills virtually. Are there -- is there online training. I mean, what other vehicles can we use to sort of get this message out to people? And enable them to be effective in -- in a new kind of economy. Because we definitely are moving towards a new kind of economy.

I mean, there are statistics that say by the time you are 38 years old that people will have, I think it's like 12 or 15 jobs, right? And that was not my father's career. I mean, my father was 30 years at one company.

And so when we see the shift of labor dynamics and the economy and the innovation economy I think you have isolated one of the really important things, is that everyone needs to believe they can be an entrepreneur.

And this is where the Kaufmann data, I do love the fact that, you know, the average person starting a company or the ink 500 is 40 years old. I mean, we also sort of think that the entrepreneur are the 20-year-old drop outs from Harvard University like Mark Zuckerberg, and in fact, they're 40. Right? Which is great because it means if you -- you didn't miss the boat at age 20 or 25 or 30 or 35. Like you can still get out there and do it. We talked about averages before, that's the average. You can be a lot older and

still be doing that. Right? And so it's one of the questions that I grapple with of how do you get this message out. I'm trying to write a commercial book, Simon and Schuster is publishing my book and I'm trying to get it out through a number of different channels but I do think that entrepreneurship of education will come in many forms. So I think the question is a really good one.

All right. Thank you.

(Applause.)