

The Economic Boom that Will Resume

A GBN Interview with Roger Cass

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Economist Roger Cass is watching the slow, deep, long rhythms of the global economy and he's very positive about the growth that is yet to come.

By Peter Leyden

With Jay Ogilvy

The current manic view of the economy focuses almost exclusively on what happened in the stock market two minutes ago. What passes for economic foresight these days is speculation about the impact on markets of government reports due out in the next week. So it is extremely refreshing to listen to someone like Roger Cass, an economist who truly thinks in the long term. He maintains that the best way to understand the economy is through a deep understanding of the long waves of economic transformation, the regular 20- to 25-year expansions that are driven by significant technological change, rapid economic innovation, and massive capital investment. Tracking these long waves is a much more reliable and accurate tool for gaining insight into the future.

Cass used this meta-analysis to call the 1990s' boom long before anyone else did. In the earliest days of GBN, back in the late 1980s, Cass evolved the concept of "the Belle Epoque," which was a precursor of what came to be known as The Long Boom. He pointed out that waves of new technologies, particularly information technologies, plus the increasing integration of globalization, would pump up productivity rates and lead to high rates of sustained growth in the U.S. and around the world. That view had become mainstream by the time the stock market began to buckle in the spring of 2000. Today most economists are pessimistic, and again Cass is going against the grain. He is clear that the global economic boom is far from over. We're still very much in the middle of it, with the current slowdown understood as more of a pause. He expects that the expansion will resume in 2002, and take off through to 2008, and only begin to subside around 2015 or thereafter. That's not to say that there won't be disruptions, overinvestment, bubbles and, yes, even recessions. But it's best to understand our era as much like the post-World War II era, where the economies of the developed world rode an general economic updraft for 25 years or so—despite being punctuated by at least five recessions.

The British-born Cass ventured up from his home in Santa Maria, on the California coast north of Los Angeles, to visit the GBN Emeryville offices in late June. He met with GBN cofounder Jay Ogilvy and me to lay out his comprehensive long-wave economic theories, analyze the current economic situation, and look ahead to the next 10 years. He delivered insights on all fronts by looking at everything from a big-picture, long-term perspective. For example, he explained that consumers should remain confident despite net worth plummeting \$2 trillion in the stock markets. After all, net worth rose more than \$11 trillion through the stock market in the last five years and the total net worth of U.S. households is still more than \$41 trillion. While investors are pummeling telecommunications

stocks, Cass is delighted by the fiber optic lines laying dormant in the ground ready for the inevitable build-out of high bandwidth infrastructure in the coming decade. In fact, he compares today's photonics industry to the semiconductor industry back in the vacuum-tube stage—poised for exponential leaps in performance, systematic efficiencies in manufacturing processes, and corresponding drops in price. Moore's law is about to repeat itself in photonics.

What makes Cass even more valuable is that he is not only a great theoretician and savvy analyst, but a hard numbers guy. Cass tracks reams of economic data for 120 countries and puts out a comprehensive quarterly report on the state of the global economy and each major region and country. So he has a handle on the economic situation of every corner of the world—as he demonstrates in the second part of this interview. He's particularly positive about Japan right now, and sees strong possibilities for India and Russia as well.

For years, GBNers has used Roger's analysis to inform our understanding of economic trends. In fact, the report is so useful that this fall GBN will start sending it out as a regular feature to WorldView members. Though Cass gave this interview before the terrorist attacks on New York and Washington and the increased uncertainty, his fundamental analysis stands firm and evolves with time. Day-to-day events may roil us, but it is wise to stay steady, keep your eye on the big picture, and think long term. And, says Roger, be optimistic.

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Origins of the Long Boom

Long-wave cycles of liquidity and technological innovation provide a strong theoretical basis for the long boom.

Peter Leyden: Roger, you have some very interesting insights on the global economy. What is the moment right now? Are we at the beginning of something, the end of something? What is the context as we look towards the next ten years?

Roger Cass: By way of background, I've been working with people at GBN since the beginning. Napier Collyns and I met in the '70s when he was at Shell and about 1978 I met Pierre Wack and Ted Newland [among the originators of scenario planning]. Through them I met Peter Schwartz in the early eighties while he was at Shell. When GBN was established in 1987 I talked with Peter about working with you all. That's how my relationship with GBN began.

At the time, my thesis was that we were going through a down cycle that had begun around 1973 with the oil crisis. In a twenty-five year, long-cycle time frame, I believed that we would be getting into the expansion of the cycle around the mid-nineties. In the late 1980s, working on the GBN scenario books, we debated how this would evolve.

I remember, for example, the controversy about Japan. There were people like Pierre Wack who thought that the U.S. was in decline and that Japan was going to be the next power and eat our lunch. I was against that notion and really believed that the U.S. was nearing the end of a weak cycle and very close to emerging into a new period of technology-driven growth and rapid expansion. That was the genesis of the Long Boom idea within GBN. In April 1992, I wrote a piece called "The New Belle Epoch," which later influenced GBN's 1994 Annual Forum [on "Restructuring the Global Economy"]. Then Peter Schwartz did his article with you for *Wired*, followed by the book. As far as where we stand with the whole Long Boom thesis, I think it's still pretty much on track.

Let me try to summarize the theoretical basis. The conventional long wave theory—the Kondratieff wave—is based on a price cycle. Kondratieff was a Russian economist who lent his name to these theories and chronologies on long waves, price cycles, inflation, and deflation and who died in the 1930s. My view is quite different; I don't subscribe to the price cycle. It worked well in the nineteenth century when commodity prices affected economic behavior substantially. But the work I've done in the past 30 years revolves around two other sets of data. One is trends in global liquidity: the availability of liquidity in the global system as measured by money supply, national reserve assets, and international bank lending, or cross border lending. You can measure those pretty precisely for a hundred years or so.

The other data set is waves of technology—technological innovation—which have been measured in various ways by various studies. For example, the Dutch and the Germans have

done some richly detailed studies on patent filings and other measures that show peaks of creativity or innovativeness in the middle of down cycles. It's the theory of "necessity as the mother of invention"; as entrepreneurs are thrown out of work or are forced back onto their own resources, they tend to become incredibly creative. We've seen this in the 1980s and the 1930s, in the 1880s and the 1830s. You can plot these on a graph. Once you begin to see such innovation happening, usually within about a ten-year period as you move toward the end of the down cycle, the funding and venture capital to turn those innovations into commercial products begins to expand. Of course when the economic cycle turns up, bank lending becomes more available and interest rates in real terms start to come down rather than going up, which is perhaps contrary to conventional wisdom. This combination of the innovation that occurred in the down cycle and the liquidity and increase in venture capital of the new expansion cycle fuel the next generation of technologies. This particular up cycle, in my view, began around 1993–94.

All my data tables are based on Long Wave periodicities, so you can actually see the differences between economic growth in the up and down cycles. I began plotting periodicities in the 1970s. At the time, the international agencies did not recognize this; now in their long-range economic data they all make a cut-off in 1973, which was the end of the last expansion cycle.

Leyden: How would you explain why it's a 20- or 25-year cycle? Why isn't it 35, why isn't it 15? What takes place?

Cass: Usually the technology cycle runs about ten to fifteen years in terms of its impact on capital investment. Then after the mid-point of the expansion cycle, you get an excess. Expansion cycles end through excesses of one form or another. As economic activity outruns available resources, price pressures build. Too much capital investment has been put into place and satisfies underlying demand for a period of years. You begin to see—and in the last cycle we saw this around 1965 or so—the capital investment boom beginning to slow down before the actual cycle ends. So those are the kinds of things we look for.

I've also looked at how the stock market behaves in expansion cycles and down cycles. What I've found is pretty interesting. Usually if you buy equities in the mid-point of a down cycle, and sell them at the mid-point of an up cycle, about ten to twelve years in, you will make some nice returns. The converse is true with bonds. You sell bonds at the mid-point of a down cycle and buy them at the mid-point of an up cycle. Your asset allocation switches quite dramatically somewhere along the mid-point as you get into these periods. We began a bull market in 1982, which was the mid-point of the last down cycle—from 1973 to 1993. Since then we've had one of the greatest bull markets in history. The Dow has gone from 1000 in 1982 to 11,000, with similar increases in the S&P and even bigger growth in the NASDAQ. Now the sell point comes at the mid-point of the up cycle. I'm talking about the up cycle beginning in 1993, and ending sometime around 2016 or thereabouts. We're talking about a peak in this market around 2006 or 2007, which is my top for this bull market.

In the interim, of course you don't go straight up. You have periods where the market gets ahead of itself. This happened at the end of 1999, when I wrote a report saying get out of equities that were extended. The price points I put were a 9300 Dow, and 1140 on the S&P. That's almost exactly what we hit this year. The Dow bottomed out in April at 9300, and the S&P at eleven hundred. These are not straight-line things. A recent *Fast Company* article [June 2000] labels me as the "Last Optimist," but there are periods when I am pretty negative and cautious within the up cycles—and also positive in the down cycles, as I was in the period from 1983–1988 when we had pretty good economic growth.

You can look at patterns within down cycles and up cycles that occur with unflinching frequency in all the prior cycles. A down cycle, just to give you an idea, is marked by an initial severe recession, like the one that occurred in 1974–75, right after the oil shock. Then you have a bounce of about three to four years, as in 1976–1979, followed by the central recession, or depression, which occurred at the end of the first ten years. That was the global economic downturn in 1980/1983 when we were as close to depression as we have come since the 1930s. Next you have the secondary recovery and then the final washout recession or "clearance sale" when bad assets are written off; that took place about 1990–1992. I talked about the periodicities of the late seventies and eighties, but once you get that final washout recession then you are ready for the next boom, the next Long Boom, or the next long expansion.

Good News for the Economy

Despite pressures and pessimism, the current economy is in good shape and poised for a tech-driven take-off.

Leyden: Is there a similar internal pattern that goes on in the up cycle?

Cass: The up cycle is different. The up cycle is marked by extended expansion, which occurred in 1994–2000. There may be brief recessions or downturns, usually because we've generated some excess in the financial markets or in capital spending. In this case high-tech capital spending ran for five years at a 20–25 percent annual rate, which was simply unsustainable. The other key factor is redundancy in terms of high technology. Because these booms are so creative and dramatic, the new generations of technologies become like breeder reactors and create new technologies. Today you're going from legacy systems to next generation systems in the fiber optic and telecommunications areas. You see companies that get behind the curve in terms of their fundamental technologies, like Lucent and Nortel and Cisco, being penalized dramatically. Other companies that are on the leading edge of the next generation of technologies, like Ciena, ONI Systems, and some smaller companies I can mention, are going to do well over the next six or seven years. Those are the companies you should focus on.

What is key when you get into a period like 2000–2001 is disinvestment, non-investment—the creative destruction I talk about. The key to the dynamism of the American economic system, as opposed to Japan and the Soviet Union, is that those economies never disinvested; they never bit the bullet. In those cases it happens for political and ideological reasons more than for economic reasons. In our country we have a free market and capital markets that work. Businesses are penalized in the financial markets unless they bite the bullet, take their write downs, go through their lay-offs, get costs under control, and move on to the next stage. That’s what we’re going through now, in my opinion. We’re in a transition period that will extend from 2000 probably into the first half of next year, maybe a little longer in some areas of high tech. But the economy in general is not in bad shape.

Unfortunately there seems to be a prevailing view that the glass is half-empty right now, rather than half-full. Too much focus is on the 8 percent of GDP which is high tech, rather than the 75–80 percent that is consumer spending, housing, and other areas of the economy that are holding up very well. I think we’ve already seen the market lows in March and April of this year. We’re beginning to build the confidence and the economic data that will support higher market levels. Then we’ll move into the next phase of this great technology boom that will extend for the best part of another decade. This is not only telecoms and fiber optics—it’s biotech; it’s nanotech; it’s all of these things combining to create an explosive increase in living standards. It’s a global technology cycle this time around that’s not limited to a few industrial nations. We’re seeing the benefits of the technological revolution in Asia, Latin America, around the world.

Leyden: You started to describe the second phase of a generic pattern here. What’s a way to anticipate this pattern?

Cass: Well this should plot out like this: 1994–2000 was the initial boom expansion of the long wave; 2000–2002 will be the transition phase as we move into the next level of these technologies, which are the driving the expansion; 2003–2008 will be another dramatic phase of economic growth and productivity, and for the stock markets and financial markets around the world. After that things will begin to slow down. Markets don’t turn down necessarily, but we won’t have the same kind of rapid growth. Capital investment begins to reach a saturation point sometime between 2010 and 2015 or so. Inflation rears its head again as we begin to stretch the limits of scarce resources. The productivity gains begin to diminish. We begin entering the phase that will lead into the next down cycle, beginning, in my view, sometime between 2015 and 2020.

There’s usually a catalyst for these cycles—some identifiable event, which triggers the next down cycle. I don’t know what is going to trigger this one, 15 years or so from now. Perhaps an environmental problem. There was an interesting article in *The American Spectator* called “Techno Horror.” It referenced people like [GBN Network members] Bill Joy, Amory Lovins, and Eric Drexler who are warning about how technology can get out of hand and be used for terrorist purposes. That’s another possibility that I can think of.

Leyden: Could you just go over the previous cycle and how that played out in actuality?

Cass: The long-cycle from 1947–1973 was the golden age of the global economy. Between 1947–1973 you had real GDP growth annually of 4.8 percent, and 5.5 percent in annual industrial production. From ‘74–’93 you see the difference in the rates of growth. Industrial production, which had grown at 5.5 percent in the expansion cycle, grew at 2.4 percent in the down cycle. Capital spending globally grew at 5.9 percent and 2.7 percent respectively, and world trade at 8.7 percent and 4.4 percent. Consumer prices doubled. The big thing is liquidity growth shrunk to zero in this period from 5.9 percent annually to 0.1 percent. Now this is our latest expansion and the rates are pretty much emulating 1947–1973. GDP, industrial production, capital spending, trade are very similar: 8.5, 8.7. Liquidity: 5.1, 5.9. When I break it down into sub periods you can see that a recession time frame is always marked by negative global liquidity.

That’s key to me. I focus on two things: the innovation cycle and the liquidity cycle.

Fear, Loathing, and Liquidity

Liquidity is critical to economic growth and highly susceptible to private banking fears and reactions.

Leyden: Give us some more on the liquidity cycle. Why is that so crucial?

Cass: Liquidity is measured by three factors: world money stock, official reserve assets, and net international finance, which is international bank lending and bond financing. You add those three numbers up and you get nominal global liquidity. Then you deflate it by an inflation factor—world consumer prices—to get the real global liquidity growth rate. Usually international bank lending is the weakest. Money stock experiences a less cyclical change because it is pumped up by central banks like the Federal Reserve Board and ECB. The most cyclical factors are international bank lending and bond financing.

It’s in the private markets that you get the big swings. When they fear that recession is closing in, the numbers begin to show it. The banks always overreact on the upside and tend to over-expand, and then get too pessimistic in down times. So you get credit crunches that are really the driving force of the liquidity cycle. You do make errors in official policy of course, as in the 1930s, but I think that the public monetary authorities today are a lot more sophisticated and aware of their policies’ impact. We still do make mistakes: raise interest rates too much, cut them too much.

For example, I think Greenspan went overboard in raising rates in late 1999 and early 2000. That was responsible for some of the downturn. Now we have to cut aggressively. But it's the private banking contractions that really cause the problems because they get too pessimistic or optimistic or there are problems with regulation, as in Asia in 1998. In Thailand, Malaysia, China—all throughout the region—regulation has been lousy, so a lot of money poured into property speculation. There simply wasn't a market there. They overbuilt or over-lent and then, of course, the whole thing began to come apart. We had similar situations in Latin America. So the developing countries are particularly susceptible to these kinds of swings in credit as growth slows down in the industrial nations. Or it can whip back the other way.

Leyden: So you see that as a driver as much as a sign or a symbol?

Cass: Innovation and liquidity are really combined because if you don't have the financing for innovation then it simply doesn't get commercialized. Now venture capitalists have pulled way back from financing anything that smacks of the Internet. My son, Stephen, is a classic example. His small Internet company has developed incredible software and some nice clients. Two years ago venture capitalists would have fallen over themselves to throw \$50 million at the company; now they can't get \$500,000. That's what happens to the innovators. The innovation cycle faces a combination of lack of financing and getting behind the curve in terms of the technology itself. In this phase of the cycle, technologies become redundant so fast, particularly in areas like fiber optics. Look at Lucent's problems: they make one major wrong bet and it kills the company.

Lucent decided not to go for the ten gigabit Ethernet whereas Nortel did. Now Nortel has fallen on its face in other areas, primarily because it made some bad acquisitions just as JDS Uniphase has done. JDS Uniphase vastly overpaid for companies and now has 40 billion dollars of goodwill on the balance sheet to write off. Cisco paid five billion dollars for Monterey Systems in 2000, and has written it off entirely this year because it didn't add to the technology. You can try to grow through acquisition, but unless you're very careful, some of these are really going to hurt you.

Let Them have Bandwidth

Given the amount of dark fiber in the ground and pent-up demand for high speed Internet access, bandwidth is poised to explode.

Cass: The financing of CLECs (competitive local-exchange carriers) is another example. Only 5 percent of the population in this country have access to high-speed Internet now. If you could resolve this last-mile bottleneck, get the Internet into the homes, this whole area would be growing like crazy. But we've run into regulatory roadblocks as well as roadblocks

with the old Bell System companies that have prevented movement to the next stage. That will eventually be resolved; there is a lot of pressure to do so in Washington right now.

Leyden: You do make the case that the demand is there and so the bandwidth has got to happen. At the same time, we're seeing articles saying, "We have all these fiber optics we're never gonna use."

Cass: You're talking about something different there. That is what we call "dark fiber" in the ground. When the Qwests and Broadwings and spin-offs of the Bell System started laying fiber across the country they said, "Instead of just putting in one line we'll put down 20; even though it's going to stay unlit for quite a long time, eventually it's going to be there when we need it."

People were saying, "Well, that's excess capacity." I don't regard it as excess capacity. It's not costing anything. It would have cost them a whole lot more to dig up the ground 20 times to put in one line than to put in 20 at one time which most of them did.

Leyden: You're saying it's just a matter of time.

Cass: The dark fiber will be lit, primarily when we begin to resolve the last-mile bottleneck and demand goes through the roof. For the time being it's not costing us anything. It's not a big deal in my view. These all-optical networks are replacing the old OEO [Optical, Electric, Optical] networks—you can turn them on at the source and send information through in a manner of minutes. Have you read George Gilder's book, *Telecosm*? It's really interesting. A great article in the *Wall Street Journal* called "Bad Bets on Bandwidth" [by Bret Swanson] also addresses this subject of the optical divide.

Leyden: You mean people in their homes or professionals?

Cass: For everybody. For business consumers, for private homes. The author, one of Gilder's analysts, makes the analogy between this period now and the mid-1980s. Then you had the Control Datas and DECs who were about building one huge computer that would do the job, and, on the other hand, the Dells and Intels which were going for putting thousands of PCs in homes. At that time there was a tremendous debate about the way to go and whether there was too much capacity. Eventually, the costs of semiconductors began to fall like a stone—Moore's Law. The same cost situation is evolving now, with fiber optics and photonics. We have what [Swanson] calls "bandwidth abundance," which some people would call overcapacity. But abundance is a plus because it's going to bring down costs of semiconductor chips enormously and totally transform the economics of this business. Now IBM has announced that they've broken through a new barrier in terms of the speed of chips.

The Promise of Photonics

Photonics is one of the rapidly evolving technologies that will fuel the next economic boom.

Leyden: You compare the stage of development of fiber optics and photonics now to where semiconductors were back in the days of vacuum tubes...

Cass: In the mid-eighties the last great digital divide played out. On one side, there's a single computer achieving billions of operations per second. On the other is enabling production of hundreds of millions of computers. As you know, the Cray computer, Control Data, and DEC washed out to the Intels, Microsofts and Dells who represented the next wave. [Swanson] makes the case that now the Nortels and Lucent's are losing out to companies like Avanex, Corvis, and ONI Systems—the leaders in the next generation. He says the big bet is against big bandwidth, against big iron. Bill Gates, Andy Grove, and Michael Dell have already shown how it can work.

In terms of the actual manufacturing process we're actually in the vacuum-tube stage of the photonics industry. Very primitive technology, very high failure rates in terms of manufacturing components. Right now in fiber optics you're lucky if you hit ten out of 100, but we're moving toward automated processes, which will guarantee the same success rates in fabrication that we're now achieving in semiconductors.

Leyden: The manufacturing process is getting much more efficient, which of course will drop prices. The switch from vacuum tubes to transistors was essentially a breakthrough in the new technology. Is that how you see photonics now?

Cass: Absolutely. The technology is evolving so fast, so dramatically, in all kinds of areas.

We're moving toward all optical networks away from the OEO networks where you had to regenerate the signal. Now, light can be sent several thousands of miles. Avanex, for example, has developed systems where you can send the signal down 4,000 miles of fiber optic cable without re-generation. Also the distortion rates are being reduced dramatically so you are getting less data failure. Companies like Corvis, in conjunction with Broadwing, which was the old Cincinnati Bell, have put in place the first all-optical network which is serving consumers and businesses primarily in Texas.

Raising the Speed Limit on Productivity

Technology is already speeding up economic cycles; just wait 'til the full productivity revolution hits.

Ogilvy: Ray Kurtzwell makes an argument about the exponential acceleration of technological change. What does this do to the periodicity that you were talking about earlier?

Cass: I think it's contracting the time period of the cycle. We saw the 1973 down cycle become a 20-year down cycle that ended in 1993 instead of 1998. This up cycle may well be a 20-year up cycle; hedging my bets, it may extend to 2012, 2015, or 2020. We're going to have to watch how things evolve. We may push the limits of capacity and saturation and generate inflationary pressures faster than we'd anticipated because these things are accelerating. In the interim, in the expansion phase, I think the growth rates and the productivity rates have been going faster over the last five or six years. All the productivity growth rate projections by the government and the Office of Management and Budget have been too low. They were talking about non-inflationary rates of growth being 2.5–3 percent and that anything faster would cause inflation to blow through the roof. What we actually found was that despite growth rates in excess of 5 percent, inflation and unemployment went down.

Ogilvy: We've raised the speed limit essentially.

Cass: Yes, we've raised the speed limit. This is very much a by-product of what is evolving in the technology area; we haven't seen the productivity revolution extend to the service sector yet. So far the impact of technology on productivity has all been in the manufacturing sector where productivity growth has been close to 5 percent. In large chunks of the tertiary or service sector, which is actually 70 percent of our economy, the official figures are not showing any productivity growth. That's partly because they haven't managed to measure it properly yet, but it's also a function of the learning curve. When productivity growth rates in retail, banking, and financial services catch up with manufacturing, our economy will blow through 6 percent. We'll be growing at the rate of Third World or developing countries. I think that's entirely feasible within the next ten years.

Leyden: Are you saying the productivity is there but isn't being measured or that we haven't really organized work around it yet?

Cass: It's there, but it's not being measured in the official data, so it doesn't show up. We're understating real GDP growth and overstating inflation. Some revisions are starting to trickle through: productivity growth in the service sector was once lumped into five or so broad categories and now we're developing 20, 30, 40 subcomponents to measure it effectively. As these come through in the official numbers that are accepted by business and the public at large, then we'll see that our economy is growing far faster and with less inflation.

Leyden: In addition to mismeasurement, you're also saying that we have yet actually to see the productivity increases.

Cass: Exactly. In addition to not measuring the current state of affairs accurately, we have to recognize that another productivity bonus will develop as we move up the learning curve in terms of technology. Generally, it takes ten years or more to use new technology effectively although this periodicity is also shrinking rapidly. In past technology cycles the acceptance took far longer; it took 40 or 50 years to get automobile use up to 50 percent of the population. Now new technology is accepted within five or ten years on a mass basis. Obviously the productivity gains from these inventions is going to accelerate.

Leyden: But does that then affect the long-wave periodicity as well? Maybe these things come every fifteen years.

Cass: I think it eventually pushes you against some sort of theoretical speed limit. Now whether that represents a true barrier or a theoretical barrier is the question. But it has the potential to shorten the cycle in both directions, up and down.

Leyden: Whereas the speed limit may be more in the capacity of human beings to adapt to change. We've been focusing on photonic technology and you're making a compelling case that it could drive the economy. All this excess capacity, in fact, will be a boon going forward, once we get the bottleneck and regulatory problems sorted out in Washington. You seem to think it's a two- to three-year breakthrough. Could you imagine this being strung out another decade?

Cass: I don't think this is going to be an extended process—you're already seeing signs of progress. The business community is exerting a lot of pressure in Washington to resolve some of the regulatory and political roadblocks that have stood in the way of getting high-speed, broadband access to a wider audience in this country. Other countries don't have those problems; for example, Korea and Japan have been much more aggressive in terms of government policy to enable high-speed broadband to permeate their economies. It's not a question of the technology not being there, because it is.

Politically, the Bell companies have to stop obstructing and the politicians have to stop implementing policies that encourage that kind of behavior. We've also got to get the financing in better shape because a lot of times, these communications companies have taken on a lot of debt on the balance sheet. The classic is 3GWireless in Europe—they paid enormously for the rights and that market is not developing as fast as they'd anticipated. But I think that once we demonstrate that we're resolving the problems that are slowing things down in this country, the money will be there. There is tremendous interest and plenty of money in the banking system and the venture capital community. It's simply not being committed; it's not being put to work.

The Power of Mutually Accelerating Technologies

A host of new technologies—photonics, biotech, nanotech—will combine to spur the next wave of economic growth.

Leyden: Another big peg is biotech. Do you see that being as big as telecom, the Internet?

Cass: I think biotech and nanotech all of these technologies—will be complementary and driving forces of the next wave of technological growth. It's already occurring. Although I don't follow biotech companies closely, I think that plotting the human genome and other advances are creating a revolutionary period in terms of how healthcare is practiced in this country. Nanotechnology also holds the promise of revolutionary cost reduction in raw materials and the like.

The advances that are being made in the biotech area are going to have the same kind of impact economically that the telecommunications revolution has been having over the last several years. This will simply add another layer and then nanotech will follow on with the later stage.

Bullish on Japan

With new political leadership and more open financial markets, Japan can restructure its economy and regain positive growth.

Leyden: Although you see deep problems in Japan, you seem confident that Japan will eventually move through them. Can you talk a bit about where the second biggest country in the world is going to be?

Cass: Japan is fascinating to me. As I mentioned, when I first came to GBN in the late 1980s there was quite a difference of opinion on this matter. Pierre Wack was a real Japanophile. He believed, as did a lot of people at the time, that Japan had found the answer. This planning between MITI and MOF and the business community was the way to go: picking winners and losers and then applying a lot of money to generate global market share. The focus was not on profitability and the bottom line but on building revenues and global market share. The problem was that much of the investment was going into things like ship building and heavy machinery, which were not really growth industries; nor were they focusing on high tech. Cheap money was being artificially created. I call it the ponzi scheme of the late 1980s. I wrote a piece called "The Emperor has No Clothes" in 1989 that said that the market was going to collapse pretty soon. Around 1990–1991 we projected that the

market would get back to pre-'90, pre-bubble levels, which is around 12,000. And that's where we are today; 11 years later we're back to where Japan was in 1985.

This is a classic example, in my way of thinking, of what happens when you won't disinvest, when you won't bite the bullet, when politicians won't face reality in a consensus-driven community as opposed to one that is prepared to dynamically attack the problems. Now, finally, the Japanese public has reached the point of total frustration with the old LDP. Recognizing that they were probably going to be hammered by the July elections, the Party said, "We'll give them what they want. We'll give them a reformist politician." The question is: is [Prime Minister] Koizumi simply a creature of the old guard, of the gerontocracy? Are those guys really in control? Are they going to dump him or put in his way all kinds of roadblocks to resuscitating the Japanese economy?

Unlike the previous reformist politicians of the past decade that lasted about six months each, I think that Koizumi is for real. The situation is so dire now; they've got huge fiscal deficits. This country was the epitome of fiscal probity fifteen years ago and now they run the biggest government deficit in the world: either 8 percent of GDP or 20 percent, depending on how you measure it. If you throw in the public agency debt and the stuff that is buried in footnotes in the government accounts, they have an enormous debt overhang problem. According to recently released numbers, non-performing bank loans are in excess of one trillion dollars, not the two or three hundred billion they'd been claiming for years. That's bigger than even I thought. Now they'll offload it into a resolution trust or common corporation to get it off the bank balance sheet so they can lend again.

If Koizumi can sustain himself and push his reform program, which I think he will, we'll begin to see public confidence recovering. Then I think the real estate market will base out. It's basically been going down for 12 straight years, back to early-1980s levels. When that occurs the collateral against many of these nonperforming bonds will begin to stabilize and hopefully move up again. So I think that Japan is on the verge of a new Meiji Revolution. The corporate sector is finally getting it. Business executives in some of the key Japanese corporations are partly under the influence of outside financial advisors from the U.S. and Europe, who are advising them on how to restructure, to write things off, to get away from lifetime employment. They're opening up the financial markets.

I think you've got a new Japan in the making. They're definitely going to have a recession or near recession this year and maybe even next. I anticipate no growth until fiscal 2002 and maybe even later. But once you get a sustainable move up in the stock market, and once the public sees that the value of their property is basing out and stabilizing and become confident that they have a new generation of leadership, it will transform the whole situation for Japan. Along with the corporate restructuring, this will allow profits to soar and the stock market will take off, maybe more than any other stock market in the Western world.

Japan to my mind, is the best bet you can make right now. The NIKKEI is close to 20-year lows and isn't going to go much lower, maybe a thousand points at the most. The upside is double or maybe triple after the next five or ten years. With that, Japanese growth will

resume. They aren't going back to growth rates of 7 or 8 percent like the '60s, '70s, and early '80s, but I think that Japan can very quickly regain 4-5 percent growth.

Leyden: Do you think there are some difficult cultural issues for Japan to work through.

Cass: I think the younger generation in Japan is totally different culturally than what has come before. They are much more westernized, much less consensus oriented. They think more like teenagers in the U.S. and Europe.

Leyden: What about the women in the workplace? In Japan, women are not as involved in the economy as women in the West are. Do you see that playing a part?

Cass: There will certainly be higher participation rates as we move along. One of the problems in Japan is, of course, very low birth rates and the graying of Japan. Demographers say that's a big negative; they say the same thing about Europe. But I think Japan can still generate good rates of growth by restructuring its economy and getting productivity up. I don't think the birth rate or the lack of immigration will stop Japan from turning things around.

The Numbers don't Add Up in China

China's strong growth may be based on fudged numbers; moreover significant political and economic challenges remain.

Ogilvy: I'm also interested in China and particularly how Shanghai might really take off as a business center.

Cass: I'm of two minds when it comes to China. Obviously on the surface they're doing extraordinarily well in a difficult environment for Asia. Growth this year is going to be in excess of 7 percent, whereas for the rest of Asia, it's going to be 3 percent or even less. They seem to be doing a reasonably good job in resolving some of their structural problems: state-owned enterprises, getting the banking system on a sounder basis, opening up the economy, joining WTO, etc.

I think [Prime Minister] Zhu Rongji is a very capable guy. But they are going into a very important congress at the end of next year in which they'll have a real generational shift. Zhu Rongji, [President] Jiang Zemin, and [former Prime Minister] Li Peng are all going to be superseded by the so-called fourth generation of Chinese leaders. They're a bit of an unknown, although from what we know, most of them seem to follow the presidential leadership line. You have two big factions in present leadership. On one side are Jiang Zemin and Zhu Rongji, and on the other you put Li Peng, who represents the old central planners.

Generally I think China is on course to increase and maintain open relations with the global community, because it really has no choice. It desperately needs foreign direct investment and Western markets.

Then again there are some big question marks. One concerns the authenticity of the numbers. According to many China watchers, the real GDP numbers don't tie in with the numbers for power consumption, railway shipments, and so on. For example, prior to 1990, there was a one-to-one correlation between GDP and national electricity consumption figures; then in 1992–1993 there was an unexplained divergence. Power consumption fell to 1–2 percent annually while GDP growth rates of 7–8 percent were being recorded. The same thing happened with rail shipments. There's a strong body of opinion that says China is fudging their numbers by 3–4 percentage points and growth rates could actually be half of what is being recorded. Another point of controversy is the magnitude of the nonperforming loans in the banking system, which may be vastly underreported. So that is another question mark: How weak are the banking system's balance sheets and what will that involve?

Leyden: Those are questions about the accuracy of the picture we're seeing. Are there other strategic questions that you're really worried about?

Cass: I do think there are some other questions. Obviously, the restructuring of state-owned enterprises is increasing the potential for sizable increases in unemployment. The changes occurring in the rural economy could increase rural unemployment. These are factors that the leadership has to bear in mind in terms of policy. On the political level, my sense is that there is a real power struggle going on, not necessarily between the different political factions, but between the military and the politicians. The military exerts a good deal of latent pressure on political policies and is much more concerned about U.S. attempts to confine China. The military, of course, has been significantly involved in the economy and its growth. Some very large companies were run by the military, and at the provincial levels some military people were making large amounts of money out of the opening of the economy. A lot of money went out of China and into offshore banking accounts in Hong Kong and elsewhere. That suggested a certain nervousness about China's longer-range future and political stability on the part of so-called senior cadres who were hedging their bets.

Hong Kong is obviously regarded as an entrepreneurial center that provides access to foreign capital and foreign investments. But as a strong market to invest in, I'm nervous about Hong Kong. I think there could be more political and economic instability in China than we're anticipating today. I don't see China's absorption into the community of nations as a straight and easy bet; there may be some unforeseen pitfalls and interruptions along the way. Within the Asian investment spectrum my recommendations are not Hong Kong but Japan, Korea, and Singapore, which is an oasis of stability in the Southeast Asian unstable political region.

Good Odds on Russia

Russia is far from finished; substantial economic and political progress should produce stability and growth.

Ogilvy: What about Russia? You reported an unexpectedly high growth in GDP in Russia for the last year.

Cass: Last year was an extraordinary year in which Russia generated almost 8 percent growth in real GDP—higher industrial production growth. But it was an anomaly. It was more the political impacts of the devaluation, and the return of capital and confidence. This year growth will be closer to 5 percent. Of course, Russia's institutional and regulatory framework has been very, very weak but my perception is that there's quite a bit of progress being made. Putin is aggressively addressing the old robber-baron oligarchic controls of some of the larger companies and getting them to improve management practices and transparency to foreign investors. The Russian stock market has probably been the best stock market in the world this year. Crime is still an enormous problem. But again, I think Putin is going to do a better job of dealing with it and limiting the influence of the Mafia than did Yeltsin and prior post-revolutionary administrations.

Russia isn't finished: Look at the broad context of an economy that is moving slowly towards stability, getting money, getting their tax collection under control. They're actually running a massive trade surplus on the order of \$60 billion and their current accounts and reserves have risen to record levels in the past several months. Capital inflows have been so strong that the Russian Central Bank has actually intervened to hold down the appreciation of the ruble, which is a total turnaround from the massive depreciations just a few years ago. They are reforming the tax system in a very responsible way by moving to a flat 15 percent tax rate, which is encouraging tax collections. And Putin's proposed to reduce that to 13 percent.

I think Russia is at an interesting stage and Putin is something of an enigma. The old KGB guy growing up in East Germany—I mean what kind of a new leader is that? On the other hand he seems to be a pragmatist. He realizes that Russia is tied to the West. I think they're making most of the right economic moves; whether he can sustain political support in the Duma is going to be a question mark. But I like the chances for Russia. I think the Russian stock market is one of the more interesting in the world, despite the lack of liquidity.

Europe: Lagging but Looking Good

Despite sluggish near-term growth, the economic outlook is positive.

Leyden: What's your take on the European situation? In particular, do you see them as being a couple years behind the U.S.? Or do you see that diverging?

Cass: I think you're exactly right. Their economic cycle runs between six-to-nine months behind ours. So when we go into a downturn, they usually lag behind for six months to a year. That's what we're seeing now—the slow growth that we began to experience in the third and fourth quarters of last year being translated into a European economic downturn. This has ample historic precedent and is not something to be particularly worried about.

The key for Europe is what new economic unification has meant for their ability to grow at higher rates than the rather sluggish Euro-sclerotic rates of the '80s and '90s. The Euro was valued far too high to begin with, particularly on the part of economists in this country. Many mainstream economists—and I was not one of them—felt that the Euro was basically going to take over the global reserve role of the dollar. That was ridiculous given the transition period and the problems they had to work out. We've now gotten down to a more rational level for the Euro, which is about eighty-five cents on the dollar. From this point on, I think the Euro will continue to stabilize and probably go higher as we move into full adoption of the reforms and we begin to use the Euro for transaction purposes in January of next year.

Right now Europe is going through the same sort of downturn in capital expenditures (capex). They are not as technology-exposed as the U.S. and don't have the same dynamic technological cycle. But they're picking up the pace, particularly in the Scandinavian economies and Ireland. Some countries are close to U.S. levels in terms of the percentage of the work force in high tech or R&D as a percentage of GDP. You can see the big difference between countries like Finland and Ireland and an old-line country like Germany—the one which is probably most vulnerable to downturn right now. German growth is virtually zero at the moment.

The Global Triggers: China and India

Huge markets and potential for economic growth make these countries worth watching.

Leyden: Looking ahead at the next ten years are you thinking positively about global economic growth being similar to U.S. growth?

Cass: I think that Europe is going to be a junior version of the U.S. It's not going to have the same kind of high growth rates because it's not going to have the same magnitude of productivity revolution; also population and immigration growth are a lot smaller. I've got Europe growing overall at 3.1 percent from 2001 to 2020, the U.S. and North America at 4.3, Japan at 3.8, Australia, Australasia at 3.6, and the OECD overall at 3.7 percent. So Europe is the laggard, but that's pretty good compared with growth of 2 percent in the '70s and 1 percent in the early '90s. It's certainly not as high as the post World War II reconstruction growth that was 5.2 percent annually.

Leyden: Looking ahead, which countries or regions would you be watching?

Cass: I think you have to focus on Asia because that's where the huge populations are with the most potential for economic growth. The two largest economies in the world in terms of population are China and India, both growing at over 6 percent. Imagine if they can keep that up and we can get the benefits of the technological revolution in both countries. India is fascinating to me. It's potentially one of the most dynamic economies in the world if they can get out from under government regulation. India has a very sophisticated high-tech work force; we've been employing them in droves in the U.S for software and programming. India could become one of the world's dominant economies. It's fascinating that the Bush administration is focusing on building relationships with India as a sort of containment of China. Our whole political relationship with India has not been good for years and years. We've tended to focus more on Pakistan.

Leyden: Are you confident that India can get out from under this bureaucracy? And why?

Cass: It depends on the kind of government. Are they willing to commit the resources to the provincial states? That's the big problem with India right now, they say one thing and then at the local level the authorities screw up relations with investors like Enron who are willing to put a lot of money into the country. The central government is saying all the right things. Now if they can follow that through at the local level, they will do very well.

Asia certainly has the potential to regenerate rates of growth of 6–7 percent. The average growth rate from 1994–2000 was 6.6 percent. For the prior 30 or 40 years it was 7–8 percent. We've got 6.7 percent as our Far East projection for the next 20 years vs. 4.3 percent for America. When you've got one billion people in China and one billion in India, that's a third of the world's population in two countries alone, both growing between 6–7

percent. That's a hell of a potential for the global growth rate. Our forecast for the aggregated global growth rate is 4.7 percent on a purchasing parity basis, and 4 percent simply on an exchange rate basis.

Leyden: In a global context the U.S. economy is so complex now, so multifaceted. You can watch a tech sector drop, but still be sustained by other sectors. Are we crossing some kind of threshold of complexity here?

The First Truly Global Economy

Today's deeply interconnected economies are simultaneously robust and fragile; yet despite short-term corrections, the boom is on.

Ogilvy: Is the globalization of the economy essentially functioning to dampen cyclical activities in national economies?

Cass: That's a very accurate point, I think. What's interesting about this current long-wave expansion is this is the first time we've truly had a global economy. In prior long-wave expansions you tended to have great disparities regionally. This one has the potential to fire on all cylinders and there is a great deal of synchronization of growth rates, which is good. On the other hand, the downside is when you get a downturn in a large economy like the U.S., the impact can permeate and that's what we're seeing right now.

Leyden: So it doesn't necessarily translate into being more robust. It could also be more fragile because of the interactions?

Cass: As long as the critical driving forces are in place and I think we're seeing in this cycle all the evidence that they are. The central bank is doing an admirable job and acting expeditiously to offset any signs of downturn with monetary easing. We saw that aggressively by the Federal Reserve Board in 1998. Greenspan brought the Asian crisis to a screeching halt, so we got the only global recession in the post war period that was limited to a year. It ended very quickly. I think there is much greater coordination between the central banks around the world and that is a strong plus as are the technological cycles permeating out from the U.S. right now.

Leyden: I want to push further on this robustness and fragility. You're consistently optimistic and it's clear that many of the developments that you're seeing are positive. On the other hand, around the time of the Russian crisis of 1998, you issued an uncharacteristically dire report. You really got worried and even used words like global depression.

Cass: No, what I wrote in May 1998 was a warning to institutional investors who are literally looking at a day-to-day framework. In May 1998, with the Asian crisis building, I felt that we were going to see a marked downturn in the next few months—from 10500 on the Dow to about 8300 or 8500. That’s where it actually went by September of that year. That was the period that I was warning about—the downside of the Asian crisis on the financial market. I’ve never gotten away from the consistent belief that we are in a long boom.

In late 1999 again I was trying to get them out of the stock market. I talked about the bubble and how valuations had gotten outrageous. I said specifically, “We’re going to go down to 9300 on the Dow sometime within the next year.” Then I quoted our May 1998 report on America’s New Economy, “Over the next few months we expect the market to correct, with strong support *at the 8300 level.*”

Leyden: So that’s a different prism in a way.

Cass: It’s short-term corrections within a long-term bullish thesis. The 1992 theories for The Belle Epoch are still in place, but there are periods of time when you have interruptions in the financial markets. The mid-1998 recession was one; the tech capex downturn now is another.

Don’t Worry, Be Happy

Increasing household wealth, combined with strong economic and technology fundamentals, are reasons for optimism.

Ogilvy: Another question relates to the promise of vastly increased liquidity as a function of the inheritance that is coming to the baby boomers. Is this something that you think about?

Cass: Definitely. I look at that through the data on household net worth as reported officially in this country. It goes all the way back to 1945. In 1996 it was 29 trillion and increased to more than 40 trillion over the next four years. In the past year we’ve lost about one and a half trillion of that, which has caused a lot of the pessimistic economists to say, “This is dire.” But I look at this in the context of the overall gains that have been made. Over the last year we were actually offsetting a lot of the stock market loss with the gains in the housing market, which actually is a bigger percentage of the average individual’s financial holdings and equity. So, I’m not concerned about that. Net worth, disposable income—these have been increasing dramatically so we do have an enormous increase in wealth at the household level in this country. This is very, very positive over the long run, in terms of provision of liquidity through pension funds and the like.

It's an ongoing process—we're just transferring more and more wealth to the next generation. And it will spur more consumption, more well-being.

Leyden: There seems to be a bunch of phase shifts happening: accelerating change, the first truly global economic expansion, this compound wealth aspect so that the kid who's 20 now can spend more than any 20-year-old was ever able to spend before. It seems as though this Internet age is a bigger deal than other phases, which were pretty big deals, as well. Are we actually hitting something that's an entirely new and qualitatively different phenomenon?

Cass: This is a qualitative revolution as well as a quantitative revolution, perhaps even more so on the qualitative side. I just think we're going to get more out of this in terms of meaningful improvement in living standards, education, knowledge, and in our ability to understand and interface with the rest of the world. America is no longer going to be the relatively isolated, non-cosmopolitan country that the Europeans generally perceived it to be. We're going to be more sophisticated, able to make better decisions, and able to enjoy our lives more as these things work through.

Leyden: Are there any questions that you are really wrestling with or pondering that are really critical uncertainties for global businesses over the next ten years?

Cass: I am a bit of an unusual individual because I have a long-term view that I stay with. It gives me a great deal of comfort. I'm not too fazed by short-term swings because I know they are part and parcel of the process. But in my own mind I'm reasonably confident that the long-cycle is going to play out as anticipated and that we've got a very strong period of growth ahead. The main thing for corporate executives is to stay optimistic, to take advantage of the situation by, for example, increasing capital spending in the downturn. Applied Materials, one of the main producers of semiconductor fabrication machinery, said, "We love these periods, because that's when we can get ahead of our competition. They're all pulling in their horns, and we're expanding."

That to me is the lesson to corporate executives. You should stay optimistic.

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