INFERENTIAL FOCUS BRIEFING

Special Briefing
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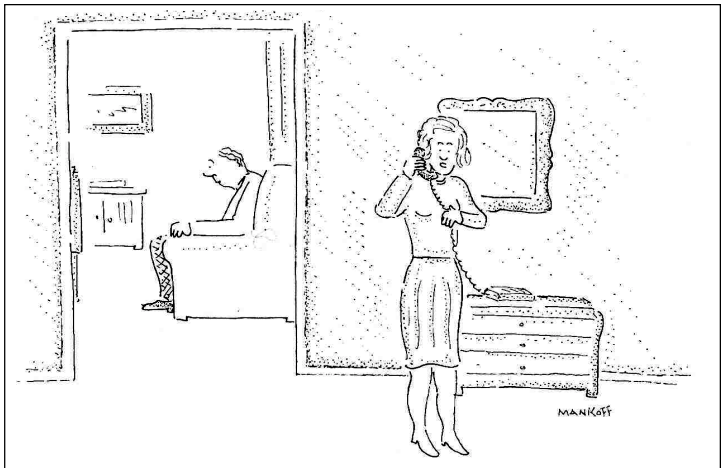
THE MOOSE METAPHOR

Being a Closer Look at Zero Visibility, Stinking Models, Herd Instincts, Reigning Confusion, Consensual Illusions and Other Business Issues in the Present Era of Error and How to Respond to Them

The Era of Error

Forecasters and analysts of all types are deep in an era of error. Projections they made last year and the year before have proven not just inaccurate but extensively (and expensively) inaccurate, and those inaccurate projections are provoking a small crisis of confidence in the models that generated them.



"We'd love to come, but the weathermongers have paralyzed us with fear."

✦ After a winter of great discontent in the field of meteorology – a year in which weather forecasters failed to predict a devastating New England storm on February 5 only to over-tout a subsequent modest snow storm as the "biggest" storm of the decade – a coastal-storm specialist and professor of meteorology at the University of Virginia concluded: "Our models stink!" (*Philadelphia Inquirer*, 3/26/01)

✦ As customers across a wide range of technology-dependent industries started canceling orders for routers, computers and microchips, chief executives at suppliers adopted a phrase to express how little they understood what was happening and what was going to happen: "zero visibility." Specifically, Judy Bruner, chief financial officer for Palm, when asked about the company's future, pulled back by saying: "Our visibility is too limited." (*Industry Standard,* 3/19/01 and 4/9/01)

✦ Art Taylor, a 3Com vice president, admitted "we went dark in the third quarter." The company's fiscal third quarter ended March 2, and Taylor seemed to confess that the company was struggling to understand what was happening. "We don't know what next year will look like." (*Investor's Business Daily*, 3/22/01)

✦ After a quarter in which companies released a record number of "surprise announcements" of lower-than-expected earnings – a 30 percent increase over the previous quarter – Joseph Kalinowski, an analyst for Thomson Financial, which monitors industry analysts, concluded: "Confusion reigns. It's clear the analyst community, by and large, has no idea what to expect this year." (*Industry Standard*, 3/5/01)

If weather, chips and stocks were the only areas in which experts were trying to overcome accuracy problems, then the whole issue would be of no great moment. But they are not. Four years ago, we noted the growing disparity between increasing computer power and decreasing accuracy in several areas. The Federal Reserve's Open Market Committee revealed that the economic numbers it was receiving were so bad that decisions as to appropriate action were getting harder rather than easier to make. At the same time, the Conference Board revealed that commodity prices were not accurate indicators of inflation. Also, DRI/McGraw-Hill estimated that the government's productivity numbers were inaccurate by as much as three-quarters of a percentage point, and officials responsible for calculating the country's gross domestic product admitted to being wrong roughly 25 percent of the time. ("Get Me the Numbers," **IF 1803**, 2/3/97)

Accuracy problems have persisted in this era of error, recently reaching costly proportions. Consider just a few examples:

✦ In January 2000, the Gartner Group, a technology consulting firm, forecast that by 2004, $7.3 trillion a year of global transactions would be coursing through the Internet. Recently, the company quietly revised that figure down to $1.3 trillion, which may or may not be any more accurate than the earlier number. (*New York Times*, 3/26/01)

✦ In December 2000, IDC issued a revised forecast for the computer industry. Fourth quarter computer sales would not rise 21.2 percent over the same period in the prior year, as IDC had originally forecast, but rather at the much more leisurely pace of 10.2 percent. By January 2001, the company, with much less fanfare, acknowledged those fourth quarter computer sales increases were actually closer to 0.3 percent. (*CNetNews.com*, 3/8/01)

✦ Last year, analysts for the cable television industry forecast that by the end of 2001, Cablevision would have 500,000 set-top boxes installed. In February 2001, Cablevision admitted that it was hoping to have 100,000 such units installed by year's end, a cut of 80 percent from analysts' projections. And that number is still just a best guess. (*Financial Times*, 2/15/01)

What good are these numbers if they can be so wrong? Certainly, some projections prove to be closer to reality than others, but which ones?

In a March speech to the Washington economics conference, Alan Greenspan, chairman of the Federal Reserve, conceded that the Fed lacked data with sufficient quality to read changes in the overall economy. Given that the Fed monitors roughly **14,000 data points**, this is an amazing confession. The chairman's past words may have been haunting him. In the summer of 1990, just months before the economy slipped into recession, he told the U.S. Congress: "The likelihood of a recession seems low" (see "The Economy: Not Really 'Curiouser and Curiouser,'" **IF 1826**, 8/13/97).

Taking an historical perspective, Greenspan told the recent Washington gathering of economists that reality had not been kind to economic forecasters, because at best they could only "construct probabilistic models that can inform decisions of [leaders] who – of necessity – will be making their decisions armed with incomplete information." (*New York Times*, 3/28/01)

What social scientists like Alan Greenspan want to believe (fervently) is that more information can lead to better forecasts, a perspective that has driven researchers to ever greater feats of data collection, computer storage and program

elaboration. But some scientists disagree. "Conventional wisdom," according to Roger Pielke, Jr, of the National Center for Atmospheric Research, "holds that uncertainty is best understood or reduced by advancing knowledge, an apparent restatement of the traditional definition of uncertainty as 'incomplete knowledge.' But in reality, **advances in knowledge can add significant uncertainty**." To add the perspective of a technology journalist, increasing complexity, no matter what technological power we apply, "seems to leave us further behind." (*Nature*, 3/8/01; *Industry Standard*, 4/9/01)

What may be stalking the work of Alan Greenspan, meteorologists and various kinds of analysts is advancing uncertainty and the elevated damage that this advancing uncertainty is causing. What has come to be known as information overload, a self-imposed condition of too much data flowing without context, is creating more and more uncertainty, even though information accumulators thought (or hoped) that more information would bring better understanding. In short, they assumed – incorrectly it now appears – that complete information would give rise to complete knowledge.

Pielke further suggested that the converse of this pursuit of knowledge and its resulting uncertainty is "ignorance [which] is bliss because it is accompanied by a lack of uncertainty." Such ignorance led to the "certainty" that the date transition from 1999 to 2000 (dubbed Y2K) would generate huge computer glitches that would trigger economic and social chaos. Such certainty led to the conclusion that America had entered into a heaven on earth called the New Economy, in which old economic and financial rules were obsolete and new rules were being created by Internet "gurus" as they went along. Other recent forecasters have proposed – no doubt with great conviction and certitude – that the post-industrial economy has managed to kill inflation, end business cycles, bless momentum investing and become a perpetual growth machine. We should note that such clarity of foresight also led Marilyn Agee, a biblical soothsayer, to predict not once but four different times when the world would end – in 1998, 1999, 2000 and, when these predictions were proven wrong, her latest date, May 28, 2001. (*Wilson Quarterly*, Spring/2001)

"Sure, you're disappointed – but, hey, it's not like it's the end of the world."

The Moose Metaphor

The question for those who listen to Marilyn Agee – or other forecasters – is: Who suffers when forecasters are wrong? In Uganda, the leader of a cult named the Movement for the Restoration of the Ten Commandments worried that his inaccurate prediction of the world's end would result in his losing power, and so he killed 900 followers rather than watch them leave. Such a turn of events makes it quite clear who suffers for the errors of the forecaster. Even in less extreme situations, the sufferers are typically the listeners, not the prognosticators. Who lost the money that television and print touters-cum-analysts said was best spent on high-tech stocks?

"The thing is," humorist Dave Barry recently wrote, "the experts sincerely believed that we were in a New Economy, and the way to get rich was to invest in a new business model, a business model based on a revolutionary economic principle: stupidity." After the collapse, however, the touters remain. "J. P. Morgan is still here," added Barry, "and so is *Fortune* magazine, and so are all the other financial [witch doctors], dancing around, waving their magic feathers." (*Atlanta Journal-Constitution*, 4/15/01)

The mania that fed on ignorance-based certitude has yet to unwind completely, and thus, some are still listening to the few dancing witch doctors and predictors who say that things are already looking good economically. But individuals are slowly starting to discover what the wild moose of Yellowstone Basin in Wyoming have learned: The environment has changed…significantly, indeed, dangerously.

For fifty years, the wild moose in the Yellowstone Basin lived free of grizzly bears, wolves, and even hunters. In short, they lived in a risk-free environment without natural predators, and that environment encouraged them to forget or let atrophy basic survival skills. Recently, predators returned to the region, and considerable blood-letting ensued. Within a season, however, the moose regained their survival skills and started listening for the wolf's howl and for the sounds of grizzlies moving in the woods. Alert and wary once again, traits they lost in their Edenic world, the moose can survive. They have learned that the environment is dangerous and that not listening and watching for important signals of change has serious consequences. (*USA Today*, 3/14/01)

The Yellowstone moose's real-life experience serves as a metaphor for contemporary American business. In the past decade, companies operated in an unreal environment, a seemingly risk-free realm that delivered rising returns with the most modest of efforts. Society's slide into mania, the world's addiction to growth, the extended economic expansion and a screaming stock market made money readily available and optimism contagious. It was the moose's world without natural predators.

The moose metaphor suggests that survival depends on direct, ongoing observations. Risks rise as assumptions increase. Each day that passed without danger, must have reinforced the moose's developing assumption that the future would look like the past.

The assumption of stasis, however, becomes risky – even deadly for the moose – when the environment is changing. "Illusions," explains Richard Gregory, professor of neuropsychology at the University of Bristol (England), "are departures from truths of the object world." The object world we know through perception. When we cease to use direct observations and depend on theory, we run the risk of operating out of harmony with that object world. (*Nature*, 3/1/01)

Illusions in the form of models, theories and conceptualizations are causing the uncertainty and damage that now worry analysts, meteorologists and economic regulators. **The more data points they collect to fill the slots in their ever-more-complicated models, the less they seem to know about what is actually happening.** The era of error mandates attention to the moose metaphor.

New Ways

In just 3 quarters, the U.S. economy slowed from racehorse-type growth, ranging between an annualized 6 to nearly 8 percent, to a slow-gate growth, hitting around 1 percent. As companies started warning of lower earnings – or as one wag called it, "marking down their expectations" – leaders repeatedly expressed shock, as if they were caught by surprise. At Oracle, a company whose employees in fiscal 2000 exercised more than $7 billion worth of stock options, chief executive Larry Ellison expressed surprise that in less than one month business went bad, muttering at a press conference something to the effect that the first two months of the year were great. John Chambers, CEO of Cisco, seemed shocked and at a loss to explain his company's rapid fall: "This may be the fastest any industry our size has ever decelerated….We never built models to anticipate something of this magnitude." (*CNet News.com*, 3/8/01; *Atlanta Journal-Constitution*, 3/2/01; *New York Times*, 4/17/01)

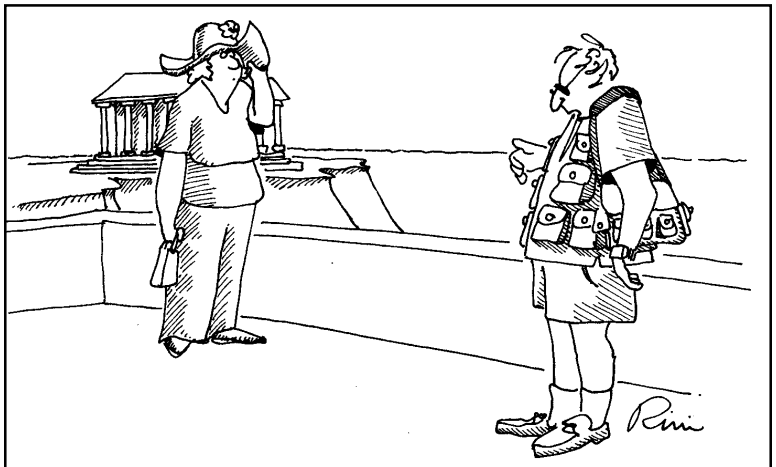
Much of the past 10 years of economic and financial growth and rising capital spending has related directly to technology. Much of that money went to expand access to data resources and to enhance information gathering, processing and storing. So why, with so much information, were so many leaders caught off guard? We think the moose of Yellowstone might have some suggestions.

An immediate answer, of course, is illusions – a separation of the aggregation of information from the object world, assuming the future would look like the past and, more particularly, assuming that early adopter "techies" were somehow representative of a new consumer.

The relevance of the moose metaphor is becoming apparent to more and more people in many different areas. Several priority changes have already surfaced, and they suggest new dynamics that could eventually guide those who set values for companies:

Strategy Trumps Productivity – The philosopher George Santayana once wrote that a fanatic is someone who has lost sight of his goal and then redoubles his effort. Our observations suggest that many companies are redoubling their efforts to pursue goals that may not suit the new business environment. For example, accepted market thinking insists that consumers are always better off with more rather than fewer choices. A recent study, however, revealed that too many choices can make people feel overwhelmed and overloaded and cause them to walk away completely. In addition, an extensive array of choices prompted potential buyers to diminish their estimation of **all** choices, no matter what varying levels of quality may have existed. In one study, when passing customers in a grocery store were offered tastes of 24 different types of jams, only

3 percent of those who stopped actually bought something. When the testers reduced the selection to 6 jams, 30 percent of equal numbers of passing customers bought something, a tenfold increase in effectiveness. (*New York Times*, 1/9/01 and 2/11/01)



"I can't find my pocket camera."

In the past, we have noted the example of Procter and Gamble, which decreased the number of products in its hair-care line and actually increased market share. If a company has set a strategy to expand its product line in order to increase market share or shelf space, that company is acting contrary to the new business environment. In pursuit of such a goal, the company might cut back expenses, reduce personnel and trim production facilities to increase productivity, but that company would only be getting more efficient chasing a strategy based on assumptions developed from a market that no longer exists. The moose metaphor suggests that more careful attention to the environment would be a wiser place to start.

Observations Trump Assumptions –The extent to which the suddenness and severity of this recent economic downturn caught the Larry Ellisons, John Chamberses and Alan Greenspans of this country by surprise is the extent to which those leaders are disconnected from the world that actually drives the economy. They may have had models that generated forecasts down to the decimal point, but they were measuring the wrong things. Models and theories are especially prone to error when things they are intended to measure are changing, or more important, when things they do not measure at all become significant. Said in the context of the moose metaphor, those leaders' models, while perhaps measuring precisely how fast the tall grass was growing, did not account for the wolves' howls or the grizzlies' movements.

In economics, those who practice neo-classical theory, econometric modeling or institutional studies are having to make room for behavioral economists. Behavioral economists suggest that sociological and psychological factors greatly influence consumer behavior and that individuals do not always act rationally, an assumption of standard theories, and do not always act consistently, an assumption of standard statistical models.

Consumers are not rational, according to one behavioral economist, because they tend to fall victim to the problems of "categorization" and "representation." Individuals categorize people, products and services, thereby grouping things that are not always alike and acting as if they are alike. Behavior such as racism is a form of categorization, and it undermines the fundamental theories of standard economic models – that people act rationally at all times and are punished by the market if they do not. Also, individuals allow representations to affect their behavior. They see an economy or stock market growing for an extended period, and they come to believe that this is representative of reality. They then assume the economy will continue to act similarly in the future, and thus they extend their credit well beyond reason (*e.g.,* consumers doubled their indebtedness during the recent extended economic expansion). Such behavior undermines standard economic thinking, which insists that individuals at all times act in their own best interest, using rational thought processes to grasp what is best. (*New York Times*, 2/11/01)

Behaviorists are affecting the field of finance as well. Their research has undermined a heretofore firmly believed part of standard financial models: Markets are efficient. Under the market-efficiency belief, prices remain just about right, people choose the right careers, investors buy the right stocks,

consumers save and spend the right amount of money and so on. However, direct observations suggest people tend to act from emotions, biases and confused mental states, as well as from rational thought processes. Behaviorists have noted that individuals can become victims of overconfidence, for example, and then overconfidence affects things like the pricing of securities, diamonds or some brand-name products. These types of behavioral or personal affectations can cause distorted values of entire firms, both positively, as we have recently experienced, and negatively, as we may be starting to experience. (*CFO.com*, 1/1/01)

A moose might overestimate his security and become indifferent to the details of the environment around him, all at considerable cost. Direct, ongoing and astute observations, the still-alive moose of Yellowstone might wish to say, lead to more effective actions.

Interdependence Trumps Independence – One of the basic traits of most specialists' approach is: Reduce (or analyze) a subject to its smallest component parts and then study one of those smallest units in ever-increasing detail. Recent learning has suggested that this approach reaches a point at which further isolation of subject matter ceases to contribute to the overall understanding of a subject. One biologist, casting a critical eye toward the Human Genome Project – a reductionist model – suggested that this approach as a means of studying life is like memorizing a dictionary as a means to learning to speak a new language. Relationships, the biologist noted, between the genes and other substances elicit the expression of diversity and variety of forms and functionalities – that is , life.

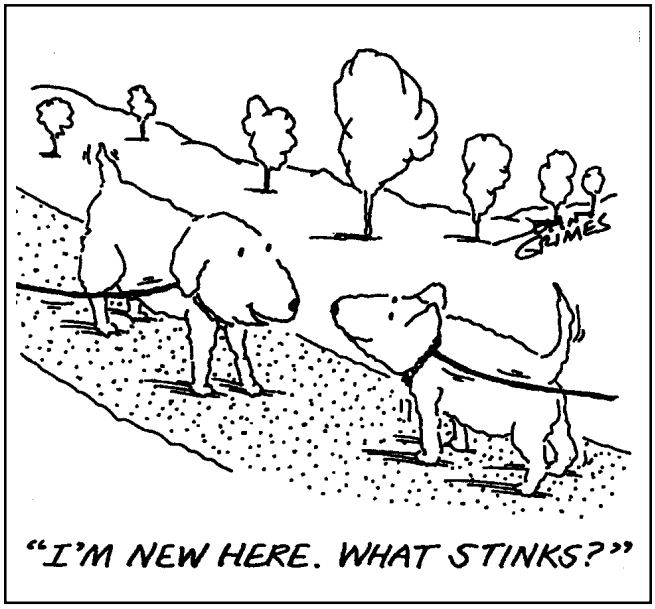
Physicists are reaching this breakthrough point as well. Once seen as the "hard" scientists of the "real" world, physicists are becoming more poetic. They are discovering not a world of clockwork precision with various elements firmly planted, identifiable and performing a constant role. Instead, their research is disclosing an entangled interactive world, wherein identities and even properties change and become known only through interaction with other particles – a world not of narrowly defined entities but of abundant, defining relationships. Particle physics, according to Frank Wilczek, professor of physics at MIT, is not just about particles, but about mathematical relationships (symmetries). To understand what a particle is, physicists must understand the dynamic of the relationships in which that particle participates. They have learned that they cannot just compile data and measurements on particle after particle and assume that a compilation of this data will result in an understanding of what an atom is or how it operates.

"Once and for all I want to know what I'm paying for. When the electric company tells me whether light is a wave or a particle I'll write my check."

In addition, individual physicists cannot, on their own, know everything about a subject. A quantum gravity physicist, Lee Smolin, author of *The Life of the Cosmos* (1997), has noted that only as a community can scientists know everything about, say, the cosmos. The reason is simple: Each person has a different relationship to the subject (point of view, standing, vantage point) and only in concert can researchers actually piece together any sense of a totality. (*New York Times*, 3/20/01)

Relationships, not just facts, express reality, and no individual can ever know a whole subject. One moose alone cannot detect all signals from the grasslands and the woods, even though he might live

with the illusion, based on years in a risk-free environment, that he can. Many attentive creatures, however, each observing from a different place with unique capabilities, can monitor all changes in the environment.



Diversity Trumps Consensus – Even as interdependence calls for dialogue, it does not imply consensus, which scientists are learning can be detrimental to understanding. "Consensus science," explains Roger Pielke, "can provide only an illusion of certainty." In other words, the knowledge that groups of people use to engender consensus is never actually sufficient for them to reach certainty, and so consensus ultimately merely leads to a feeling of certainty, which is, Pielke insists, an illusion. When groups act from this illusory certitude, finance behaviorists have learned, they are exhibiting the "herd instinct," a type of action that further discredits the theoretical point that individuals always act rationally. (*Nature*, 3/8/01)

Consensus can support an illusion of certainty and can make decision-making more comfortable, even if that decision is inconsistent with actual conditions in the environment. One moose might hear the sounds of the grizzly and then ignore them because so many others did not hear them. A group needs to hear everyone's perceptions, even if discord arises. As Pielke suggests, avoiding consensus may not yield certainty, but uncertainty is closer to reality.

The Moose Is Loose, But Always at Risk

Through much of the recent economic expansion – unprecedented in duration – and especially through the mania that ballooned the values of everything from company and stock valuations to all things tech, high-tech and Internet, American businesses have had a rather easy time of it. With the ability to "manage company earnings" and spend "the market's money" (*i.e.,* elevated stock prices), profits grew at a double-digit-per-year pace. Companies looked good, leaders looked good, and analysts never looked too closely at the world outside their area of expertise (see "Seeing Through It, Part II: Capital Flows, Managed Earnings and Lower Expectations," **IF 2132**, 11/17/00).

When the unwinding of the mania started, everyone was surprised – that is, when the grizzlies returned to the environment, the inattentive moose were surprised. Leaders who abided by the new ignorance (basic skills are not necessary) and who thought the illusion of certainty that it created (a New Economy and growth mania, now and forever) was reality were taken by surprise when their orders ceased, their values tumbled and their backers disappeared.

Now that reality has punctured those illusions, real growth numbers seem harder to generate – "visibility" is lessened. Some leaders have opted for received wisdom (the "herd instinct" redux), cutting costs, reducing staffs, increasing productivity and pushing more products. Some behavioral economists might suggest that such tactics are exemplary of "representation" (assuming what has worked in the past will continue to work), and research scientists might note that these decisive actions actually give the decision-maker a sense of certainty. In short, they are illusions that do not take into account the new realities of the business environment – that grizzlies and wolves are afoot.

In "Soon-to-Be 'Best Practices': When the Game Changes, New Skills Are Needed," **IF 2201**, 1/5/01, we noted that both the "old" and "new" economies were suffering because changes in the business environment were causing trouble for all companies. We suggested some skills that might be

needed to prosper in the new environment: customer retention, sales-based profits, customer-needs-based actions, constant customer dialogue, and employee growth and development.

These skills fit comfortably with the lessons of the "moose metaphor" (reworked strategy, real-world observations, interdependence, and diversity of perspectives). Best practices offer guidance for operations, while the moose metaphor offers guidance for developing an overall strategy that is consistent with reality.

What the best practices and the metaphor together suggest, is that theory, modeling and conceptualization are especially prone to error in periods of massive change – thus, we are living in an era of error. Best practices and the moose metaphor encourage closer connections between the points of contact – customers and customer-contacting employees – greater attention to flows of information inward and throughout the company, and openness to the types of changes that can keep a company dynamic. In other words, they outline the behavior of a vital organism, in touch with the world around it, capable of changing as the environment changes and willing to let go of models and practices that no longer work. The Yellowstone-Basin moose who did not have their ears cocked to hear the changes in their environment and who were too busy feeding on the grass to refocus their behavior did not survive. For those interested, the business environment is changing, and the moose metaphor is a lesson in paying attention to what is important.

Best Practices – Operations

Old Obsessions	***New Necessities***
Stock-price manipulations	**Customer retention**
Addiction to Growth (*including M & A)*	**Sales-based profits**
Command & Control	**All Channel Open Participation**
Latest technology (*New-New Thing*)	**Customer/User actual needs**
Efficiency	**Employee growth & development**
Managed Earnings (*Higher*)	**Managed expectations (*Lower*)**
Conceal Information	**Transparency**
"Money-comes-from-everywhere" operations	**Cost-price balance**
Bigger & Louder Advertising/Marketing	**Moderation as an asset**
"Anything that Sells"	**Morality as a factor**

Moose Metaphor – Planning

Old Obsessions	***New Necessities***
Productivity (*Fanatical, Harder Drive*)	**Strategy** (*New Goals, Smarter Drive*)
Theory/Models/Assumptions (*Plug in the numbers*)	**Direct, Ongoing Observations** (*Listening posts; free flow of info - outside in*)
Consensus (*Illusion of Certainty*)	**Diverse Assessment** (*Acknowledge uncertainty*)
Independence (*Self-contained, Corporate synergy*)	**Interdependence** (*Networked, vital organism*)