BUILDING WEALTH IN CHANGING TIMES

The Solari Report

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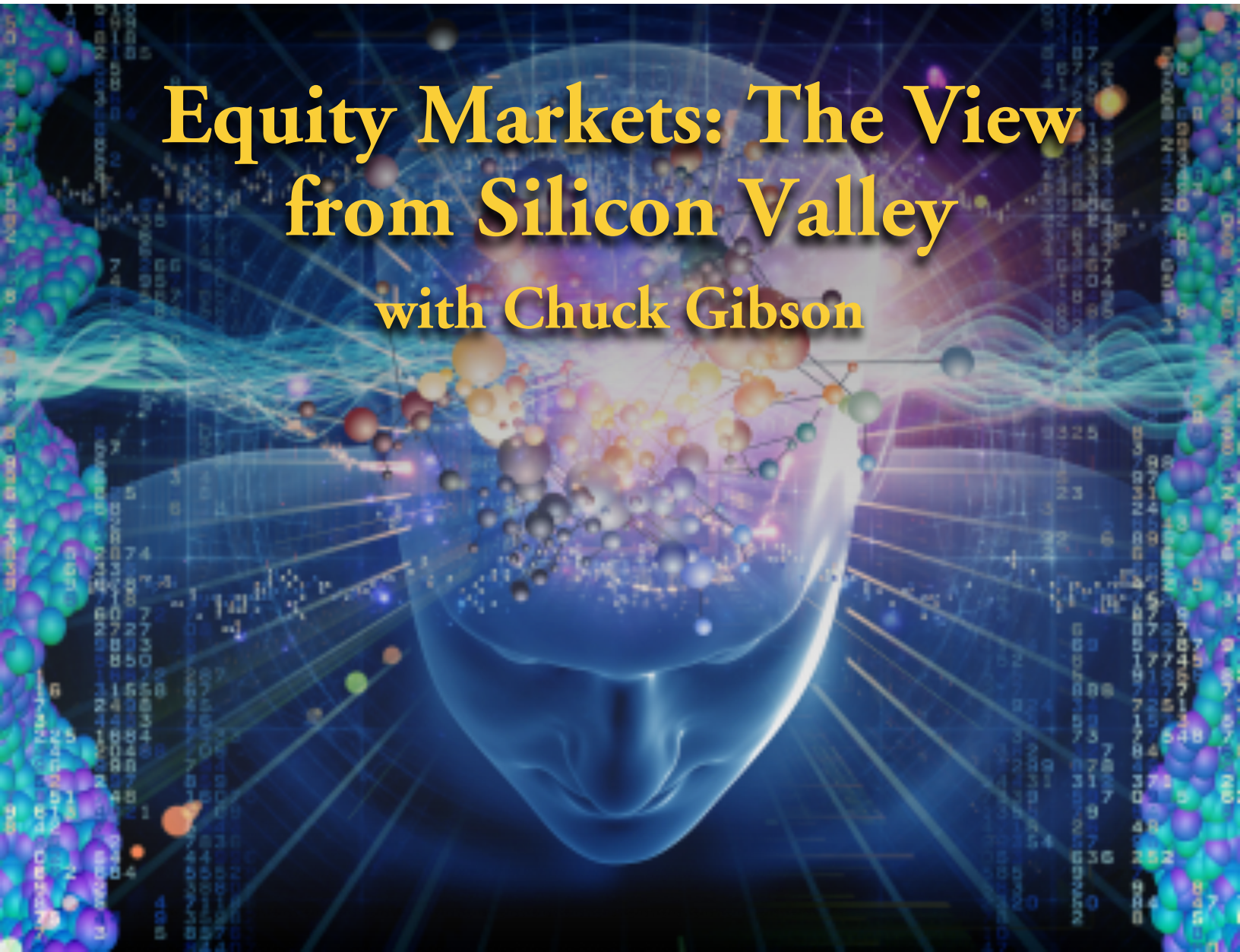

Equity Markets: The View from Silicon Valley

with Chuck Gibson

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C. AUSTIN FITTS: So let's turn to our topic tonight, "Equity Markets: The View from Silicon Valley". Chuck joined us on the precious metals market report with Franklin and I several months ago. But to introduce him again, in 2010 I had some of my investment advisory clients in a fund that was managed out of Zurich which I liked very much. And as the Americans brought more and more pressure on the Swiss a decision was made to send the American investors' money back.

And so I started in 2010 in anticipation of this happening doing a search for a fund that could replace the one that we had. I searched and searched and tore my hair out 'cause I just couldn't find anything. One day I was sitting in Chuck's office meeting with him as he manages some of my clients' money. I said, "You know, I trust you and me to manage these funds more than any other fund I can find." And I really just said it facetiously off the top of my head. And then one thing led to another and the result was we created Sea Lane Advisory, LLC. which is a partnership of Solari Advisors and Chuck's investment advisory company, Financial Perspectives.

Chuck and I spend about two hours a day in investment committee every day, five days a week looking at investment trends in companies. Because Sea Lane is in the San Francisco Bay Area next to Silicon or in Silicon Valley and Chuck is an engineer who started on the IT side of Silicon Valley before moving to investment advisory, it's not surprising that we spend quite a lot of time analyzing what is happening in the high-tech part of the domestic and global equity markets.

I finally realized one day sitting, working with Chuck on these various topics that I realized that it was very important for me to start to bring this information to our subscribers so that they can understand these developments. So I asked Chuck and Chuck has graciously agreed to join us regularly, which we'll be doing quarterly on the *Solari Report*. So with that, let me invite Chuck to join us. Chuck, are you with us?

CHUCK GIBSON: I am. Can you hear me?

C. AUSTIN FITTS: I can hear you just great. Okay. So technology and innovation as a primary trend. What do you think?

CHUCK GIBSON: Well, like you said, it's here and it's now and you have to embrace it because it's – if you don't it's going to take over your life one way or the other.

C. AUSTIN FITTS: I said to somebody when Franklin Sanders got an iPhone, I said, "Well, I guess it's here to stay." Well before we dive in I just wanted to comment on where these trends are happening. As you know I travel around the country a lot. I really notice how much certain areas of the country are economically doing very much better than others. And one of the reasons – you see it around Austin, Texas and in Texas. You see it in the Boston area and you certainly see it in the Bay Area and Silicon Valley.

One of the things is an area a leader in the new technology and innovation that's happening? And so it's not just something that's having a dramatic impact on equity markets, it's really having a dramatic impact on places. Certainly in the United States what I see is a division in the economy between places that are staying current on technology and places that are falling behind. But certainly I must say when you're out in Silicon Valley, it doesn't feel like there's any recession out there.

CHUCK GIBSON: No. And even in 2008, 2009 it would not be unusual to go to a restaurant on the weekend and find that they were packed. Or

at lunchtime, they were still packed. It was like nothing was happening. It was really strange. It wasn't quite that bad but you wouldn't have known that it was a severe recession that it really was.

C. AUSTIN FITTS: Yes.

CHUCK GIBSON: And I've been on the East Coast too in the Boston area where you have, you know, strong technological ties and they were just somewhat impacted like the Bay Area. So it's those areas that, like you said, that are strong technology and are embracing it that are tending to do very well or much better let's say.

"I've been on the East Coast too in the Boston area where you have strong technological ties and they were just somewhat impacted like the Bay Area."

C. AUSTIN FITTS: Well I remember when I was out in Pleasanton and they announced the Facebook IPO and every weekend on Sunday night the Mercedes dealerships would all be packed. I kept saying, "Oh, there's no recession here." Okay. Let's just dive into the key areas.

I should tell everyone that Chuck and I sat down and I said, "Okay. First I want to make a list of all the different areas that will be dramatically impacted by new technology and then I want to cull from that the areas that will be relevant to the equity investor." Because there are a lot that really impact us as a human being or as a citizen of a sovereign country because a lot of them get into areas the government oversees.

We just wanted to focus tonight on those areas that seem to be making a real impact on the equity markets both now and that we anticipate in the future. So that helps limit this list to a more manageable list. The first is one that Chuck knows an awful lot about so, Chuck, I'm going to defer to you. And that's the switch from desktop computing to what we call going mobile. So if you could give us an overview of this.

CHUCK GIBSON: Yes. You know, this started I hate to tell you how long it

was before I actually got into the investment advisory business but this was when I was in the corporate world. One of the things that I was focused on and that is the convergence of the phone, the computer, the telephone – and the TV. And we were working on it back in the '80s and '90s and it's still going on. And technology is advancing. It's amazing how much faster – what we've been able to progress in the last, you know, five years is way over what we were able to progress in the first 20 years of this convergence. But is a convergence of those things.

And right now the interim step of all of that really is the smartphone and the tablets. And we still have some improvements to go but at some point in time, and I don't think it's going to be that far in the future we're going to see a device or two devices at the most where you will be able to do all those things. You'll be able to make a call on it. You'll be able to go to your office. You'll be able to plug it into a docking a station and it will be your computer.

You'll leave the office, if you ever get that opportunity, to go home to your family and it will follow you wherever you go. You'll be able to watch TV. You'll be able to do everything from it. And we're there today. It's just that we have pieces of not only the devices themselves but the network to be able to provide that capability has not caught up yet. But we're getting there.

C. AUSTIN FITTS: I put a slide up on the teleseminar and it's a slide that shows us going from mainframe computers in 1960 to the desktop in 1990 to 2000. And then the mobile internet computing and the explosion in the number of units that is happening. It's really quite extraordinary. You know my fantasy about – William Gibson has a book called *Mona Lisa Overdrive* and in it the protagonist who's the daughter of a Yakuza chieftain. She has a handheld personal assistant. And out of it pops a hologram of a British butler who can answer any question and do anything for you that you could possibly imagine. And so I'm hoping it gets to the point where I get my English butler.

CHUCK GIBSON: Yes. Maybe in a few years. We're getting there.

C. AUSTIN FITTS: Maybe in a few years. Okay.

CHUCK GIBSON: I find this graph really exciting because at some point I looked at this and I said, "How can this be? How can we have continued growth in the number of units that are actually being utilized when the number of users that actually don't have those units is shrinking?" And what this – what I'm finding out as you dig a little deeper, you're finding that, for example, corporate world has a single type of phone and most of them aren't quite there with Apple.

So they'll have either a Blackberry or they'll have an Android phone and then people are on their own are buying a second phone, an iPhone. And so that answers at least in the short-term why this logarithmic growth will continue to go for probably another, you know, the rest of this decade.

C. AUSTIN FITTS: I just put up the chart on the explosive growth in mobile data traffic. I don't know if you've seen it come up yet but it goes from 2011 to 2016 and shows the estimates of how much of the traffic itself is going to grow. And I think part of this is the availability of video and video working over a mobile device. Is that true?

CHUCK GIBSON: Yes it is because they take up so much more data. The interesting thing is if you had the networks to be able to support this, the actual data traffic would grow greater than what they projected.

C. AUSTIN FITTS: Right. And of course one of the really big things – let me pull up the mobile payment growth. One of the big things is this is not just data but now we're talking about more and more transactions being done online and from a mobile device. So I have that up and it says global mobile payment transactions expected to rise to $940 billion. So almost a trillion dollars in 2015. So if today it's approximately $100 billion we're talking about a multiple of, you know, ten times by 2015. That's an extraordinary shift of our transactions onto these mobile devices.

CHUCK GIBSON: And that's a growth rate of almost 100 percent a year so

you can see why there is so much flurry of activity around mobile and mobile payments because it's here and now and it's similar to the environment we had – you know, I keep using this example of when VCRs were first introduced to the world and it was a matter of there were two camps that were – you know, two competing camps for technologies and VHS tended – they beat out Beta.

Right now there is no clear winner on which technology or which technological path that they're going to use to be able to use for mobile payments. So it's a little early to know who it is that's going to win but whoever wins you can see that the amount of money that's being thrown into this sector is unbelievable. It's important though to notice that this about mobile payments, not about mobile banking 'cause there's a clear distinction.

Mobile payments is the actual payments of a purchase that you've made. Mobile banking is the ability to do your banking. You know, go to your checking account and move money or something like that. Now that's already available but the payments are currently in their infancy.

C. AUSTIN FITTS: Now they call it a wallet when you have a – in essence the ability to put money on your mobile device that you can spend?

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: And Apple is supposed to come out with a new wallet this fall. Is that the case?

CHUCK GIBSON: Yes. All eyes are on Apple right now.

C. AUSTIN FITTS: Right. I suspect one of the reasons the stock has moved up as much as it has is anticipation of Apple's launch. You know, I think that there are people who are hoping Apple's going to be the winner on the payment side. Well what are the challenges of getting to this place where everything can be done mobile and what does that mean to the companies that are going to try and address those

challenges?

CHUCK GIBSON: Well obviously the first one that comes to my mind and I know it's a sensitive issue for you is the security part of it.

C. AUSTIN FITTS: Right.

CHUCK GIBSON: How do you protect a person's identity, their information? 'Cause all this information is going to be stored on your device and devices get lost, they get stolen. How do you protect that? And that's kind of no different than a credit card but – because that's really what the payment system is all about. You don't necessarily have to have a wallet like you and I might think about it where you have dollars or paper currency sitting in that wallet that you're allowed to spend.

The actual wallet can in terms of mobile payments is really like an account that you can debit against or a credit card that you can charge against. So it's not necessarily a wallet as we think about but that is a number pathway that they're electing to look at.

"You don't necessarily have to have a wallet like you and I might think about it where you have dollars or paper currency sitting in that wallet that you're allowed to spend."

C. AUSTIN FITTS: What about getting video to go through the mobile system, both in terms of what you need, in terms of networks in which you need on the device itself?

CHUCK GIBSON: Yes. The threshold – well, you've got two-fold problems there. One is the current networks to be able to stream video. Now they can but it's not high-definition video and, of course, we're about one or two generations behind in the ability for the networks to be able to stream the type of video that we're used to viewing on a big screen TV. But that will come. You know, they're changing technologies about every two or three years with regards to the generations of the network. So I would expect the next generation or the one after that for able to see high-def, you know, 1080p-type of

video.

But that being said I don't know if you have a phone, a payment, or a bill that gives you unlimited data, that's great. But if you ever tried to watch a movie or something, they charge you on a per-bit type of basis and that becomes very, very expensive. So I'm not sure how they're going to be able to deal with this. Even though they – even when they do have the capability and have the bandwidth to be able to stream all of the information that people want to stream, it's – I could see it just becoming very cost prohibitive.

C. AUSTIN FITTS: I pulled up the 24/7 graph and this is my – this is a graph you found that I just love. It shows the going from a world of desktop intelligence where we're spending three hours a day on average at the desktop to one of mobile intelligence where the internet is accessing us and we're communicating, you know, every waking minute. In fact, I just sent an article to be posted on the blog about somebody went on a media diet and stripped their phone of all the apps and made a commitment to shut their phone off 10 hours a day. But you're talking about a very different relationship between me as an individual and the internet and online access. It's quite remarkable.

CHUCK GIBSON: Yes. And you know what I find interesting about this is that there are entrepreneurs out there that are going to look at this chart and say, "I got a six-hour window I can try and find a way to squeeze in there and get access to this person because from 12:00 AM to 6:00 AM they seem to be free of – maybe I can make that from 12:00 AM to 5:00 AM –

C. AUSTIN FITTS: Right.

CHUCK GIBSON: – or 1:00 AM to 6:00 AM." So that's where this is – there's going to be a way that you know that something's going to come up. They're going to be able to invade that six-hour peace and quiet that you have. It's going to be 24/7.

C. AUSTIN FITTS: Yes. An engineer this week said to me, "You know, we're going from a world of desktop intelligence to mobile intelligence, to ambient intelligence where if the networks integrate into everything, it's not that we have this online world that's one world and this world we walk around in. You know, on line world vs. a place-based material world but the two are going to get integrated in this process. That has enormous consequences, you know, both positive and negative.

I know one of the things we struggle with is there's certainly a lot of people making apps and there's certainly a lot of people doing social media and games but it's yet to be clear to us how any of that turns into a business. It's something I struggle with and I think if you watch what's happening to Facebook stock, it's clear they're struggling with it too.

CHUCK GIBSON: Yes, you know what's interesting, Catherine, is the – you talked about that and you go back to the payments portion. And that's going to – as soon as they figure out which technology they're going to use or technologies they're going to use, that's going to be commoditized because there are going to be hundreds of millions or billions of transactions. Because if you looked at the number of dollars that are associated with – we said almost a trillion in what was it, 2016 or 2015? The average payment – the average payment that's going to be made is less than $10.00.

C. AUSTIN FITTS: Right.

CHUCK GIBSON: So if you take that $1 trillion and divided by $10.00 that will tell you how many individual transactions. So you can see that for somebody that gets paid on a per transaction basis or somebody that gets paid as a percentage of the amount of money that they're transacting, it's going to be a huge amount of money. They're inserting themselves between you, the payer and the payee and they're going to extract their fair share. And it's – we're talking huge sums.

C. AUSTIN FITTS: Well it's amazing because micro – it shows you the

power of micropayments when you get enough of them going. So it's a micropayment world. One of the videos I didn't put up on the blog was Google's Project Glass: One Day. But it shows somebody walking – I think they've got their computer in their eyeglass or something. It's just very invasive technology but it will give you a sense of some of this integration and I think is maybe worth looking at. Now let me see if I can't pull up the next graph.

CHUCK GIBSON: While you're doing that let me just touch on games real quick because, you know, right now in 2011 there was about $5 billion worth of sales, revenue generated from the sale of games for mobile devices.

And that's projected to be triple that – $16 billion in 2016. Now the interesting thing is that people will prefer to get these things for free or they're going to pay a very small amount for the games themselves. But what's interesting is that currently about one-third of the revenue is based on things that you buy when you're in the game. So if you're playing the game and you want to buy a credit or something that's a part of the game, that's about one-third of the money of that $5 billion.

But that is projected to grow to over a half in 2016. So the money, that's the way they're going to monetize this. They're going to do it through not only the purchase of a game but also through getting you hooked into that game and those hooks are going to have things that you can buy in the game to take – you know, to go to the next level. And so it's going to be interesting. It's kind of a cool way that they're going to – for those that are gamers on how they're going to generate revenue.

C. AUSTIN FITTS: Well part of it to me gets back to this micropayment because if you can make it easy to do a tiny amount, you know, people are much more willing to take a chance on tiny amounts and try things. So if you can make it really easy and cheap to do micropayments, it opens up what I would call the long tail.

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: Okay. I pulled up the chart "The Rise and Rise of Data", but clearly what this means is just an explosion of data driven by the growth in mobile gadgets and the shift to mobile computing. I can't even explain to you what an exabyte is.

"Clearly what this means is just an explosion of data driven by the growth in mobile gadgets and the shift to mobile computing."

CHUCK GIBSON: Well, that's funny. I had to look it up because I didn't want to not know the answer to that but just to tell you that is one followed by 18 zeros.

C. AUSTIN FITTS: Wow. So 129 exabytes by 2016.

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: Yes.

CHUCK GIBSON: So you can see that not only – there's two things that come out of that. One is how you're going to – how are you going to have a network that can be able to transmit all that information but secondly, which is another topic that we will eventually need to talk about is how do you manage all that? Where is it going and how do you manage it? Not only you as an individual but the entire system because that's going to be – if it's not just information that's thrown away. How do you store it? How do you keep it? How do you manage it?

C. AUSTIN FITTS: And is that – why don't you just given an introduction to the notion of the cloud and what the cloud is and connected to – why it's happening.

CHUCK GIBSON: You know, the cloud is one of those things that people either embrace or it's a very polarized topic because there are thosethat want to preserve their privacy and the cloud – the data's up there. If you can get a hacker to hack into it, you're going to get –

everything that you have up there is going to be exposed. And so that's one thing that those that don't favor the cloud have concerns about. But those that do the data is so large you – the only way you're going to be able to start to manage that is through nested types of servers that can control, store, and you can get at that data.

Because think about if you're a large corporation. You have just unbelievable amount of data. Are you going to store that? You know, where do you store that? How do you get at it? How do you have access to it? How do you manage it? And in the cloud allows you to do that most efficiently because you're – if you have unused resources you can borrow one – you can maybe borrow some resources that people aren't using from another company. So all you're doing is borrowing their space and their computing power. And the cloud allows you that advantage of being able to – to be able to get efficient use of computing power and space.

C. AUSTIN FITTS: Well it's funny. I'm one of those people who's completely distrustful of the cloud as you know. If you look at the various things that are needed for the kind of world, the technology is moving towards, you know, we need clouds that are trustworthy. And yet what we've seen is the online world has yet to prove itself to be something that's reliable or trustworthy. So it's going to be interesting to see how we create something that can be trusted.

Well, let's turn to integration into the infrastructure. One of the DVDs I put up was, which is our second area, and that's computing not just shifting from the desktop to the handheld device but shifting out of the handheld device and integrating into the general infrastructure. And one of the things that makes this possible is what is called smart materials. And I put up the DVD from Corning called "A Day Made of Glass" that shows – gives an example of integration of this kind of smart technology throughout the infrastructure into the housing, into the cars. You know, sort of into the furniture even. Maybe if you could sort of introduce smart materials, what's happening and what's driving this?

CHUCK GIBSON: Yes on that – you know, I've got – I'm not really all that – I haven't spent a whole lot of time in studying that. And so it is interesting, especially that – what I have done is looked at that Corning. Because if you look at what they've done with glass and the ability to use that in all aspects of all your phones, your computers, your TVs. Everything has glass made in it and it's now almost a part of all of these – we're talking about mobile.

It's almost a part of every single mobile and technological advance that we as humans are interfacing with every single day because it's the digital that has to be converted to the analog and the analog is what we use as a visual. So the actual glass part of it is the analog part where it's transmitting the analog data which you pick up with your eyes. It's really interesting and, in fact, the growth is just unbelievable.

C. AUSTIN FITTS: Now what does nanotechnology has to do with the smart materials and what is nanotechnology?

CHUCK GIBSON: Well nanotechnology, you know, I love this topic but it again is one of those polarizable topics. I don't know where I – I have this vision of somebody introducing nanos – nanoparticles into your body and then going in and eating your brain. I don't know what. It was some movie or horror movie I must have seen or something.

But there are some really cool things going on in nanotechnology right now and I don't know if you have seen the one. The titanium jaw that was put up from the University of Haslet out of Belgium. So they had this titanium jaw was printed from nanoparticles and particles and they were able to implant this in a person and they were able to then within 24 hours swallow and talk normally.

C. AUSTIN FITTS: Wow.

CHUCK GIBSON: And I think that is unbelievable. Additionally, you know here's a couple of other examples I thought.

C. AUSTIN FITTS: And wasn't it somebody in their '70s - the person was a

senior?

CHUCK GIBSON: Yes it was so that makes it even more difficult. There's a company down in Florida that is actually using nanoparticles to create filtration – basically filters. And the reason why that's really good is because nanos, nanoparticles are the smallest things that you can do. So you – once you combine these things together they allow you to have an unbelievable filtration rate and they were able to get to 99.9999 percent of all things out of water.

So you could say – you could use this in a practical manner of taking a portable little filter that is made of nanoparticles, going to a country or a place where they don't have potable water and be able to use this to filter water and then have it drinkable. And so –

C. AUSTIN FITTS: So now isn't nanotechnology manufacturing or engineering at a molecular or submolecular level?

CHUCK GIBSON: Yes. That's exactly what it is.

There are a couple, a few other things. There are a couple of sports equipment companies that they're making – so one of them is making – they're putting nano coatings on tennis balls. And these tennis balls with the nano coatings bounce twice as long as a regular ball. But not only that, it lasts – it substantially improves their life in a tennis match. And they're also using it in golf clubs where you can actually get a lower density and higher strength club that allows for longer and straighter shots, which of course all of us golfers would love to see.

And in an even a more practical life for some of you men out there they're actually using nanoparticles for packaging on beer bottles. So this allows them to have thinner material and it makes the actual, the beer itself – not the beer but the beer plus the container lighter, so it's cheaper to ship and it also extends the life of the beer on the shelf.

C. AUSTIN FITTS: That's amazing. And the thing that amazes me is when you start digging in and looking at the different companies doing

these things, I don't know if would technically fit under nanotechnology, but materials. You and I were looking at a company that makes plastic braces. And if you've ever had a kid or a friend who had to wear those metal braces, you know, it's kind of a small application you never think about but it could make such a big difference in everybody's life. So there are thousands and thousands and thousands of these lighter, stronger materials of the things they can do.

Well let's turn to another area in integration into the infrastructure. Because one of the things that people are talking about is machine-to-machine coordination and artificial intelligence. So I talked a couple of weeks ago about the report in Kiplinger's that cars were going to talk to each other and talk to the highways and we didn't need drivers to drive. You know, we could all sit and work on our way to the office because the car would drive.

"My immediate reaction is so far the world of software has relatively been the Wild West and entrepreneurs are cowboys. It hasn't been a world that is engineered for very high-quality, risk management."

And my immediate reaction is so far the world of software has relatively been the Wild West and entrepreneurs are cowboys. It hasn't been a world that is engineered for very high-quality, risk management. But now we're talking about going into a world where one small flaw in the network or in the software can result in a 100-car smashup on the LA freeway in that kind of world. So it's a very, very different quality control and culture to me that's going to emerge if this is going to happen 'cause we're talking about some pretty significant risk issues.

CHUCK GIBSON: Yes. You know, a good example of that would be what we have here, the Bay Area Transit. So there are multiple trains running on a track or two and they have to – the software controls their ability so that obviously they don't smash into each other.

And the complexity of that software was – it took them years and

years to be able to create. I can't imagine how complex it would be to be able to do that when you've got hundreds of thousands of cars running together all at different speeds at different times, you know, coming and going at different directions.

On a train you've only got one direction, one way and the other. You've only got basically two directions that you can go and there's usually very few of those trains running at the same time. So I'm with you on that one. I'm not sure I want to be the first person to be in the car to test that system out.

C. AUSTIN FITTS: It was funny. Somebody said to me today. "Oh, wait. You know, I'd rather have, I'd rather deal with the software issues than deal with drunk drivers. So maybe it's a little bit safer when the drunk drivers turn on their software, their autopilot.

CHUCK GIBSON: There you go.

C. AUSTIN FITTS: Okay. Well let's turn to manufacturing, our third area. It was interesting. I've done surveys of various team members and colleagues this week and this is the area that seems to cause the most excitement. We're using technology to create a whole new generation of tools and one which you've already mentioned but I want to talk about again is 3-D printers. So maybe if you could just introduce for us, what is a 3-D printer?

CHUCK GIBSON: Ah yes. 3-D printing. It's basically the process of making a 3-D solid object from a digital model and it's – if you think about current manufacturing, it is a subtractive process. So if you have – if you're building a car, you have a sheet of metal and you drill some holes in it to make it fit. And that's a subtractive. You start with something you take something out of it and it fits into – you know, through machining it fits into your whatever it is that you're building.

Where a 3-D printing is basically an additive process. So you start laying – so you have a two-dimensional object and you start laying down that third dimension which is – so you've got length and width

and now you're going to add the depth part of it. So it is just – it's pretty simple. You create a 3-D model and that 3-D model is then communicating information on each one of those layers to a 3-D printer and it lays down. It starts and basically lays it down from your 2-D layer and then it just starts building on top of each other.

C. AUSTIN FITTS: So you just literally produce – the DVD we have up on the – or the video we have up on the blog is you just print yourself off a new wrench.

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: It's pretty amazing. And to me it's – go ahead.

CHUCK GIBSON: Well I was just going to say there are, for example, Audi uses the 3-D printer on the prototype models of their cars. So they used to go out and have stuff – you know, they create a prototype and you'd go through many iterations because you're going to want to make changes along the way. And it's very cost prohibitive to be able to go out and when you make a small change you have to go and rebuild a whole bunch of components.

Here the model's already built. They make a minor change to the software. They hit the send button and it goes to a printer and it prints a brand new whatever it is that they want to build. And they can put into the car and test out, see how it works. It's unbelievable how much faster, cheaper, and easier it is to fix or to be able to use in these kinds of environments.

C. AUSTIN FITTS: So needless to say it makes it much cheaper to try things.

CHUCK GIBSON: Yes. And over time when you're going to use this thing in a production mode it'll become cheaper to do it that way too. But right now this is so new and in its infancy that people are using it just in prototypes and it is clearly the best way to do it for this type of model.

C. AUSTIN FITTS: Okay. So two other things worth mentioning. One is lasers and robotics. Anything you wanted to mention there?

CHUCK GIBSON: No. I know this is your love so I tend to leave this to you because you're the champion on lasers and robotics.

C. AUSTIN FITTS: Well I put up one video and in fact somebody pointed out, "Well, you know those guys really work off a joy stick so it's not technically a robot." But what I've seen happening – what we've seen happening in the last decade is more and more manufacturing can be done with robots instead of with humans and it's dramatically bringing down the cost of manufacturing all sorts of stuff. And including making it more attractive to manufacture in the United States.

So there are tremendous advantages of being close to your market. So let's say you're selling into the United States or you're selling into China and having this technology makes it much easier to do a smaller footprint manufacturing and be close to home and be much speedier. And so I think the big question here is will this allow manufacturing to stay in the United States and in the developed worlds or even move back in, particularly with some of the increased political tensions between the United States and Asia?

So to me *The Economist* had a wonderful article in the spring of this year called "The Third Industrial Revolution" and that's up on the blog. And they talk a lot about taking these technologies and what it can do to really bring manufacturing. And we had a couple, several *Solari Reports.* We had Dale Dougherty from Sonoma who's the sort of found and leader of the Maker Movement. And the other thing that's happening is these tools are now getting to the point where a group of people can get together in a place or, you know, we've seen franchises. Tech Shop grow up.

So somebody like Tech Shop can have these tools. People can join and be members. And so there's a lot more that we can learn to do for ourselves or small business can do for itself in a community. So I have

no idea if we're going to get to the point where you go down to Ace Hardware and they just print you off whatever it is you want in their 3-D printer. But it certainly means we can bring a lot of the stuff down to a much smaller footprint. And I think to me in theory that's – that could be good news for the small guys.

CHUCK GIBSON: In addition though I think it's really important and it does bring up a different concept for those that have – are involved in this. But if we go down that path and we do retool that as United States and we become strong again in manufacturing, the shift that would be required for the skill for employees is – were going to – it's projected that we and whoever else takes this on are going to have labor shortages because there just aren't enough skilled employees at any one specific location. For example, in the United States.

So what they're talking about is – if that's the path that we're going to go, you may see multiple manufacturing locations around the world, not because that's the way, let's say you're a U.S. manufacturer. That's not because that's the way you want it but it's because there aren't enough skilled employees to be able to do the job.

"That's not because that's the way you want it but it's because there aren't enough skilled employees to be able to do the job."

C. AUSTIN FITTS: Right. I was – when I was in Switzerland last year somebody sat down next to me and I asked them what they're doing. And they said, "Oh, I'm over in California. I have a grant from the Office of Naval Intelligence. They want me working to encourage low-income communities to get interested in robotics because they project in 10 years they need 400,000 robotics engineers in the United States alone." How's that?

CHUCK GIBSON: You know and that's crazy. I saw a report from McKinsey who said that because of the cloud, and we're talking about manufacturer needs, there's going to be 1.5 million more data literate managers to be able to help manage that are needed in the next five years.

C. AUSTIN FITTS: I can believe that. I can believe that. Okay. Well one of the things I'm interested in is how we encourage young people to focus their curriculum on where the jobs are going to be. Well let's turn to number four service industries and this is not what I want to talk a lot about I keep looking at what is possible with these different technologies. You know, so using robotics to literally run all the fast food restaurants with no humans. And my question is what in the world is this going to do to the employment.

And, of course, I think you already answered the question which is there's going to be a tremendous demand for skilled workers and it doesn't appear if you look at the universities or the schools that anybody seems to be preparing for this. I mean –

CHUCK GIBSON: I agree with you. You know, I haven't looked at the curriculum in most but the people that I talked to I don't see, the kids today that I talk to that are in school I don't see education heading in that direction. Maybe it's because we're so new and it's in its infancy that, you know, the education system hasn't quite caught up with the demand or the realization that there's going to be this kind of demand.

C. AUSTIN FITTS: Well there's incredible disconnect and I think it's going to be interesting to see how that all gets connected up. Quickly, food and water. Just – this is an area of much frustration because I've been looking for since 2004 seriously on ways of investing in food through the equity markets. And I have to tell you whenever I see new technology, there's some good stuff being applied to water in terms of companies that help do water remediation and all sorts of other good things with water.

But in the food area I don't even want to talk about new technology because so much of what is happening is really frightening. And you see tremendous wonderful things happening in the private equity area or in the open source area but so far food is one that has eluded me. So I will skip on to energy which is one that's had a very dramatic impact. The first part of energy that we wanted to touch on was the

extraordinary increase in domestic gas reserves. And I'm going to turn and bring up the first slide as a result of new drilling, so called fracking technology. Maybe, Chuck, you can just take a second and introduce this.

CHUCK GIBSON: Is this the – I can't see what you've got up. Is this the U.S. oil and natural gas proves reserve chart?

C. AUSTIN FITTS: No, I've got the recoverable natural gas reserves globally.

CHUCK GIBSON: Ah. Okay.

C. AUSTIN FITTS: And then I'll go to the historical for domestic.

CHUCK GIBSON: Yes. The one thing, you know, when we do our research on this we find that you're going to get different people telling you different amounts of reserves because they will quantify certain types of reserves differently than other people. But the bottom line is regardless of what the exact number is there has been a huge expansion of available discovery of natural gas since fracking and since the shale. It's almost – it's gone from – it's almost 60 to 70 percent growth since the start of 2000. And I suspect this is going to continue though while our oil has actually – we had an uptick in the last few years but it's on a gradual decline. It's declined about 30 percent.

But gas is where it's at for the United States and it has an unbelievable potential for supplying. I don't know if you saw the report but I think it was IEA that came out and said that there's enough recoverable gas reserves to take care of the next 90 years for all of the United States' energy needs.

C. AUSTIN FITTS: Right. And we should mention the fact that the fracking technology is very controversial in some respects but the reality is what it's managed to do in terms of making the United States theoretically energy self-sufficient. As a financial matter is quite dramatic. And you see that drama played out in the equity markets, both in the energy sector – so it's energy, it's pipelines. But also we

had Jim Norman on the *Solari Report* and he pointed out that 40 percent of the cost of any U.S. manufacturer is energy. And if you look at the price of natural gas here versus Asia at that time we were $2.00. Europe was $7.00. Asia was $15.00. That's an incredible competitive advantage.

CHUCK GIBSON: Yes. Absolutely. And can you imagine not shipping that money over to the Middle East and keeping it here and creating jobs and wealth here? I mean the potential for wealth creation is unbelievable.

C. AUSTIN FITTS: Well maybe if you could talk a little bit about what LNG is and what's happening with LNG both in terms of exports and trucking.

CHUCK GIBSON: Yes. So LNG is basically just a change in state of gas. So gas is gas. Gas particles. And it's hard – it takes up a lot of space. And if you apply pressure and temperature to gas you can change it to a liquid. And so basically it is just the process from converting a liquid to – excuse me – a gas to a liquid and gas is much more easily transportable either via trucking or via ship. And so it's interesting because there is a lot of effort here in the United States, money being put into the ability to be able to convert this energy, convert natural gas into liquid natural gas.

And the main reason is because you take – natural gas is currently, I don't know, $3.00 a cubic foot or whatever it is. And if you can convert that into liquid natural gas it takes just a little bit of energy, which is a byproduct of course of energy. Use some of that energy to convert it. You can ship it overseas to Asia, which is the biggest home for it and you can make – you can double or triple your money. You can get three – two to three times x the revenue that it costs you to drill and convert and ship. So there's a huge economic benefit and cost benefit for those that have a low cost of access to this energy source here in the U.S.

C. AUSTIN FITTS: And it was just – it was 2011 that we started to be an

exporter, a net exporter of gas. Right?

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: Yes.

CHUCK GIBSON: Yes. And we've got – it's to the point where we have so much gas and so many wells without the demand here in the U.S. and not enough LNG capabilities that they had to just basically turn off the spigot because the demand and the – they're running out of space to put this excess supply.

"It's to the point where we have so much gas and so many wells without the demand here in the U.S. and not enough LNG capabilities that they had to just basically turn off the spigot…"

C. AUSTIN FITTS: Right. Well so much for peak oil for now.

CHUCK GIBSON: Exactly. Maybe peak oil but we have excess gas. Well that sounds like a commercial for something, I don't know.

C. AUSTIN FITTS: Let's turn to renewable energy because one of the things you've really educated me to is what's been happening with the economics of solar energy. And I think that's worth touching on because we're – at some point we're coming up on a tipping point when solar could become a lot more important to the energy supply.

CHUCK GIBSON: Yes. You know, that's all we've been – one of my loves 'cause I came from the Silicon Valley and part of what they did was be able to start off the solar industry. But, you know, I mean if you step back and you look at it. If we could capture just 1/10,000th of the energy, the solar energy that's striking the earth, we would have enough energy that we would need for the whole world with no greenhouse gas emission. So I mean the potential is there. And it's unbelievable.

And the actual growth of the technology itself or the improvements in the technology. So solar's been out there for about 31 years or so and they made some projections. And if they can – if the current progress

continues for one more decade, which seems likely – we're getting up to some theoretical limits but they said that about silicon too. They will have created and energy source that is as cheap as coal. And you know what coal does to an environment to have to mine and to use. And then if that goes on another 10 years, so in 20 years from now you'll be able to create energy from solar cells that is half the price of coal.

C. AUSTIN FITTS: Wow.

CHUCK GIBSON: So basically you could eliminate the use of coal. Now I'm not picking on coal. I'm just using that as a reference.

C. AUSTIN FITTS: Right. Well I know –

CHUCK GIBSON: So what we see is this ongoing progress of the solar technology. But the one thing where we are today, and I don't know if any people out there have invested in solar but it's not been the greatest investment over the past four or five years or so.

C. AUSTIN FITTS: Right.

CHUCK GIBSON: And that's because it's commoditized and there is no real differentiation. It's just a small difference between supplier A and supplier B. And on top of it you now have the Chinese who have a much lower cost to manufacture jumping in. And so what you have is a huge commodity that is easily manufacturable that – there's some technology required but in general it's not a challenge. It's not like trying to produce an Intel microprocessor.

But at some point in time we're going to have a breakthrough, whether it'd be through a technological change, a type of solar cell, whether it's gallium arsenide or something different that's going to give us the breakthrough that we need. And somebody is going to – whoever manufactures or creates that is going to be the big winner.

C. AUSTIN FITTS: Okay. So all over the world we have these huge utilities

who are doing coal or doing – you know, but they're big footprint, big monopoly, very powerful and, of course, they're producing lots of dividends for investors. What happens when this hits the tipping point?

CHUCK GIBSON: As we've always said it's the death of one, you know, industry and the birth of another. So all – I don't see it will be the death of – what will happen is you'll see a slow decline of the massive utilities and an increase of whether it be solar or any other type of energy source that's actually cheaper. So it's just a shift and that shift is going on. It's just a very – it's like turning a tanker. It's going to take a long time to get there.

C. AUSTIN FITTS: It was so funny because when we were looking at Apple being equivalent to so many of the European stock markets I went in and I told you, "You know, I want to look at all the French companies." And so I went and looked at all these big French utilities and I thought, "Oh, no." I don't think these guys are ever going to be able to adapt to this. So I want to stick with those smaller –

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: – those smaller guys. Smaller, nimble, newer. Okay. So let's – I just wanted to mention the wild card, of course, here is breakthrough technologies. We had Adam Trombly talking about free energy the *Solari Report* if you're interested. We're not going to go into these technologies tonight but I did want to mention I'm going to be over in the Netherlands in November. There's a very interesting conference to bring leaders in breakthrough technologies from all over the world. I'm hoping I'll a report on that. But to me that's a wild card. But I still don't know quite what to make of it in terms of when something real might get integrated.

So let's turn to health sciences because I think it was you Chuck that said if there was going to be one area that have the most dramatic impact on increasing value in the equity markets you thought it was probably going to be health sciences. Is that fair to say?

CHUCK GIBSON: Yes. I still think that's true. You know, I have a bias because I went through the development and growth and maturation of the Silicon Valley where it was all silicon and computers. And I saw the branch off from that into – taking the same model, taking the same path that biotech is taking. And it's unbelievable. What happens, whether it's biotech or silicon, you would have a large company. You'd have somebody with a really good idea. They'd go. They would lead. They'd create something new. They'd get some venture funding and the next large company – you know, it would then turn into a large company or they'd be bought out.

And that's exactly what's happening with biotech. And if you look at the trends from the past two years it's down slightly. But there was $1.5 billion that flowed into the equity markets start-ups for just the first half of this year.

And if you look for – since the back, since 1998 there have been on average, 100 to 200 venture-funded start-ups and 300 to 400 total biotech fundings, which are both combinations of start-ups and second round fundings for biotechnology companies. And that's just for venture funding. That doesn't include the major drug companies and the money that they're pouring into the market. So it's unbelievable the amount of money that's flowing in there and the potential breakthroughs that are going to be made through this. And, of course, once you have a breakthrough then monies – you know, that's where money can be made in equities.

C. AUSTIN FITTS: Well it's funny. I put it up on the blog because this is one of my favorite saying that since 2003 silver was up 800 percent. Gold was up 500 percent and the leading manufacture of surgical systems was up over 4,000 percent. That brings it home to me. But, you know, it's pretty interesting and spectacular what's going on. We mentioned the 3-D printer building a jaw, a new jaw for a woman.

CHUCK GIBSON: Yes.

C. AUSTIN FITTS: And we've seen all sorts of surgical systems you and I

have looked at. And, of course, nanotechnology now gives us tiny little devices that go into your body and drip drugs out slowly and then melt away.

CHUCK GIBSON: That's right.

C. AUSTIN FITTS: One item I wanted to mention was the 3-D printer that can make a human organ. And if you look at – you can jump on the internet and do a search for 3-D printers and human organs. And what you'll see is whether at Cornell or MIT or all over the country people are working on this. You're literally seeing, you know, the fastest way to get a transplant is not to wait for a donor to die but to turn on the 3-D printer.

"You're literally seeing the fastest way to get a transplant is not to wait for a donor to die but to turn on the 3-D printer."

I was in our office and we were looking at a company that was making such a printer and I went back to – the couple that I was staying with. I told them and they said, " You're making this up. This is impossible." And we turned on the TV and there was a doctor show. And sure enough, they were growing somebody a kidney in the 3-D printer. And I said, "Well see. It's on TV. It must be real."

And then today we were – I was going over with the Solari team. We were sort of doing our round-up for the *Solari Report* tonight. And somebody said to me, "Are you making this up? Is this a joke? Is this for real?" And, of course, I made everybody get on Google and do a search for 3-D printer and human organ. And sure enough they were like, "Oh my God. This is really happening." So I don't know if you want to say anything more about these different things but they're – you know, day to day to day what we're looking at is pretty amazing.

CHUCK GIBSON: It is and I – it's one of those things when we first saw that video when we were looking into that company to see if we wanted to invest in it, it was – you had to laugh and it wasn't a laugh because of it was funny. It was a laugh because this is creepy.

I'm not sure whether I like this or not.

C. AUSTIN FITTS: My uncle started the transplant center in South Carolina and you would see people die waiting for a transplant. And to know that they didn't have to die, that you could – you know, you had a way to get something rather than just pray and wait for a donor, to me that's very freeing.

CHUCK GIBSON: It is. It's unbelievably impressive in what can be done. It's just – for people that are used to it, or like you were, that were involved in it, I think it's acceptable. But it's understandable. But for me it's still a little creepy on growing this – what's next? You're going to grow a whole human out of that?

C. AUSTIN FITTS: What else have they been growing that they haven't told us about?

CHUCK GIBSON: Exactly. Exactly.

C. AUSTIN FITTS: Okay. So quickly, let's talk – let's turn to some of the crosscutting issues and there are many. We could talk about these forever but let me address quickly. One of the things that's needless to say is that patent law, patent liability and patent litigation are getting more and more important. And when we look at companies, you know me. I'm always turning to the litigation section. But it makes having the patent, getting the patent, managing the patents and the value of patents much more important.

So for those of you planning on going to law school, you want to look at intellectual property. Another thing is artificial intelligence. How in the world are we going to optimize, find, store, organize, manage, you know, all this different data? And then – and I talked earlier about the risk management. How in the world are we going to get a culture in the software industry that's really committed to very high qualities of flawless performance when the risk issues and the liability issues are this great?

We talked about the employment model. One of the things I always come back to which you know is a big concern to me is the privacy issues. And after getting familiar with where all of this technology was going including the cloud I said to one of the people I work with, "Well we all live in the *The Truman Show* now", in honor of the movie *The Truman Show* where Jim Carey lives in – everything's a camera and it's looking at him. Needless to say there's a lot less privacy in this world and a lot more accountability, good or bad. Any thoughts, Chuck, on the crosscutting issues?

CHUCK GIBSON: Well I go back to the – it's not the cloud but the managing what they're calling big data and to me that is going to be a huge challenge that we're going to have but it's also going to be a huge potential for – you know, we're all looking for where are we going to find growth because we don't want to go into this stagnation of a country that has no path for its kids.

And every day we create 2.5 quintillion – again, that's 18 zeros – bytes of data and it's so much that 90 percent of the world's data has already been created in the last two years. So basically we're doubling in two years. And how do you manage all that? Not only do you talk about the risks that are involved but how do you manage that?

It's going to take an unbelievable amount of resources and smart resources that are going to be able to manage that.

C. AUSTIN FITTS: Right. And it's also heading as a society, how do you manage an explosion in knowledge as well? Now obviously not all data is knowledge but with this amount of invention and sort of integration of smart technology and all sorts of things the innovation and the growth in knowledge is accelerating. And so to me there's a real social issue of how do you change your culture to live with that higher learning speed and – but have a culture that's a wonderful place to be a part of and continues to be human? So these are big questions.

Before we close, our movie tonight is *Other People's Money* with

Danny DeVito, which is a wonderful comedy that explores just these issues. There's a small company in New England, Wire and Cable run by Gregory Peck. And Danny DeVito plays Lawrence "Larry the Liquidator" Garfield who does a hostile takeover or hostile tender for Gregory Peck's company. Technology is changing the market and Peck and his company are not changing with it.

And Danny DeVito basically comes in and says, "This company's dead and we need to liquidate it." And it's sort of two sides of the balance sheet having a war. And at the end it turns out that Gregory Peck's daughter who Danny DeVito falls in love with seeks out a Japanese company and says, "What we need to do is we need to reinvent the company." So you sort of get the asset side of the balance sheet warring with the financial side of the balance sheet. And then the daughter comes in with the third way, which is a reinvention and reintegration of both because in fact both are right and both are wrong.

One of the things you see in Gregory Peck's defense of his company is the fact that with Danny DeVito's going to do is better for the shareholders but it's going to just completely knock the town and taxpayers back on their you-know-what. And so you see all the issues battled out but it's very cleverly done and it's very funny. Did you watch the Larry the Liquidator speech, Chuck?

CHUCK GIBSON: Yes and I thank you for twisting my arm and sticking the gun to my head to watch that because that is a classic. And anybody that hasn't seen it, it – I'm going to hold onto that one. That one I'm just going to – that one I love, I tell you. Thank you.

C. AUSTIN FITTS: It's a very, very funny movie and it battles out all these issues. And it helps you rise above them and get perspective on them. What's interesting is you watch our entire society grapple with this incredible change. You know, we're getting all sorts of emotional. We're getting fear. We're getting anger. We're getting crankiness.

And to a certain extent, and this is one of the reasons I wanted to do

the *Solari Report.* We need to step back and say, you know, "Maybe what's happening is not just the bad guys. Maybe what's happening is by me getting this iPhone and completely reengineering how I do things and how I pay for things and where my time and money goes, I'm causing a dramatic change throughout the society."

And that's what we're seeing. And I love *Other People's Money* because it takes you up to a higher level and gives you a real perspective on what's happening. Right now, America is just one big metaphor for *Other People's Money*. So definitely watch that movie.

"I love Other People's Money because it takes you up to a higher level and gives you a real perspective on what's happening."

Okay. Well before we close you're going to be back in October Chuck with another equity update. But before we go I know that you've spent years and years plowing in and looking at all these different areas and understanding the investment consequences of them. Is there anything else you'd like to share with us before we end in this discussion of technology as a primary trend?

CHUCK GIBSON: Yes. There's one. I'm glad you asked me that. The one thing I would just add is that from an equity standpoint new technology does not necessarily equate to meaning it's a great investment. It could, but it doesn't mean that. And so you have – not only do you have to look at the company and what they do but just as importantly – and this, you've taught me this more than anybody is that you need – the people matter just as much as the technology matters.

C. AUSTIN FITTS: Yes. And in fact I think when somebody asked me today, you know, is this area going to get pumped and dumped like the internet stocks, one of the things I was thinking about was, "Okay. How do you protect yourself from that?" And I get back to the idea of investing in the primary trend. And to me the most important thing, Chuck has an expression called the gem. We're still trying to figure out how to define a gem. But a gem is a company that

is really extraordinary, not just in terms of the products and services that it provides but the leadership and the management and the quality of the people and the culture.

I think one of the greatest ways to protect yourself from the pump and dumps and the swings and some of the fraud or crazy stuff that goes on in the, you know, a fashionable business that ultimately never makes sense and doesn't have a sound business model is to look for that excellence in people and governance and leadership and in culture. To me it's that excellence that has defined all the really great companies that have translated into really great investment.

So I'm still trying to define how to – what it is that defines a gem and how to find a gem but I think that's what you're looking for. You're looking for excellence in the people and that's what makes a company great. And it's ultimately to me it's the great companies that will be the great investments in this area. So I'm glad you said that. Okay. Well Chuck, thank you very much for joining us and we will look forward to you joining us in October. And between now and then I'm going to be on the phone with you two hours digging in the dirt for more high-tech truffles.

CHUCK GIBSON: That's right. Well, we're looking for gems but thank you for the invitation and have a great rest of the evening.