Executive Summary

OLD-FASHIONED DECISION MAKING doesn't meet the needs of a world with too much information and too little time. So-called rational decision making, once the ideal, requires comprehensive knowledge of every facet of a problem, which is clearly impossible today. One of the most recent decision-making models, incrementalism, despairs of knowledge and instead concentrates on the smallest possible units of change—without any sense of grand design.

Now a new model is evolving. It lets us proceed with partial information. It helps us adapt to new information as it becomes available. It also helps us achieve broad goals and purposes. This new model is actually an old model, used by doctors for centuries and by many managers. It's called mixed scanning or adaptive (or humble) decision making, and it involves two sets of judgments:
broad, basic choices about an organization's goals and policies and small, experimental decisions based on in-depth examination of a focused subset of facts and choices.

Physicians never commit all their resources and prestige to their first diagnosis. Knowing where they want to go, they use focused trial and error to get there: try medicine x for y number of days, and if that doesn't work, try medicine z. Managers can use this technique to increase the flexibility and adaptability of their decisions. In addition, they can put decisions off, stagger them, or break them into separate parts, and they can also maintain strategic reserves that will allow them to take advantage of sudden opportunities and to cover unexpected costs.

**Decision making in the 1990s** will be even more of an art and less of a science than it is today. Not only is the world growing more complex and uncertain at a faster and faster pace, but the old decision-making models are failing, and we can expect their failure to accelerate as well.

If executives once imagined they could gather enough information to read the business environment like an open book, they have had to dim their hopes. The flow of information has swollen to such a flood that managers are in danger of drowning; extracting relevant data from the torrent is increasingly a daunting task. Little wonder that some beleaguered decision makers—even outside the White House—turn to astrologers and mediums.

Yet from this swelling confusion, a new decision-making model is evolving, one more attuned to a world
that resembles not so much an open book as an entire library of encyclopedias under perpetual revision. This new approach—in fact a very old approach in modern dress—understands that executives must often proceed with only partial information, which, moreover, they have had no time to fully process or analyze. I call this model "humble decision making."

In a simpler age, the principle governing business decisions was held to be rationalism. Rationalists argued that decision makers should and could explore every route that might lead to their goal, collect information about the costs and utility of each, systematically compare these various alternatives, and choose the most effective course. Executives were then urged to throw the full power of their leadership behind the chosen path. The rule was: Implement! Overcome every adversity! This called for the kind of assertiveness shown by Israeli army commanders when they order subordinates to storm and take a roadblock: "I don’t care if you go over it, under it, around it, or through it, just see that it’s ours by the end of the day."

Today’s typical executive finds it quite impossible to pursue decisions this aggressively. For example, it is no longer enough to understand the U.S. economy; events in Brazil, Kuwait, Korea, and a score of other countries are likely to affect one’s decisions. Explosive innovation in fields like communications, biotechnology, and superconductivity can take companies by surprise. Unexpected developments can affect the cost of everything from raw materials to health care—witness the oil shocks of the 1970s and the spread of AIDS in the 1980s. Economic forecasts are proving to be much less reliable than they used to be (or, perhaps, than we used to think they were). Deregulation, computer-driven program
trading, foreign hot money in the U.S. economy—all add unpredictability.

Rationalist decision makers simply need to know much more than ever before. Of course, with computers our capacity to collect and to semiprocess information has grown, but information is not the same as knowledge. The production of knowledge is analogous to the manufacture of any other product. We begin with the raw material of facts (of which we often have a more than adequate supply). We pretreat these by means of classification, tabulation, summary, and so on, and then proceed to the assembly of correlations and comparisons. But the final product, conclusions, does not simply roll off the production line. Indeed, without powerful overarching explanatory schemes (or theories), whatever knowledge there is in the mountain of data we daily amass is often invisible.

And our prevailing theories—in economics, for instance—are proving ever less suitable to the new age. Artificial intelligence may someday make the mass production of knowledge an easy matter, but certainly not before the year 2000.

In short, the executives of today and tomorrow face continuing information overloads but little growth in the amount of knowledge usable for most complex managerial decisions. Decision makers in the 1990s will continue to travel on unmarked, unlit roads in rain and fog rather than on the broad, familiar, sunlit streets of their own hometowns.

Actually, decision making was never quite as easy as rationalists would have us think. Psychologists argue compellingly that even before our present troubles began, human minds could not handle the complexities that important decisions entailed. Our brains are
too limited. At best, we can focus on eight facts at a
time. Our ability to calculate probabilities, especially to
combine two or more probabilities—essential for most
decision making—is low. And the evidence shows that
we learn surprisingly slowly. We make the same mis-
takes over and over again, adjusting our estimates and
expectations at an agonizing crawl, and quite poorly at
that.

Moreover, we are all prone to let our emotions get in
the way—fear, for one. Since all decisions entail risks,
decision making almost inevitably evokes anxiety. Deci-
sion makers respond in predictable ways that render
their decisions less reasonable. Irving L. Janis and Leon
Mann have treated this subject at some length in their
book, *Decision Making*. Common patterns include de-
sive avoidance (delaying decisions unduly), overreaction
(making decisions impulsively in order to escape the
anxious state), and hypervigilance (obsessively collecting
more and more information instead of making a deci-
sion).

Political factors are another complicating considera-
tion, partly because we try to deny their importance. One
study reports that most executives see their decisions as
professional, even technocratic, but rarely as political.
While they acknowledge that political considerations
may enter into dealings with a labor union or a local gov-
ernment and that “bad” political corporations do exist,
few are willing to recognize that all corporations are
political entities and, consequently, that most if not all
important decisions have a political dimension. For
example, it is not enough to dream up a new product,
market, or research project; we must consider how to
build up bases of support among vice presidents, division
leaders, and others.
By disregarding the emotions and politics of decision making, rationalism has taught executives to expect more of themselves than is either possible or, indeed, desirable. Implicit in the rationalistic decision model is the assumption that decision makers have unqualified power and wisdom. It ignores the fact that other individuals, too, set goals for themselves and seek to push them through. For ethical reasons, we should not want to override them, and for practical reasons, we cannot do so. Successful decision-making strategies must necessarily include a place for cooperation, coalition building, and the whole panorama of differing personalities, perspectives, responsibilities, and powers.

So even before the world turned ultracomplex and superfungible, our intellectual limitations were such that wholly rational decisions were often beyond our grasp. Recognition of this fact led students of decision making to come up with two new approaches that are, in effect, counsels of despair.

The first of these is called incrementalism, a formal title for what is otherwise known as the science of muddling through. Incrementalism advocates moving not so much toward a goal as away from trouble, trying this or that small maneuver without any grand plan or sense of ultimate purpose. It has two attractive strengths. First, it eliminates the need for complete, encyclopedic information by focusing on limited areas, those nearest to hand, one at a time. And, second, it avoids the danger of grand policy decisions by not making any. Its main weakness is that it is highly "conservative"; it invariably chooses a direction close to the prevailing one. Grand new departures, radical changes in course, do not occur, however much they may be needed.

The second counsel of despair is openly opposed to reflection and analysis. It calls on executives to steam
full speed ahead and remake the world rather than seek to understand it. Building on the perfectly accurate observation that many things are exceedingly difficult to predict—which product will sell, what the result of an ad campaign will be, how long R&D will take—executives are advised not to sit back and await sufficient information but to pick the course favored by their experience, inner voice, intuition, and whatever information is readily available—and then to commit. Pumping enough resources, dedication, and ingenuity into the course they have fixed on can make it work, can render an underprocessed decision right.

While more heroic and appealing to the executive self-image than incrementalism, this go-for-it approach is the decision maker’s equivalent of “Damn the torpedoes, full speed ahead!” It is a hidden rather than an open counsel of despair, but it does despair of knowing the world and approaching it sensibly. And it is much more likely to end in shipwreck than in victory, especially in ever more treacherous seas.

Yet another approach—rarely described but not as uncommon as it ought to be—is what we might call rational ritualism, where executives and their staffs take part in an information dance whose prescribed moves include the data pas de deux and the interpretation waltz, except that the information used is generally poor (arbitrarily selected or from undependable sources) and often vastly overinterpreted. Usually most of those involved (or all of them) know the data is unreliable and the analysis unreal but dare not say that the emperor is naked. Instead, they make ritualistic projections—and know enough to ignore them.

A less explicitly recognized approach to decision making has been with us for centuries. Effective managers have made use of it since business began. Because
this approach is particularly well suited to the new age of
data overload and pell-mell change, it deserves a new
look and, though still evolving, the respectability that a
clear formulation can give it. I call it humble decision
making, but a more descriptive title might be adaptive
decision making or mixed scanning, since it entails a
mixture of shallow and deep examination of data—gen-
eralized consideration of a broad range of facts and
choices followed by detailed examination of a focused
subset of facts and choices.

Mixed scanning contrasts strongly with two prevail-
ing models of decision making—rationalism and incre-
mentalism. We have already seen that the rationalist
model, which requires full scanning of all relevant data
and choices, is often impossible to heed. It requires the
collection of enormous quantities of facts, the use of ana-
lytic capabilities we do not command, and a knowledge
of consequences that are far away in time. Many of those
who despair of its usefulness tend to favor increment-
isim, or muddling through.

But incrementalism, too, contains a self-defeating fea-
ture. Theoretically, incremental decisions are either ten-
tative or remedial—small steps taken in the “right”
direction whenever the present course proves to be
wrong. But the moment decision makers evaluate their
small steps—which they must do in order to determine
whether or not the present course is right—they must
refer to broader guidelines. These wider criteria are not
formulated incrementally but have all the hallmarks of
grand, a priori decisions, which incrementalism seeks to
avoid. Yet without such guidelines, incrementalism
amounts to drifting, to action without direction.

Mixed scanning, as the term suggests, involves two
sets of judgments: the first are broad, fundamental
choices about the organization’s basic policy and direction; the second are incremental decisions that prepare the way for new, basic judgments and that implement and particularize them once they have been made. Thus mixed scanning is much less detailed and demanding than rationalistic decision making, but still broader and more comprehensive than incrementalism—and less likely to be limited to familiar alternatives.

Rationalism is a deeply optimistic approach that assumes we can learn all we need to know; mixed scanning is an adaptive strategy that acknowledges our inability to know more than part of what we would need to make a genuinely rational decision. Incrementalism is profoundly cautious and avoids decisions based on partial knowledge; mixed scanning seeks to make the best possible use of partial knowledge rather than proceed blindly with no knowledge at all.

The oldest formal use of mixed scanning is medical. It is the way doctors make decisions. Unlike incrementalists, physicians know what they want to achieve and which parts of the organism to focus on. Unlike rationalists, they do not commit all their resources on the basis of a preliminary diagnosis, and they do not wait for every conceivable scrap of personal history and scientific data before initiating treatment. Doctors survey the general health of a patient, then zero in on his or her particular complaint. They initiate a tentative treatment, and, if it fails, they try something else.

In fact, this is roughly the way effective managers, too, often make decisions. Business data are rarely unequivocal. Driving in fog and rain has always called for caution as well as a clear sense of destination, and the rules for humble yet effective decision making are much the same for doctors and executives.
Focused trial and error is probably the most widely used procedure for adapting to partial knowledge. It has two parts: knowing where to start the search for an effective intervention, and checking outcomes at intervals to adjust and modify the intervention. This approach differs significantly from what we might call outright trial and error, which assumes no knowledge at all, and from fine-tuning searches, which can occur only when knowledge is high and uncertainty low.

Focused trial and error assumes that there is important information that the executive does not have and must proceed without. It is not a question of understanding the world “correctly,” of choosing a logical procedure on the basis of facts, but of feeling one’s way to an effective course of action despite the lack of essential chunks of data. It is an adaptive, not a rationalistic, strategy.

Tentativeness—a commitment to revise one’s course as necessary—is an essential adaptive rule. Physicians tell their patients to take a medicine for x number of days, to call them at once if the symptoms grow worse rather than better, to return after some set interval for another examination. Such safeguards permit the doctor to adjust the intervention if it proves to be ineffective or counterproductive. A good doctor does not invest prestige and ego in the treatment prescribed. On the contrary, what distinguishes good physicians from poor ones is precisely their sensitivity to changing conditions, their pronounced willingness to change directions on the basis of results, their humility in the face of reality.

Executives often render decisions on matters less well understood than many medical conditions. Hence executives, even more than physicians, are best off when they refuse to commit to an initial diagnosis and so refuse to
risk dignity and stature on what is inevitably an uncertain course. By viewing each intervention as tentative or experimental, they declare that they fully expect to revise it.

A year ago, some American bankers may have thought it sounded grand to announce that they would play an important role in the new, post-1992 Europe. Now that the great difficulties of such a course have become more evident, those bankers who announced only that they would try to find a way to work within the European Community seem wiser and more prudent.

Procrastination is another adaptive rule that follows from an understanding of the limits of executive knowledge. Delay permits the collection of fresh evidence, the processing of additional data, the presentation of new options. (It can also give the problem a chance to recede untreated.) Rarely is missing the next board meeting as detrimental as it seems. If one can make a significantly strong case at a later board meeting or rezoning hearing or town meeting, the result will justify the delay.

Decision staggering is one common form of delay. If the Federal Reserve believed the discount rate should rise by 3%, it would still not make the adjustment all at once. By adjusting the rate half a point at a time, the Federal Reserve can see a partial result of its intervention under conditions similar to those in which the rest of the intervention, if necessary, will take place.

Fractionalizing is a second corollary to procrastination. Instead of spreading a single intervention over time, it treats important judgments as a series of subdecisions and may or may not also stagger them in time. For example, a company concerned about future interest rates might raise half its needed equity now by issuing a bond and the other half later by selling an asset. Both stagger-
ing and fractionalizing allow the company to relate turning points in the decision process to turning points in the supply of information.

*Hedging bets* is another good adaptive rule. For instance, the less investors know about a specific company, the wiser it is to spread their investments among several stocks. The less certain they are of the stock market in general, the wiser they are to spread their investments among different instruments and areas—bonds and real estate, for example. Hedging bets will never produce a bonanza to compare with the lucky all-or-nothing, eggs-in-one-basket coup, but it is much more likely to improve long-term yield and security.

*Maintaining strategic reserves* is another form of hedging bets. The stock market investor with a cash reserve after the crashes of 1929 or 1987 was in an excellent position to capitalize on those disasters. In a predictable, rational world, no company would need idle resources. In fact, large reserves can be a dangerous invitation to an LBO. But in a world where we have learned to expect the unexpected, we need reserves to cover unanticipated costs and to respond to unforeseen opportunities.

*Reversible decisions*, finally, are a way of avoiding overcommitment when only partial information is available. The simplest response to the energy crisis of the early 1970s, for example, was to turn down the thermostat during the winter and raise it during the summer. It had the additional virtue of being fully reversible in seconds. Conservation measures were more difficult to take back, but were often only moderately expensive, and a subsequent lowering of energy prices did not render them counterproductive, even if it did reduce the return on invested capital. Changing an energy source, on the
other hand, was often a complex and expensive reaction to the crisis and costly to reverse. Yet a number of companies did convert from oil to coal in the 1970s and now wish they could recall a decision made on the basis of inadequate information and executive overconfidence.

This list of adaptive techniques illustrates several essential qualities of effective decision making that the textbook models miss: flexibility, caution, and the capacity to proceed with partial knowledge, to name just three. Only fools make rigid decisions and decisions with no sense of overarching purpose, while the most able executives already practice more humble decision making than I could possibly preach. They will, I predict, apply the good sense and versatility of this tested, realistic model ever more widely as the world grows more and more difficult to manage.