THE UNIVERSITY OF ARIZONA
Race Track Industry Program

33rd ANNUAL
SYMPOSIUM ON RACING & GAMING

TUESDAY, DECEMBER 5, 2006

KEYNOTE LUNCHEON

John L. Petersen, President & Founder, The Arlington Institute

MR. DOUG REED: Welcome to the Symposium on Racing. I'm happy to present the keynote luncheon today. Hope you enjoyed the new facility.

I'd like to first thank our keynote luncheon sponsor, IGT, who has been with us many, many years here. And Walt Hawkins and his crew are always big supporters of our program. Thank you, IGT.

And I'd like to recognize one more group again, because a lot of them were working this morning. This event could not be put on without students of the Race Track Industry Program. They do a yeoman's job, they work audiovisual, they work registration, they help us with the conference, getting everything ready. Over here to my right are a lot of the students. If you would stand up, give the students a round of applause for the good work they have done.

Before our keynote speaker I'm going to turn things over to Wendy Davis and let her do the good job of giving out presents and awards. Welcome, Wendy.

MS. WENDY DAVIS: Thank you, Doug. This is the fun part.

Our first award is the Clay Puett Award. It's presented by the Race Track Industry Program for service to the racing industry. From supporting riding activities on public lands to the many tax issues that affect equine racing and all equine enterprises, to economic impact studies of horses and racing, to lobbying on behalf the racing industry, including most recently working on the exemption for racing on the Unlawful Internet Gambling Enforcement Act, we would like to recognize Jay Hickey, president of the American Horse Council, and the American Horse Council for all the hard work they do for us.

Jay, if you would like to come up.

(Applause)

MR. JAY HICKEY: I have to tell you, I'm totally surprised by this. And I will

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hopefully not perform like President Bush did the other day, although I could. President Bush, the older, don't take that the wrong way. He got upset.

I'm very touched. I have to say this. I very much appreciate it. I love to come to this conference. There's so many good friends that are here. My wife, for the first time, has come and she is not here. She — I said, “Do you want to come to the lunch?”

And she said, “Do I have to?” And I said, “No, of course.”

That's too bad. But she thanks you also.

Doug and Wendy and Steve, thank you very much. On behalf of the Horse Council — and really the Horse Council is you — I thank you for this. Thank you.

(Applause)

MS. DAVIS: Our next award is the John K. Goodman Alumni Award. And Jack is sitting right up here at the front table with us. This year's award winner of the Race Track Program Alumni Award has come back and been a guest speaker at the Race Track Industry Program. And that speaks volumes about the kind of graduates and what they go out and accomplish once they leave the University of Arizona. This year's award winner started out as a racing official and worked up through the ranks, worked for a number of great racing secretaries out there, before becoming a racing secretary himself. He is currently a TRA director, on the Equibase Board of Directors. He is also executive vice president of Beulah Park America tab. And we would like to thank and honor Mike Weiss, our Jack Goodman Alumni of the Year Award. Come up.

(Applause)

MR. MIKE WEISS: Thank you.

MS. DAVIS: We have just one more award to give. This is for our distinguished student, our current student at the Race Track Industry Program. And this year there was a dead heat. We have two winners. They were just too hard to separate.

Our first winner has completed a couple of internships. One with Prairie Meadows Racetrack, another with National HBPA. He participates in a number of the independent study projects we offer, including one that looked at the racing challenge we did in conjunction with the American Quarter Horse Association. He also worked on the HBPA national membership survey. He has been instrumental the last two years when we had Casino Night and raised money for student scholarships. He is a great student academically; and, finally, he listened to his advisor when she said, “You really want to take physics? I think it's a whole lot harder than chemistry.”

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But he was big enough to say, “You know what? You are right. I don't think physics is any easier than chemistry.”

So I think he is finishing up the chemistry now.

Jon Moss, if you would like to come up.

(Applause)

Our second award winner participated in an internship this past summer with Michael Dickinson. He works very hard for us in the Race Track Program offices. He has worked really hard the last two years on the Mentor Lunch, getting all the mentors organized with the students and the program. He, too, worked hard on Casino Night and raising money for student scholarships, and I think you've seen him here quite a bit working on registration. He passes out the packets, will also do the actual registering, run boxes from one place to another. He is really our go-to guy.

Again, great student academically; and now that he is just about to graduate, he is a very serious-type of student. He is starting to crack a smile now that the light at the end of the tunnel is not a train.

Jason Egan, if you would come up, please.

(Applause)

MR. JOE WITTERSCHEIN: Good afternoon. My name is Joe Witterschein with The Innovation Group. When I came in the building about 20 minutes ago, I had no idea I was going to be asked to introduce this afternoon's keynote speaker, but he knew. He stopped me as we came in the room. We've never met and he said, “I think you're the gentlemen that's going to introduce me.”

And I said, "I'm surprised. How did you figure that out?" And he said, "It's 20 minutes from now."

If I can't do that, what good am I?

So what I'd like to do is introduce to you a wonderful gentlemen. I think you'll find him very engaging. His name is John Petersen, considered to be one of the most informed futurists in the world. His current professional involvements include development of sophisticated tools for anticipatory analysis and surprise anticipation; long-range strategic planning; and, of course, helping leadership design new approaches for dealing with the future. I urge you to listen up. I think you'll enjoy him. On behalf of the University of Arizona Race Track Industry Program, please welcome John L. Petersen.

MR. JOHN L. PETERSEN: Good afternoon.

Well, I can tell you it's nice to be here. I got up at 3:30 this morning in New

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York City where it was 11 degrees. And all the airplanes worked today and I showed up and it's much better here than New York, I can tell you that today. I'm happy to be here.

I run a think tank every once in a while outside of Washington, D.C., called The Arlington Institute. It's not Arlington Heights, Illinois, which is kind of your guys' thing. I used to live in Des Plaines, though, and I worked across the street from the racetrack for a short period of time, about this time of the year. I was out of work and I was a Santa Claus in the shopping center across the street from the Arlington Heights racetrack. It was really quite memorable. And it reminds me again of what you do when you are young and out of work, you know?

But we don't study racing industry or anything. At The Arlington Institute we are futurists, a unique kind of nonprofit shop; and we look where the world is going. We're a 30,000-foot perspectives systems, perspective kind of people. We try to know a little bit about everything. And we don't make predictions. Anybody in my business that tells you he is going to make a prediction about the future, you should worry about that. It's impossible to predict the future. There's a lot of good Nobel laureate level science that says it's impossible to predict the future. We build scenarios, we build alternative pictures about the world and, as Joe said, we develop unique, leading-edge technology.

We're building for the government of Singapore a national surprise anticipation center, which is the first capable of that kind anybody in the world will have. We're out on the edge trying to look at big trends in how the world is going and how it all fits together and what might happen in the next 5, 10, or 15 years.

And so what I thought I'd do today in the 45 minutes we have together is walk you through some of the trends and some of the extraordinary things happening in the world right now. I want to warn you, I hope it's interesting and provocative and you are having a good time, but it's really serious, too.

We live at this extraordinary time in history. It really is. A lot of people say this stuff — and I hope I convince you — it's an amazing kind of time where there's fundamental changes happening that never happened before in all of history. And the — it's characterized by a thing called exponential relationships. For the kids over here studying physics they all understand it.

Curves like this one. This is an exponential curve, growth in population. Starts back at the year zero — the birth of Christ, if you will — works it's way to 2000, and you see it's really low for a long time and suddenly starts to accelerate and goes screaming for the sky. This is a hockey stick relationship, some people call those kind of things.

This is exponential growth. And we're living — you see where we are? We're up on the side of this thing. And that makes a difference. We're living at this time where we're going to add, in our lifetime, tripling the population on the planet. For most of you, you look about the same age as I am. It all makes a difference. And

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it makes a fundamental kind of difference about the way the system works that we all live in. You see these kinds of exponential curves in terms of the environment.

Here's the amount of carbon dioxide the atmosphere going back from 1000 to 2000. And here, you see the exponential. And here's the nitrous oxide, methane, and sulfur and so on. In that part of the environment, the context we live in, you see those kinds of changes. You also see that kind of relationship in technology. This is information technology and this is the kind of famous relationship of the doubling of technology, of computer technology, every 18 months. MIPS per thousand dollars. Million instructions per second per thousand dollars of dollars. And you can see starting in 1900 they were mechanical computers, and works its way up to 1960s where there's the big IBM mainframes. And then there's Apples in the 1970s and into Macs and Gateways and so on.

Up here is the equivalent computing power. A human at the top and a monkey and a mouse and a lizard and so on. What you are seeing is the slope of the curves, as you go further and further in time, are getting higher and higher. You get closer to having individual computers that are the equivalent of the computing power of the human brain. And right now looks like somewhere around 10 years from now or less you have an individual computer more powerful than a human in terms of—in general in terms problem solving and things like that.

By the way, that is an exponential curve, too. This is not linear, this is a geometric relationship. Each one of these things is 1,000 times higher than the one before. So it's not one, two, three, four. If you looked at this curve on a scale that goes one, two, three, four, five, it would go almost straight up and you wouldn't see — it would not make sense. So you get this kind of relationship, and it's slowing up all over the place.

Why is it going backwards? That's interesting.

The same kind of relationship shows up in other areas as well. And it's an inverse kind of relationship. This is where the fisheries are destroyed. We had the amount of catch in the fisheries and the ocean went for about the same up to 1950 and then the technology exploded. Those of you bass fisherman or offshore fishermen, you know about fish finders and sonar that you could use. And suddenly you can find fish all over the place that you couldn't find earlier. There was a period of time where there was a huge catch and now you are at the bottom and there's areas of ocean where there are no fish in the terms there were before.

You see these kinds of relationships and they show up in all different kinds of sectors. That all makes a difference. These things all interconnect together in complex ways, and they say the future that we're going into is fundamentally different than the past. At some part it all starts to interact and you get a really new world.

What I'd like to do is talk you through four major areas where there's big change coming. And I call it the four Ts. The first T is "technology." We'll start by

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looking at information technology.

All of us live with wonderful computers and information technology around and the stuff going on in the computer area is just amazing. It's just extraordinary. If you start by thinking of the fact that the World Wide Web that we cannot live without — you guys can't do business without — did not exist 15 years ago. If you try to put yourself in that position and understand that we're riding the wave of extraordinary change driven by the underlying computing power — that curve, chart I showed you — computers toward the capabilities of an individual human being.

And here it is in another way. Here's Moore's Law that says you are doubling every 18 months. And here's the trend going on since the beginning of the last century that says the doubling rate goes on here. This is one of those logarithmic curves. It really is going exponentially but is represented as a straight line. But what you have is coming on the near horizon. I mean, the intelligence services in my town, Washington, D.C., are working big time.

Quantum computing, starting with one bit and two bits, at what it was a linear relationship where it would continue at the same rate as this red line, that's not what quantum computing does. Quantum computing heads up this way at this extraordinary explosion where each additional bit multiplies geometrically what the power is. You have a place out here by 2010. You have huge increases in the capabilities.

There are breakthroughs in computing that allow you to do things like predict. This isn't hard to do in Tucson. What the weather is going to be three years from now, two in the afternoon, out in front of this building. You're going be able to do things like that, because the computing power will make transparent things we all thought were impossible to make sense out of.

So the computing power is increasing like crazy. You are getting extraordinary increases in storage. Hard drives and flash drives and all that kind of stuff.

Here's something that came out last year. It's a single chip the size of a postage stamp, and it has the storage content of 25 DVDs on it. Think about that and how it's being compressed, and this is rapid-access stuff. It means when you work your way out here 10 years or so, you are able to carry along any kind of information, every kind of information you want. Instead of the tethers we have to the access of information in many cases, suddenly everything changes. You can carry it along with you. You have extraordinary memory.

There's all kinds of it. Quantum computing and light computing, light-based computings and holographic computing, some people call them holocomputers. And so it's not just the trends that you see now that you can plot, but all these new things coming in optical computers, new things that can change things in dramatic ways.

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I have some pictures I pulled off the Web. But with a holographic computer you project somebody in the middle of a room, in terms of a meeting. So you don't have to go to meetings like this. The food would not be as good but — you can go to a place like that. The movie operates in the middle of your living room when you are there.

These trends change, are going to change everything in dramatic ways. You're seeing the integration of capabilities. I carry around a Treo, a Palm-based telephone. It works anywhere in the world. It's got the Internet, it's cameras and music and it's got bundles of things integrated together. And this is a funny Photoshop-kind of picture. Here you have the cellular phone with true vision. You're looking at this pretty lady and you can see the top of the bag, you can see the skeletal picture of her arms, and she has a gun in the bag. Who knows. But that's the idea. The idea is — this is like Star Wars or some kind of thing like that.

That's the direction you're going. Because you can start to see it. The interesting thing is, we all just do this stuff. We just buy it and don't think about what we are doing. We don't think about what's happening. We ride the wave, surf the wave of amazing change, and it's seldom we build it in some kind of context of what's going on.

There's — the real possibility, this is a real iPod. You guys in the back, I'm going to have to explain it to you. This is a contact lens. In the contact lens, there's a little Apple, a Macintosh Apple. Up here are the symbology from your DVD to play and pause. And over here forward and over here rewind and the menu is down in here. You blink your eye — I don't know how it works. It's a funny picture but representative of technology that they are working on in England at British Telecon labs.

And I asked the guy, "Can you tell if somebody is wearing one of these contact lenses?"

And he said, "No, no."

It's so small you can't even see it. And it has embedded technology with a little laser on it and picks up the wireless technology from your supercomputer watch — small watches with big power — takes the output and shoots it down from the laser through the cross-section of the contact lens. And in front there's a 45-degree mirror, and hits it and it plays in front of your field of view, the output from your computer, so you can shut your eyes and read a book. Go to the beach, lay by the pool, lay back and close your eyes and watch a movie. There's all kinds of weird, strange kinds of things potentially possible with this technology. It's a really different kind of a world.

If you go to biotechnology, some people say the next couple of decades are going to be the decade of biotechnology. Biotechnology is wild.

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Here's a picture, emblematic, and I'll explain in the back. This is a jar of fingers. This is literally a jar of fingers. This is a jar and all these things are fingers and these are cloned human fingers. These are the first humanoid polyfinger clones. There are no hands in this jar, only fingers that have been grown, cloned. And that's emblematic. You think about that for a minute. You say, what? They are growing body parts in jars? Yeah, they are, as a matter of fact. And that's the first time in all of history, you never did that before.

And you're into this biotechnology and the ability to manipulate life, organic life of all kinds. They're cloning racehorses. Some of you guys know about that one. I mean, there's all these extraordinary things going on in biotech.

They are, in terms of replacement, body parts. They now have these things worked out where they can do ink-jet printing of human organs. You know how an ink-jet printer works? It spits little dots of ink, drops of ink. You start with organic matter and shoot these little balls of organic matter and put them on a piece of gel, and you do one level and another and stack it up. It's like a CAD, computer-aided design. You know what that is? You build the design in the computer and take it to a machine. You manufacturer body parts like this, and that's where we're going, the ability to do things that have never happened before. Really fundamental kind of ways.

And then it gets really weird. People are starting to mix human and animals together. Here's a thing from National Geographic. This human animal combination is called a "chimera." In Shanghai they've fused human cells with rabbit eggs and they have a human-animal chimera and it's the first one they successfully did. They left it in the dish a couple of days and then they destroyed it. And I think, what's the next guy going to do? Doesn't he kind of want to wait and say, let it go another week. And the next guy says, let's go another month. And you don't stop these kinds of things. It keeps on going. It's because scientists want it figure it out.

And then it says down here in Minnesota at the Mayo Clinic they created pigs with human blood flowing in their body. Huh? I mean, pigs with real human blood?

The most interesting one, Stanford University has done an experiment now with mice with human brains. What's the mouse look like with a human brain? These are weird kinds of things.

Maybe you saw this picture from a couple of years ago. This is a mouse with a human ear. And they didn't graft that ear on there, they grew a mouse with a human ear. And I don't remember how they did it. And you say, hold it. This is a really different kind of space we're getting into. We're messing around with stuff. I'm straight out of the Midwest from Omaha, Nebraska. My parents explained to me how this all works. They said, God gives you what you got and you've got to live with it. And whatever God gave you, even if you don't have any hair or you're short, whatever your problems, you've got to learn how to deal with it. Not anymore. We're at the place where humans are starting to play God, manipulate

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life in ways that was never seen possible before.

When you do mechanical things in humans you call it "cyborg," and you combine mechanical and computer things. Here's this funny Photoshop thing. But maybe someday you have your iPod embedded in your arm, you flip it up and choose what kind of music you want. Here's a transducer here and it probably goes to the audio canal so you can hear. I don't know how it works. But that's the kind of stuff that you are on the way to doing.

It gets complicated because, you know, scientists figured out that you can do in vitro fertilization. I have a friend of mine that has a great kid who was — they took the father's sperm and mother's egg and put it in a petri dish and stir it up, whatever they do. And they get an egg and put it back in the mother and get a kid. You do this for people who can't conceive in the usual kind of ways.

But it's a problem. There are a whole lot of people that want to do that. If you get all of these sperms from different guys and the hospitals, they get them mixed up. They screw up. They really do sometimes. What science has done, they figured out a way to do bar codes for eggs and sperm and embryos. And, I mean, you think about this, these little things running around and they have bar codes and you kind of wand them like going through the supermarket.

What?

What kind of a thing is this? This is a really, really different kind of a world. And then they figured out you can now fertilize an egg without sperm. That's like, you know, kids without fathers, literally. What kind of a world is that? How does it work? How do you think about that? What are the ethics, the laws, other things that allow you to integrate that into our system and how it all works? There are some women that might like that. That's just a really different kind of a thing.

And, of course, gender on command. People want to choose the kind of kid they get. It's a big problem in places like China and India. Even in the United States and the developed world people want to choose what kind of kid.

And so you've got — when you look at all of this engineering, bioengineering, and stuff coming together you say, what's on the back end? I can say you go to Amazon, BabiesRUs.com, and if you want a bouncing baby — boys or girls 300 bucks. This one weighs 12 pounds and ships every two weeks. I don't know. Who knows where it goes. It's into space. That's really weird if you order a kid. How does it show up? Maybe they come hermetically sealed in a can.

A girl, and you have an ultrasound — I don't know, but it's emblematic, representational of the kinds of things happening. Time Magazine says human cloning is closer than you think. Time Magazine is a high-level kind of folks thinking about that. They say it may happen; but, in fact, a couple of years ago this crazy professor, he tells politicians he has a secret island for human cloning.

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Horrified lawmakers heard yesterday from a Kentucky fertility expert who declared the genie is out of the bottle, claimed he has 700 people eager to participate in human cloning. He told the House panel he represents an international consortium whose lab on a secret island located in the Mediterranean is likely to clone a human within two years.

And everybody said, yeah, yeah, and then the aliens show up. They say they are cloning humans and they say we did the first one in December in the U.S. in 2002, and a couple of them in 2003. We might be living in the time when the first humans are cloned by human beings. We might find out they are not showing anybody, there's a bunch of attorneys general trying to nab the kid, and they are not letting anybody see them. They might find out in five years you have a little kid about this high and they check the DNA and it's cloned. I mean, what is that? What is the ethical system, the legal system, value system that deals with that?

Scientists that I know from the Santa Fe Institute studied the rate of change of the underlying social systems and laws and ethics and values and the rate of change of technology. And it's moving a million times faster than the ability of the underlying social system to deal with.

Big kinds of things. You've got to worry about this kind of stuff. It might go bad. It's a stupid picture. We're into space where you don't know what's going to happen. You make mistakes and it turns into kinds of things you really can't anticipate.

So now you get into another one of the Ts. I call it "tornado." We're talking about weather and climate change.

In this area you're seeing similar huge changes. And many of you have seen the pictures around, the planet is warming faster than it's ever warmed, faster than when human beings are on it. This is a place in Alaska. You've got glaciers and in 2004, same time of the year, nothing. And similarly you have — there's pictures all over the places. They are worried the ice is melting in the Himalayas. And by 2035 there won't be any more ice on the Himalayas, which supplies water for five billion people on the planet, or something like that. No ice on Kilimanjaro, and on and on. And you have this picture, a polar view. Present sea ice on the North Pole area is — they are projecting by 2030 it's this big. 2095, there's none.

Warming of the planet like you have never seen before. This makes a difference. Scientists are trying to figure it out. This makes a difference. If weather changes in a hurry, food doesn't work. It doesn't grow the way it used to.

David Wasdell from England came up with a representation. You get global heating accelerated, and if you can control it and turn it you can go back to cooling and get back to thermal equilibrium. Well, you put that together with this kind of relationship that says the hotter it gets, you have more loss of power to intervene. It gets harder and harder, in terms of money and resources, to turn the thing back. You have to act soon rather than later. That makes sense.

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What he says in this great graphic, we're running up a hill, and you get to the top and there's a place of unstable equilibrium and you are tilting. If can go one way or the other way, and if you don't do anything, if you don't change what we're doing, you go over the top and it goes to rapid runaway global heating and you have big problems. And some people talk about Kyoto Accords. You know about those, the countries get together. They make about three percent difference. It still goes over the top.

And so the kind of initiatives that need to happen in order to change this, they are dramatic and big, the problem is, the feedback loop. The positive feedback loops. One, that decreasing snow and ice as it melts, you don't get as much reflection from the sun, so it gets warmer on the ground and more global warming and that warms it up so it melts faster and you get positive feedback things.

There's about 80 or 90 of these kinds of things when they kick in. That's where you get the exponential in creation. They all feed on each other and it gets faster and faster. Of the rapid climate change, one of the scenarios scientists come up with, suggests when it gets warm like that in the polar areas, when it warms up in a hurry, you get relatively warm air next to the surface. And you guys in school you know, particularly the guy that did physics. Warm air rises. And so when the warm air gets so warm it breaks through and rises and cold air sweeps down through the hole from the North Pole, and what you get, literally, two months, a rapid freezing that turns into storms and a little ice age.

You're into nonlinear relationships in terms of very complex systems. They don't just change gradually. You are going along and suddenly, boom! Shifts into a new kind of mode and changes into new space. And like I told you, in biotech and other things we're walking into space we don't understand.

The world's weather is driven by the ocean conveyers, water underneath the ocean. And they are starting to change. They are monitoring and it's starting to slow. When that happens all the world's weather starts to change. There's nobody in this room, on the planet, that's never happened in our lifetime. We don't have anything in libraries that tell us how to effectively deal with that. So we're into very interesting space where we're going to have to get really creative and we're going to have to do it in a hurry.

Another T is "travel." These things are all related to each other in some ways. Transportation, for instance. One of the things that's begun to dominate the news is the whole notion of peak oil; that we've gotten to the top of the ability. The beginning of end of the oil age on the planet; that you have gotten to the top and from now on the production of oil decreases.

Why do I say that? For the last two years the Saudis have not delivered on their contracts by a factor of almost 30 percent, and they have not delivered what they said. The world production from the numbers available say it's flattened out for the last two years. Maybe we hit the peak. It's obvious. Retrospectively, you

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don't see it, you don't know it when you are there. Once you hit the peak and it heads down, let me tell you something, the demand does not decrease when the supply increases.

The supply has been running up this curve, driven by countries like China, for instance. When that thing peaks you have lots of jockeying around by countries trying to figure out how do they get the energy they need to keep their economy going?

The minister of the interior of China last year said, “Last year we had 60,000 riots in China, the year before we had 45,000 riots in China.”

One of the biggest thing the Chinese have to do is keep the whole place together so they don't have a civil war. The way they keep it growing is through economic growth.

What fuels economic growth? Energy fuels economic growth. And if you start to pull the pins on the energy, you've got yourself a really interesting situation. They start going to look for it. Maybe they go to the West or Russia, but you have a lot at stake in these big powerful relationships. Maybe it hasn't peaked yet, the government says 2026, or 2037, or 2047, I've never seen curves that operate like this. And these guys have never been right any way, so I don't particularly believe them. And I have a lot of sources in the industry. They tell me that.

Royal Dutch Shell does their scenarios. These guys are not against oil. They say the increase in reserves have slowed down by four times since 1990. That only replaced 45 percent of production since 1999. If you want these slides, I'll be happy to give the slides and they will be made available.

There's real stuff behind all of this. And then the scenarios out of the back end. How do people adjust to it? There's all kinds of propositions that people come up with.

Here's one from Hubbard. Says a permanent and irreversible decline in world oil production would have both economic and psychological events.

So who is paying attention? Well, I'll tell you what. There's a lot of people starting to pay attention to this right now.

I was coming through National Airport yesterday morning, and I ran into Bud McFarland. Remember him? The National Security Advisor from the Reagan Administration? And Bud, he and I have been acquaintances for a long time. I said, what are you doing now, Bud? He said, “Jim Woolsey and I” — remember that name, he used to be director of Central Intelligence—“Jim Woolsey and I are working on alternative energy things, trying to do ethanol, to do it and take wood chips and turn it into ethanol so you can burn it in cars.”

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When guys like that are in the business of trying to find alternative energy sources, this is a big deal. And all the dot-com billionaires are into ethanol. So I think there's a real move into this in terms of transportation area.

It's interesting. Because very few people know when Henry Ford did the Model T, he designed it to run on alcohol. He designed it to run on ethanol. That was during Prohibition. And there was a bunch of people that didn't like the idea of having stills all over the country producing alcohol that you can drink. And I'm sure John Rockefeller had a little bit to do with it. And anyway, they decided it was going to burn oil.

But there are about five million cars on the road. Some cars that burn 85 percent ethanol, and it only costs $30 to convert a car during manufacturing. So it will burn 85 percent ethanol. And Ford and all of these guys are starting to do it. What you are starting to see is a fundamental kind of shift in the fleet and manufacturing and everything to allow you to manufacture this kind of stuff from inside the country, not just from corn and traditional distillation kind of methodologies. They are doing it with what Woolsey and Bud are doing, doing it with biotechnology.

You take these trash chips and throw it in there in a vat full of water and you take all these enzyme bugs and they start chewing on it and they kick off alcohol. It's low energy and changes everything. Really fundamentally. And then hybrids, combinations of internal combustion and electric cars. For my money, we're on the way to an all-electric world. There's a place out there, 20, 25 years where everything is all electric and the only question is, where do we get the electricity?

Now, the travel kind of thing is also related to epidemics. What travel does is move the viruses and vectors for epidemics around. And bird flu is the one we heard most about in the last couple years.

Here's a chart that shows — here's Africa down here and Europe, and here's over into Asia. And these big areas are the flyways of the migratory birds, and that's what they think are moving the virus around. And these Australian ones.

Up here it says January and June 2004 and the yellow things are the new cases down in here back in the first half of 2004, and the red ones are previous cases. I click this thing and it goes from January to June and June to December. And you can see that you get new ones down through Indonesia and a bunch of them in Vietnam and then moves to 2005 and starts to move up here to the "'stans," Kazakhstan and so on.

And then the new ones in December, July and December 2005, starts working it's way it to Europe. And then by 2006, the first half, it's all over the place in Europe, Africa, and now starts to slow down. By the way, these are not human-to-human. There's only a few with human transmission. But the virus is moving itself around, and a lot of epidemiologists think it's inevitable that this is going to happen. That's another thing that plays into all of this that's likely to change.

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You also have terrorism, of course, which is in the news every day.

Good-night scenarios, that's the business we are in. And, you know, you look at 9/11 and the Iraq war and you say there's something we have to do in order to deal with the aftermath with this kind of event and with the terrorism that comes out of it, so you got to deal with that. But there's also some underlying fundamentals of what drives and supports that that needs to be dealt with.

There's two variables you need to deal with. Deal with the terrorists, but deal with the cause of the terrorism if you can. And I built four scenarios. One of them is called "the great Islamic war." And what that says, if you don't do very well at dealing with the terrorists and terrorism, and you don't do well with the fundamentals, everything goes down in a hurry. And you've got a long period of time where you have a big effective war between Islam and the West. Maybe at the end of this thing it gets better; and if you don't learn, it gets worse. Some people would argue that's what's going on right now.

Another scenario. We do good dealing with the terrorism problem, but we don't do with the underlying kind of problems that are driving the terrorism, that are supporting the terrorism, and that I call "mortgaging the future." You don't worry about that stuff, you kind of deal with the short-term problems so it gets a little better, then it gets worse.

And the third one is called "the two-front war." And that's the smart one where you deal with the terrorism thing but you've also got a significant initiative to deal with the underlying problems. Let me tell you something. I live in Washington and there aren't any politicians that can hold two things at the same time and run two things at the same time. It's a nice idea, but it doesn't work that well in reality. I mean, you can look at these and make up your mind and try to decide where you think we're going.

This is a problem. Terrorism is an interesting issue. It's an interesting issue but probably gets worse. Because I had a friend of mine the other day that went to a classified briefing on counterterrorism and he came back and I said, "What can you tell me?"

And he said, "There's one thing I can tell you, and that is what they found out for the last couple or three years. There's a bunch of graduates of MIT that come out of the nuclear and biological area that have gone back to their countries and now they are working for the dark side, al-Qaeda or whoever it is."

And so you look at that and say, hold it. Now you have the possibility of a qualitative difference in these things. Who knows? You don't know what's going to happen.

I read a week ago, that al-Qaeda declared computer war on the West. They decided they are going to work in cyberspace. How does it come together and

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affect the economy and the kinds of things we are interested in on a day-to-day basis?

On global economy there's an interesting fact, and you need to think about this a second. The world's population has grown more in the last 50 years than the 4 million years that preceded that. You got that? Think about that. You've got more people on the planet. That's a big hockey stick curve. More people in the last 50 years than all the people that ever lived in the four million years before that. And I'm telling you, that makes a difference.

If you look at it and say, where are all the people living, growing? This is 1950, 1995, 2025, and 2050. And here's northern America and Latin America and Africa. Here's where the big growth is. And Asia, look at the growth in Asia projected. You see all the growth is in the poorest parts of the country; and China and India, as a matter of fact. And if you look at it in terms of China and India, you see — here's China, 1995, the middle line. This is 2050 out here. And the Chinese, no matter what of three scenarios, in terms of population growth, the interesting thing is the Indians overtake the Chinese at some point. Out somewhere around 2035 or so.

Let me tell you, why is that important? Because both of those countries are growing at an economic rate of eight to 10 percent GDP, and that means they are heavy-duty guys. And you've got to put a very real potential that 20 years or so from now, China is the number one economic power in the world and India is number two and the United States is number three.

By the way, we ought to start thinking about the implications of that. Those are big, titanic stuff. Absent big surprises like a devastating global epidemic that could change things, there's big, titanic changes coming downstream in all of this. The Asian economic dominance is here to stay.

Let's me tell you what's different about this — and this is my last slide. Here's where the good news and bad news is. On the first hand, there's television and Internet. You connected everybody more and more to form a global brain, a global nervous system, and the metabolism of that runs faster and faster. All these trends are part of a fundamental reason. And why do you get these trends? The information is moving faster and faster, and it's part of the larger characteristics of this great rate of change.

On one hand, you have less time than you thought you had. The thing is accelerating faster and faster, because the organism is increasingly moving around. On the other hand, your good news, by the way, for your industry, as I understand it, if the economy goes down, you guys do pretty good. The racing industry, gambling business, entertainment, movies, there's good news and bad news in all of this stuff no matter how you look at it.

The good news side of this equation is that this global brain, this increased connectivity allows you to come up with ideas and responses to all of this in ways

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you never could before. In fact, what it's presenting is a species with the capability to solve these kinds of problems. We're the guys that's going to solve it, young people like me that wear a tie, those of us educated and have resources. It's not the poor people in the world that will deal with this.

It's almost a wonderful thing we are put in this position, this extraordinary time where things are going to change where we can be part of the solution, how we get from here to there and become new in the way we think and we are going to be forced in that. It's really kind of cool. Somebody asked me last night in New York, all these CEOs, “Are you a pessimist or an optimist?”

I'm an optimist. I think this is cool. You can get on board.

But I'll tell you, you're not going to play if you are not a player. You’ve got to get informed and you’ve got to get engaged. That's my message today. It's an extraordinary time and it's time for everybody to become a part of this. We can solve this kind of thing. If you don't play you're going to get surprised and it's going to be painful if it happens.

So anyway, it's nice to be with you today. I don't know if we have time for questions. If somebody wants to ask questions? I'd be happy to answer questions, if you have some questions.

Yes, sir.

Did you all hear this? On one hand, I'm positive technology can solve it and this man says, “Well, humans won't share it.”

Yeah, that's a very real possibility. And that's why you don't do predictions. Maybe the guys with all the money and power kind of control it and decide this is a good way. When everything cleans out we're going to own it. That might be a real possibility. That's why politics is important, and why we should be informed.

On the other hand, maybe one of these big things comes along and shakes us and scares us and you stand up and say, hold it. We don't want that to happen anymore. And we have got to change. That's my hope. And in my shop we track all kinds of new ideas and economy and government and other kinds of really cool concepts that are showing up about alternative ways that are inevitable. Things never stand still.

Capitalism didn't start with the birth of Christ. These ideas show up and a new one comes along. And there's going to be a new one; and we're playing, betting on the come, to use your language, there's going to be new ideas and we can aggregate them and put them together. That's why this is such a cool time and all these neat possibilities and all we got to do is engage.

Yes, sir.

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(A question was asked)

MR. PETERSEN: Interesting question. He wants to know about what words have different meanings to different kinds of people and how the effect of words can change this.

You're onto something really quite important. The social psychologists that I know and admire talk about a spiraling system called "spiral dynamics." And it says in the evolution of human beings, the social evolution, we're at different levels. Some people are at a lower level. They see the world through a different grid. They have a different value system. They look at people hugging trees and say that is stupid. I mean, why would anybody do that? And there's different people, different levels. The tree-huggers look down at the other guys, these guys are nuts. They are undeveloped. You've got these things all going by each other and, by the way, this theory says there's a transition. And there's a small group that gets up above and they look down and see the relative value that everybody contributes to the system. Every one has a different language, a different grid.

My problem with trying to communicate to a group like this, I use a set of words. And some of you say it's stupid and nuts and crazy; and some of you say it's kind of cool. And the problem is that I'm not saying the right kinds of words. If you built this thing and you thought about the communication strategy, you take a concept and cut it and have different ways to characterize it so it appeals to the vested interest of whatever group it was so everybody saw the value of it in their own terms. So it's a very important marketing aspect of this whole thing. You've got to think about it in those kinds of terms.

Somebody else? I can't see over there — well, I scared you all. I don't want to scare you all.

Thank you very much.

(Applause)

MR. REED: John, thank you very much. You've certainly given us a different way to look at our future and think about the future.

I'd like to give you a housekeeping note. You have a break to catch your breath. We usually cram the most in on the first day. If you would promptly at two be at the respective two sessions at two.

We have a full day today. I'd appreciate it if you go to Finger Rock or Grand at two. You have a little break. It's not quite as jammed on Wednesday and Thursday, so enjoy a little break, and we'll see you at two.

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