Chapter 2

WHY “STUFF” HAPPENS

THE START OF SOMETHING BIG

In the autumn of 2001, the financial collapse of the Enron Corporation hit the front pages of virtually every newspaper in the world. At the time it was the largest bankruptcy in US corporate history. But as scandals go, it turned out to be just one of many accounting “irregularities” that numerous American corporations had been practicing for the decade or more during the runaway bull market that began in the early 1980s.

By far the most interesting aspect of the Enron collapse, though, was the public’s reaction to the event. Basically, both the financial and general press promoted the view that the Enron accounting revelations had deeply discouraged investors, thereby causing a crisis of confidence on Wall Street. In essence, the conventional wisdom of the chattering classes was that Enron’s collapse generated a negative social mood, which in turn led to a lack of investor confidence in the market.

Notice the italicized words in the preceding paragraph, “causing” and “generated.” They suggest a direction of causality in social events, one that is so deeply hardwired into the collective subconscious that to question it is akin to challenging our taken-for-granted reality as to the way the world works. It’s useful to consider the Enron situation as an entry point into the fundamental questions of what is the social mood and how it influences social events and actions. Robert Prechter discussed this Enron event at length in material cited in the chapter References. Let’s review his argument.

A headline in USA Today in the spring of 2002 captured succinctly the mainline view of Enron social dynamics when it proclaimed to the world, “Scandals Shred Investors’ Faith.” The implication of this headline is that
the market was moving along just fine—until the Enron revelations shattered people’s confidence in stocks. If this line of reasoning were even approximately correct, one would have expected the market to experience a precipitous selloff following the revelation of Enron’s accounting shenanigans and the company’s consequent bankruptcy filing. If you’re tempted to believe this fiction, have a look at Figure 2.1, showing the daily price movement of the Standard & Poor’s 500 Index (a benchmark measure for overall market performance) from the year 2000 onward.

The figure shows that in the 18 months preceding the Enron scandal, the market declined 39%. After the scandal broke in 2001, the market actually rose more than 10%—and stayed up at those levels for nearly a year afterwards. So the actual facts of the matter fly completely in the face of the notion that the Enron collapse “spooked” the market; in point of fact, the flow of events ran in just the opposite direction. Here’s what actually happened.

The declining market from January 2000 onward put enormous pressure on Enron’s ability to use its high-flying stock price as leverage to secure

![Figure 2.1](image-url)  
**Figure 2.1** S&P 500 index from 2000 onwards.
loans to support the firm’s accounting legerdemains. The decline of the stock price and the consequent drying up of the firm’s lines of credit then led to the collapse of the company—and the subsequent scandal—when regulators and creditors began digging into the company’s books. The increasingly negative social mood also whetted the public’s appetite for scandal, recrimination, and punishment. A scapegoat was needed and Enron was the perfect candidate.

So contrary to the wisdom of the time, a more viable line of reasoning is that it was the negative social mood, as reflected in the dramatically falling stock market, that led to the Enron collapse, not the other way around. In this view, investors were not depressed at all as a result of the Enron collapse; rather, they were already depressed for the preceding 18 months as Figure 2.1 so graphically illustrates. In a very definite sense then, it was this negative tone in investor psychology that led to Enron’s collapse. And if it had not been Enron it would have been some other firm employing similar magical accounting procedures—which indeed turned out to be the case, as witnessed by the subsequent bankruptcies of WorldCom, US Air, Delta Airlines, General Motors, and numerous other firms that couldn’t quite get it together over the past several years.

To further underscore this crucial point regarding people’s false beliefs that it is events that catalyze the public’s mood, let me recount a story told by Robert Prechter of an experience he had a few months after the Enron brouhaha hit the headlines. In April 2002 Prechter spoke at an Ivy-League symposium on the psychology of investing. His presentation followed the line of argument presented above, and he reports that several of the academics, psychiatrists, and investment professionals in the audience told him afterwards that the “mood-drives-events” argument caused them to reevaluate their views on social causality. But reevaluating views and actually changing them seem to be very different matters, since the reverse flow from event to mood was still fixed in the audience’s mind as seen by what happened next.

A general discussion session took place at the end of the conference following Prechter’s presentation, with the final question from the attendees to the speakers being, “The Enron scandal has deeply discouraged investors; when can we hope that this black cloud hanging over the stock market will go away?” The panel responded for 10 minutes or so, but no one questioned the basic assumption behind the question that it was an event (the Enron collapse) that caused discouragement in the investment community (a social mood). In short, despite Prechter’s call to arms, the attendees to a man and
woman retreated to the conventional wisdom that the Enron scandal caused investors to be discouraged. The socionomic position is just the opposite: Investor discouragement, as evidenced by a steadily declining stock market, gave rise to a climate in which an Enron-like scandal would almost surely break out, and that further such events would follow. And sure enough, they did.

But what do we actually mean by the term social mood? And how do we measure it? With the Enron situation as backdrop, we turn to these pivotal questions.

**GETTING INTO THE MOOD**

Most academics and continental philosophers seem to operate on the principle that “If I can’t understand him, he must be a genius,” and produce reams of documents supporting this claim. Fortunately, the public at large recognizes this sort of talk for what it is, namely, gobbledygook, and holds academics and other pundits to a different standard: “An idea has genuine content and value if and only if I can understand it.” Following this precept, we will make use of the following commonsense notion as to what is meant by “mood”: Mood is simply how an individual or a group feels about the future. Thus, social mood is how a particular group, community, population, or society feels about the future.

Social mood comes in two flavors: positive and negative. So if at a given time a group has a positive social mood, it means the group is optimistic and looks forward to the future; a negative social mood is just the opposite. In that case, the group is pessimistic and fearful of the future. Of course, there are degrees of optimism and pessimism, and not every person in a group feels the same. In fact, it is this heterogeneous aspect that gives rise to varying degrees of positive or negative social mood. But, in general, at any given time a group as a whole is on one side or the other of the positive-negative divide.

At this juncture the reader might well object to the black-and-white categorization of social mood as being either positive or negative with no shades of gray. While we’ve adopted the “one size fits all” policy of talking about the social mood of a population, fuzzing over the various subgroups making up the population, there is an important distinction to be made between social mood that’s at a turning point and social mood that’s turned and is still far from topping/bottoming out. To respect this difference, we will shift
from black-and-white to grayscale, and allow for two different sorts of both positive and negative mood.

We take our cue for the differing types of mood from the categories introduced by Dominique Moïsi in his book *The Geopolitics of Emotion*. There Moïsi discusses three categories of social mood: hope, fear, and humiliation. Our notion of increasing social mood corresponds (approximately) to hope, while fear characterizes decreasing social mood. For Moïsi’s term *humiliation*, we substitute *despair* to characterize the period when a negative social mood is bottoming out. Finally, to close the circle we introduce the term *hubris* to represent a peaking positive social mood. The table below summarizes this taxonomy of moods:

<table>
<thead>
<tr>
<th>+ Mood rising</th>
<th>+ Mood peak</th>
<th>− Mood declining</th>
<th>− Mood bottom</th>
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<tr>
<td>Hope</td>
<td>Hubris</td>
<td>Fear</td>
<td>Despair</td>
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It’s important to note here that while the mood is always positive or negative, it’s also continually changing and moving from strong to weak and back again. This is the reason for the gradations just introduced. Most of the time the social mood is trending, in the sense that the mood tomorrow will be just like today—except a little better or a little worse, depending on whether the current mood is positive or negative. Or in our new terminology, most of the time the mood is either hope or fear. There are even strong mathematical reasons for saying that this is the typical case, in the sense that if you pick a moment in time at random, there is probability 1 (which is *not* absolute certainty, at least not to a probabilist) that you’re on a trending part of the social mood curve. In other words, the critical points where the mood is either peaking or bottoming form an infinitesimally small set in the collection of all moments in time. This fact, incidentally, accounts for why futurists of the trend-following persuasion are almost always right when they forecast that the current trend, whatever it is, will continue. But such forecasts are content free and next to useless, since you don’t need to hire a futurist to tell you that tomorrow will be just a little better or a little worse than today. The real challenge rests in nailing the turning points. That information is real, not fool’s, gold, and is something truly worth paying for.
In summary, then, the social mood is simply the beliefs a population holds about the future. Let me emphasize here yet once again that our concerns in this book are with the social mood, not the mood of the individuals making up the group. I’ve often heard people say things like, “Well, I feel this way and so do many of my friends” as an argument for why they believe the group must feel that way too. Things just don’t work that way. Groups have an entirely different set of rules and dynamics by which they function, often totally at odds with the rules and dynamics by which every single member of the group operates—as an individual. Here’s a depressingly familiar example.

Consider a group consisting of the fans of a soccer club. We regularly see reports of outbursts of violent behavior by such groups, actions like throwing trash and chairs onto the playing field, attacking the referee, and other not-so-random acts of violence perpetrated against supporters of the opposing team. When questioned, the people forming the group say they would never engage as individuals in the type of behavior they are happy to join-in with when they’re acting as part of the group. In short, there is a group dynamic that emerges from the interaction of the individuals, a dynamic that simply does not exist at the level of the individuals themselves who make up the group.

Our concern in this book is with that group dynamic, not the thoughts, feelings, and beliefs of the individuals forming the group taken as individuals. Of course, those individual thoughts, feelings, and beliefs contribute to the group dynamic. No doubt about that. But they are not enough to create the group dynamic. For that, we need an interaction pattern among the individuals. Exactly how that interaction pattern serves to combine the feelings of the individuals into an emergent, collective group dynamic is very poorly understood, at least from a scientific point of view. But it is the essential element in generating the “social mood.”

MADNESS, MEMES, AND MOODS

The spring of 2005 was a great time for crowd madness, at least if the crowd you were looking at was the one occupying corporate boardrooms across America. This period amply illustrates use of the term madness to mean “takeover mania,” which was then striking every nook and cranny of this domain, as Proctor and Gamble announced that it was buying Gillette, SBC was trying to take over AT&T, Sprint acquired Nextel, Verizon tried to buy
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MCI, and so it went, one firm after another engaging in an irrational fit of collective acquisition mania.

How can we call these “deals” an example of the madness of crowds? Simple: Just look at how the deals worked out. Although the deals were engineered by supposedly sophisticated CEOs armed with the best investment bankers and lawyers money can buy, these takeovers have all the earmarks of herding behavior of the very worst sort, at least for investors. The psychology of the situation is clear: When CEOs see a company in their industry buy another company, they become possessed by the dreadful vision that their industry is consolidating into a few giant firms. “What if my firm is left out?” they ask themselves. To prevent this worse-than-the-worst possible outcome, the CEOs immediately launch a frantic search for a company to buy with price being no object. What matters is sheer survival, or in most cases, perceived survival.

But a company can buy another company at such an inflated price that the stock of the parent firm never recovers. Of course, the acquisition makes the new, bigger company so big that it cannot be bought by another firm (“To Big to Fail”). But its shareholders are permanently damaged—while the shareholders of the acquired firm happily take the money and run. And this is not just armchair speculation (no pun intended) either. A recent analysis of the nine biggest takeovers in history, deals valued at $50 billion or more, showed that in seven of those nine cases the stock of the acquiring company never returned to the level where it was just prior to discussion of the purchase. But shareholders of the acquired firms received a generous premium to the price their stock was selling at just before the deal was publicly announced. Finance theorist Richard Roll has done an extensive study of this phenomenon, as reported in his article “The Hubris Hypothesis of Corporate Takeovers”. There he reports that overconfidence on the part of the CEOs is the driving force of most mergers, despite the preponderance of evidence suggesting the merger is no bargain, at all, at least for the acquiring firm.

Despite the clarity of these facts even to the uninitiated, when merger fever strikes, rationality visiting the executive suite is about as popular a commodity as a visit from a tax inspector. The reptilian madness of the crowd always trumps the logical rationality of the “new brain.” But, then, who would have ever thought otherwise? The puzzle crying out for attention here is how these waves of madness get started and spread through a group, especially one that’s presumably as savvy and sophisticated as corporate CEOs, who one might suppose are receiving their not
inconsiderable compensation packages for exercising prudent judgment of the sort that’s needed to avoid exactly these sorts of negative consequences of group madness.

The basic idea underlying crowd madness is the same as the idea behind word-of-mouth advertising: spreading thoughts through a network of connections. Madness sets in when a new idea from the group emerges that is not held by any of the individuals in the group. In many ways this notion is analogous to the spread of a disease through a population, as we outlined briefly in the last chapter. An epidemic starts with some infected individual. That individual makes contact with many other persons, some of whom are susceptible to being infected. Those people, in turn, contact other susceptibles, and so it goes. The factors separating an epidemic from just a collection of sick people are the density of the web of connections, the susceptibility of the individuals to the disease and the virulence of the disease itself. So, for instance, a new strain of influenza is far more potentially dangerous than, say, Ebola fever, even though the latter is far more virulent. And that is exactly the point: Ebola kills its victims so fast that they have little chance to spread it to others even in a dense web of contacts. On the other hand, flu develops relatively slowly and is generally not fatal. So before you even know you have it you’ve contacted many others, some of whom are likely to contract the illness from you.

Translating this general notion of spreading ideas rather than bacteria and viruses, we have the basis for a kind of “thought contagion,” whereby elementary ideas or snippets of cultural artifacts like popular songs or jingles can be transmitted from one brain to another via a mechanism not unlike the transmission of a flu virus. The evolutionary biologist Richard Dawkins christened such informational artifacts memes. They play the same role in informational structures in a population that genes play in the population’s biological structure. Each individual in the population is continually trying to “infect” the brains of others with their own ideas and beliefs, just as at this very moment I’m trying to infect the brains of the readers of this book with this notion of a meme. Again, whether a particular meme like an iPod catches on or dies like the meme for a video phone call depends on the strength of the idea, how information about the idea moves around in the network of individuals involved, and the susceptibility of these individuals to catching the “idea virus.”

As an example, if the population in question happened to be the citizens of North Korea the likelihood of an iPod epidemic would be small, since the susceptibility of any individual is low due to the lack of western currency
to purchase the device. The connective structure may also be very unfavorable for an iPod epidemic in Pyongyang, where state control of the media and channels of communication ensures that very little information about this device will reach the population through the usual western-style modes of advertising, store displays, and the like. Before taking up the structure of information networks and their role in forming up a population’s social mood, it’s instructive to look at a couple of examples of this herding instinct in action.

MOODS AND MEMETICS IN ACTION

- **The John Kerry Postulate (aka The Self-Fulfilling Prophecy):** In the run up to the 2004 US presidential election, all sorts of people were promising their vote to the challenger, Senator John Kerry. But despite the very bridgeable gap between Kerry and George W. Bush in the polls at the time, virtually none of these people seemed to think Kerry would actually win the election. I need not recount the end result. This phenomenon led to what political columnist John Vinocur termed the John Kerry Postulate: “Regardless of how narrow the margins in the polls look, your choice will lose if next to nobody expects him/her/it to win.” Vinocur applied this Postulate to the French referendum in 2005 for approval of the European Union Constitution, noting that for two months prior to the vote the pollsters without exception were saying that the French voters would decline the Constitution. So virtually no one thought the voters would accept the Constitution—and, of course, they didn’t. Vinocur observes that an Internet polling group called Expression Publique said that the “No” crowd were dug in as the majority, but that only 7% questioned the finding on the basis of their own experience. At this point the John Kerry Postulate kicked in, suggesting a rather bleak prospect for approval of the Constitution.

  This is an excellent example of how the prevailing social mood biased a collective event, in this instance the outcome of a popular vote. Despite the herculean efforts of the French government to smoke out a “Yes” decision from the voters, no one believed in France’s role as a major player in the EU. So the vote went against approval of the Constitution.

- **Spread of Change at Nortel:** Nortel is a leading data and telecom supplier and manufacturer employing many thousands of people worldwide.
In October 1997 the company sponsored an event offering participants in training and organizational development within the firm the opportunity to learn from each other’s successes (and, presumably, failures too). The agenda of the meeting involved hands-on experience with a program called Tipping Point, which was a simulation of the organizational change process. The simulator was modeled on the way a disease spreads in a population, using that process as an analogy for the way ideas spread throughout an organization. Within the simulation, proponents of new ideas are analogous to people infected with a disease. So their enthusiasm for whatever idea they are promoting is literally ... infectious!

By word of mouth, advocates spread the news about the benefits of the new idea. The rate at which the news traveled depended on the number of contacts between advocates of the idea and those who were neutral or negative toward it. It was also dependent on external factors, such as rewards and recognition for adopting the innovation, infrastructure support for whatever new processes the idea required for its implementation, and support of influential leaders in the organization. As the number of “infectives” increased within the organization, the idea eventually reached a critical mass causing the entire organization to flip sharply in support of the new initiative.

At the Nortel conference, 20 teams competed against each other to design the best strategy for increasing the number of advocates of a given innovation, while at the same time limiting the cost of promoting the idea. The most important lessons the participants drew from this exercise were that the best advocates for innovations are people who accept and apply change, that connections between advocates of an idea and others in the organization are essential, and finally the pivotal role played by higher management in Nortel serving to shape the kind of behaviors they want to see.

- **Wisdom of Crowds:** Journalist James Surowiecki has noted that the collective wisdom of a large group of people making independent guesses about the outcome of an event like an election may well shed more light on the actual outcome than listening to any individual “expert.” In other words, the mood of the group can trump any individual opinion or sentiment. For instance, if you had paid attention to journalists during the 2004 American presidential campaign, you would have read about a tight race with daily ups and downs favoring one candidate or the other. Just prior to the election, most pundits were saying the race was simply too close
to call in the major battleground states. But the wagering on Intrade, an Internet betting site, painted a very different picture. Bettors were calmly putting their money on a Bush victory. Even more remarkably, the weekend before the election bettors called the winner in every one of the 50 states!

Surowiecki’s book on collective wisdom recounts many examples of when the crowd gives better answers to a question than any single advisor or expert. For instance, he tells about the dramatic event in May 1968 when the nuclear submarine USS Scorpion sank on its way back to its home port at Newport News, Virginia. The US Navy had an idea of the general area in which the sub went down, but due to communication blackouts designed to hide the position of nuclear submarines, as well as technical limitations on communication from the deep, the Scorpion was not able to broadcast its actual position at the time it sank. So all the information the Navy had was that the sub went down in an area 20 miles wide and thousands of feet deep. To pinpoint the precise location of the sub, naval officer John Cravens hit on the idea of gathering a group of diverse experts and asking them for their best guesses as to why the sub went down, what its rate of descent was as it sank, the angle of its dive to the bottom, and other information of this type. Craven took all these guesses and processed them via some mathematical wizardry to generate the group’s overall best estimate as to where the sub was located on the ocean floor. It turned out that the Navy found the Scorpion less than 220 yards from where the group predicted it would be located. Yet not one individual in the group had picked that specific location—or any location as close to the true location as that estimated by the group as a whole.

Of course, crowds can be disastrously wrong in their collective judgments too. Witness the Dutch tulip mania of the 1630s, the Crusades, or the bowling stock bubble of the 1950s, in which futurologists assumed every man, woman, and child in the United States would bowl for two hours a week, 52 weeks of the year. Among the many factors separating the glory of the Scorpion identification from the ignominy of tulip mania are the need for diversity, and most importantly, independence of the individual opinions (no “group think”), and mechanisms for aggregating the individual estimates into a collective judgment. The Internet markets, such as the Iowa Electronic Market for elections, fit the bill perfectly in this latter regard, as does the Hollywood Stock Exchange for betting on the outcome of box-office returns for new films.
CHAPTER 2

How, exactly, are the thoughts and especially feelings of individuals in a population herded together into a kind of “madness of crowds” that constitutes what we see as the social mood? No one really understands in detail how this happens. But in recent years complexity scientists have developed theories for describing the process. Not surprisingly, these theories involve how people are connected in a network and the way information percolates throughout a network to move feelings, opinions, and thoughts from one brain to another.

THE CONNECTIONS THAT COUNT

It’s not very often that a major intellectual advance is first announced in a popular magazine. Revolutionary ideas usually first see the light of day in obscure academic journals, and only much later, often very much later (or never), make their way to the pages of the popular press. A notable exception occurred in the general-circulation magazine Psychology Today, when in 1967 it published an article by Stanley Milgram, probably the greatest social psychologist of the twentieth century. In this piece, Milgram described the results of an experiment he carried out to test how many intermediate acquaintances, or links, would be needed to connect two randomly-chosen people in the United States.

To explore this question, Milgram first chose two target individuals, a divinity student living in Sharon, Massachusetts, outside Boston, and a stock broker living in Boston itself. He then prepared 160 letters, which he divided into two lots and sent to randomly selected people in Wichita, Kansas, and Omaha, Nebraska, towns chosen because in Milgram’s view they seemed to exemplify Gertrude Stein’s withering putdown of Oakland, California: There’s no “there” there. He asked the recipient of each letter to send it on to an acquaintance they thought would help promote the goal of the letter eventually reaching its target in Massachusetts. So, for instance, if one of the people in Wichita or Omaha happened to actually know the target, then there was no intermediate link. On the other hand, if there were 100 people in the chain from Wichita/Omaha to the target, then the connection involved 100 links. What were the results? How many of the 160 letters actually made it to their target? And how many intermediate acquaintances were necessary, on the average, to achieve this connection?

Prior to the experiment, Milgram had asked many intelligent, knowledgeable people what they thought the answers would be. Most guessed
that there would be many links between the source in the Midwest and the target in Massachusetts. One person even thought it might involve 100 intermediate acquaintances to complete the chain. After mailing the letters to the random sources, Milgram waited nervously to see if any of the letters would eventually reach their target. To his surprise, within a few days the first letter came back having gone through only two intermediate links. This was simply beginner’s luck, though, as in the end just 42 of the 160 letters finally reached their target. The greatest surprise, however, was that of these 42 letters, the average number of intermediate links was just $5\frac{1}{2}$—a number vastly smaller than Milgram anticipated. Playwright John Guare rounded this number up to 6, and later titled his 1991 Broadway hit, *Six Degrees of Separation*, enshrining this term into everyday language.

Although the experimental conditions underpinning Milgram’s work have been questioned in a number of ways, the overall conclusion still seems to hold. Even though the world consists of 6 billion or so people, an astonishingly small number of links are needed to connect any two individuals. No one is more than a few phone calls or handshakes or mouse clicks away from anyone else. This empirical observation has led to the term “small worlds” as a catch phrase for this type of network connectivity. Since the structure of a network is at the heart of how information moves from one person to another to create an overall social mood, we need to understand as much as possible about the way the pieces of a network can be connected, and how those connections allow the flow of information from one part of the system to another. Let’s take a peek at what network theorists have discovered about these all-important matters.

The usual procedure for studying the connective structure of a group is to represent each member of the group by a point (node) and then draw a line (arc) between any two people who are directly connected by sharing a communication link, friendship, or some other direct mode of interaction. This gives rise to what mathematician’s call a “graph,” which is simply a set of nodes and the arcs linking various pairs of nodes. Graphs that are clustered have many nodes that tend to form closely-knit groups with many arcs connecting people in the group, but very few arcs leading out of the group. On the other hand, a graph whose arcs are selected at random has no such clustering structure. Figure 2.2 shows two graphs, each with 12 nodes and 18 arcs, displaying these two types of connective patterns.

Milgram’s problem was to discover the smallest number of links it takes to reach any other node from a given node in the graph. The average of all such shortest paths in a graph is called its characteristic path length (CPL),
which then is a measure of the degree of separation in the network. For the random graph in Figure 2.2 the CPL is 1.95, while it is 2.45 for the clustered network. Milgram’s studies indicate that even when the number of nodes is several hundred million, or possibly even a few billion, the CPL only goes up to around 6. But neither the random network nor the fully clustered one really reflects the structure of the networks of everyday life. For instance, if the US airline network were random, on average there would be the same number of flights going from Chicago to Los Angeles as from Chicago to Canton, Ohio, or Tuscaloosa, Alabama. But if it were clustered, it would take a large number of flights to travel from one city to any other. Yet we all know that it seldom takes more than two or three flights to reach just about any town in the world from anyplace else. So there must be some other structures in real networks that are not present in these two extremes. Milgram’s work suggests what’s missing.

In another version of his experiment, Milgram sent 60 letters to various people in Wichita. In this case the participants were only allowed to pass the letters by hand to personal acquaintances they thought might be able to reach the divinity student in Massachusetts. Fifty people responded to the challenge—but only three letters eventually made their way to the target. In this and similarly-related experiments, Milgram noticed a kind of “funneling effect” whereby most of the letters being forwarded were by a small number of “hubs” who were significantly more well-connected in the network than the average person. Even in the original study in which only three chains were completed, Milgram noted that “two of the three completed chains went through the same people.”

This experiment leads to the idea that real networks have “shortcuts”—a few people that connect clusters that would otherwise be very far from each other. Alternately, there may be a few people who have an extremely large number of acquaintances in the network (“connectors”) who serve as hubs.

Figure 2.2  A random network and one that is clustered.
Figure 2.3 A clustered network with a shortcut and one with connectors.

through which a large volume of interactions flow as with the airline networks. Examples of these two types of graphs are displayed in Figure 2.3. Interestingly, the characteristic path length for the so-called “small worlds” network, a clustered network with shortcuts, shown here is 2.03, virtually the same as for a random network. But the clustering structure is much higher in the small-worlds case. For the network with connectors the CPL is 1.88, a bit smaller than for the other graphs but not significantly less. Again in this latter case the clustering is much greater than for the random network.

In his book *Small Worlds*, Duncan Watts shows how small-worlds connectivity structure can be constructed very easily from the fully clustered graph of Figure 2.2. He also points out that it takes only a small number of shortcuts in a highly structured graph to turn it into a small-worlds network. But one thing the small-worlds structure does not have is hubs. These arise in a information structure when two factors are present: (1) the network grows by adding new members to the population, and (2) the new members connect in a preferential fashion linking most often to those people who already have a lot of links. The consequence of these two simple conditions is that the network becomes what Albert-Lázló Barabasi terms a *scale-free network*, since there is no typical number of nodes per arc. These types of networks also display what’s termed a *power-law* structure, which in everyday language means that there are a few nodes having an extremely large number of connections (the connectors) and lots of nodes that have very few connections. This is exactly what we see in structures like the Internet and interactions among cellular metabolites. In both cases there are a few nodes—web sites like Google or particular molecules—that are very large (many connections), while most web sites and molecules are relatively insignificant (small number of connections).
The small-worlds networks have a kind of “egalitarian” structure, in which there is a distribution of people around the world such that the vast majority of the population is weakly connected to each other, while a few relatively “powerful persons” like the Pope, a famous athlete, or Bill Gates have a huge number of connections. To see the power of just a few random links in an otherwise clustered network, science writer Mark Buchanan has estimated that in a clustered network where each person is connected only to his or her nearest 50 neighbors, there are 60 million degrees of separation needed just to go halfway around the world’s population. But if there are just 3 random links out of each 10,000 links, then the degree of separation falls from 60 million to only 5!

By way of contrast, a network with connectors is not egalitarian at all. It is “aristocratic,” with just a few people having an enormous influence on the movement of information from one part of the network to another. For instance, estimates of path lengths on the World Wide Web suggest that there are between 4 and 10 degrees of separation between any two web sites. Thus, it should not take more than 10 mouse clicks, on the average, to go from a randomly chosen site to any other. But it has also been suggested that every time the number of links in the Web doubles, the number of nodes possessing the previous 4 to 10 degrees of separation is reduced by a factor of five. Consequently, the “rich” nodes get richer and the poor relatively poorer, where here the “rich” nodes are those sites like Google, Microsoft, iTunes, and amazon.com that are the connectors or hubs that dominate the Web.

What does all this have to do with the kinds of social networks we’re concerned with in this book? Which of these types of graphs is the most likely candidate for representing the structure by which information about individual opinions and feelings about the future pass through a population? The simple answer is, I don’t know. To the best of my knowledge the question has never been explicitly studied using real networks and real data. But it’s not much of a gamble to speculate that the best candidate is the last one, the clustered network with connectors. Establishing (or refuting) this conjecture is a very small piece of the research program given in Appendix B that I feel is needed to put the hypotheses presented here on solid scientific ground. Let’s conclude our study of networks and social mood by examining the role connectors play in “flipping” the social mood from one extreme to another in a rather short period of time.

Probably the most over-hyped method for losing weight that’s been foisted off onto a desperate and obscenely overweight public is the so-called
Atkins Diet, named after a New York City physician, Dr. Robert Atkins. According to Malcolm Gladwell, author of the best-selling volume *The Tipping Point*, a large part of the appeal—and publicity—behind this diet is that it reframes the question of dieting from thinking about weight loss in terms of avoiding calories and fat to thinking about it as avoiding carbohydrates. Such a shift totally changes the way people look at dieting. This is a particularly transparent example of the much more important fact that if you want to know if some event suggests the close proximity of a turning point, be it in dieting or in world affairs, ask yourself: Does that event cause people to reframe an issue? Publication of the Atkin diet signaled a turning point in the world of dieting.

In his book, Gladwell identifies three elements necessary for an unstable situation to flip from one state to another. He calls them *The Law of the Few, The Stickiness Factor, and The Power of Context*. The first asserts that only certain types of individuals can serve effectively as transmitters of information. He terms these the Connectors, the Mavens, and the Salesmen. We have already seen the first type. They are people who know everyone. The Mavens are a variant of the Connectors: They don’t know everyone. Instead, they know everything. A football Maven, for instance, knows everything about the world of football, who’s hot, who’s not, who’s injured, what team is ineffective against what other team, and so on. Finally, the Salesman knows how to do a good job of communicating information to others. Gladwell cites Paul Revere as the quintessential example of all three, since he knew what the British were up to (Maven), knew all the right people to tell (Connector), and was able to spin a good story about the situation (Salesman). Thus, a model aimed at understanding shifting social moods would necessarily have to incorporate all of these types of “transmitters” as well as a much larger number of people who cannot serve any of these functions very well. We might term these people The Herd. Here are a couple of examples illustrating different possibilities.

A lot of computer aficionados were overjoyed when Linus Torvald created the open-source operating system Linux in the early 1990s. Linux was trumpeted to the world as an alternative to Windows by the anti-Microsoft crowd, with some degree of justification given the seemingly unending series of reports of bugs and security holes in each successive version of Windows. But what’s happened to Linux? How much market penetration has it actually managed to achieve in the decade or so that it’s been freely available? No one can really say. But even a generous estimate is around 29 million as of spring 2005. This sounds like a lot. But Google estimates this
is only about 1% of the machines that query its search engine. I’ll leave it to the reader to guess whose operating system is running on the vast majority of the remaining 99%. So why hasn’t Linux reached “escape velocity” and soared off into the operating system stratosphere? According to most knowledgeable sources, Linux is technically far superior to the competition, costs nothing, and has lots of application programs that run on it. Why hasn’t Linux yet “flipped” to become the operating system of choice?

According to John C. Dvorak, a keen observer of the computer scene and regular columnist for PC Magazine, the reason for Linux’s failure to reach escape velocity is simply the absence of a critical, “must-have,” end-user application that runs on Linux and Linux alone. Dvorak points out that earlier operating systems that succeeded, at least for awhile, all had killer apps like VisiCalc for the Apple II. Those operating systems that were technically outstanding, such as the NorthStar in the 1970s, had no killer app and died on the vine. Linux appears to be in a situation where it can serve a niche market due to its Apache Web server software. But this is simply not enough to create a tipping point. The only thing that will do that, according to Dvorak, is the Linux-exclusive, must-have application. No amount of fancy user interfaces, technical virtuosity, or other whistles and bells will suffice. But the inherent conflict in having an open source code, together with Microsoft’s dominance and stifling of industry innovation at every turn, leads to the sad conclusion that there is not going to be any such killer app. Neither Linux nor the Mac is going to achieve product escape velocity and flip to become the operating system of choice for the typical end-user. In this sense, both are condemned to a life in the shadows of the computer world, serving niche markets of specialists, connoisseurs, and computer fanatics. In terms of information contagion and idea viruses, Linux just didn’t start an epidemic in the world outside that of computer hackers, geeks, and those already in the know. If Dvorak’s analysis is to be believed, it never will.

A happier story of a phenomenon that not only went beyond the tipping point, but actually threatens to change Gladwell’s analysis of what is needed for such a feat, is the process of information exchange on the Internet via web logs (“blogs”).

A couple of years ago, John Hiler published an article on the Internet, sent notice of it to a friend who published a widely-read blog for high-tech news, and began thinking about other things. To his astonishment, within a week more than 30,000 visitors came to his site to read the article. In analyzing this unbelievable (to him) reaction to his modest posting, Hiler
came to some conclusions that have direct bearing on our question as to how individual moods can “take off” to tip the prevailing mood of the population as a whole. Here’s a brief summary of what he discovered.

First of all, Hiler noted that every epidemic needs both a host and a virus. He claims that the virus is simply the hyperlink, while the blogs are the host. When it comes to ideas as viruses, there can be no better vehicle for the virus to be than a link. Each link represents a web page holding out the promise of fascinating new material to lure the curious browser. Moreover, a link can copy itself from one blog to another at nearly the speed of light, generally by human-directed intervention.

In Gladwell’s taxonomy outlined earlier, there’s a clear distinction between the Connectors who know people and the Mavens who know facts. Hiler correctly points out that this distinction is blurred more than ever by the information transfer process on the Internet. The reason is pretty simple. Offline Connectors need to be gregarious sorts of people who move in many circles and are always eager to meet new acquaintances. Online Connectors need have none of these qualities. It’s a lot easier to blog a posting than it is to make a presentation or go to a convention. So suddenly blogging Mavens are as important as Connectors as far as being a hub is concerned. Why go through the intermediary of a Connector when you can get the real scoop directly from the Maven? In short, eliminate the middle man.

To summarize how his article spread on the Net, Hiler identifies five steps:

1. Someone (an “expert” or “content Maven”) creates a document and puts it online. This generates the link.
2. A “link Maven” sees the link and blogs it on his or her site.
3. A Connector (or a link Maven with Connector-like traffic to his or her site) finds the link and blogs it to his or her site.
4. The link achieves “escape velocity” in the blogging community.
5. The link then gains escape velocity outside this community.

This process turns the traditional view of advertising and marketing (i.e., viral marketing) totally upside down. As Gladwell himself notes in the Foreword to Seth Godin’s illuminating volume *Unleashing the Ideavirus*,

Advertisers spent the better part of the 20th century trying to control and measure and manipulate the spread of information—to count the number of eyes and ears that they could reach with a single message.
But this [ideavirus] notion says that the most successful ideas are those that spread and grow because of the customer’s relationship to other customers—not the marketer’s to the customer.

In short, it is “word-of-email” advertising from friends and acquaintances that transmits the message, not the unwanted intrusion of a marketer’s message. So in today’s world of high-speed, highly-connected communication networks, if you understand web Mavens and Connectors you can spread your ideas—including your mood(s)—beyond simply web logs to the population at large.

We now want to leverage up our working definition of social mood into the beginning of an actual theory of how collective events are conditioned by the mood of a population. For this, it’s necessary to have some means to actually measure the social mood in a population at any given point in time. By taking the stock market averages as a surrogate measure for the overall social mood, it follows that the predictive power of a social mood hinges upon our ability to ferret out patterns in stock prices movements and infer from these patterns what types of events are more or less likely to unfold over different time horizons. Let’s now compare various alternatives to stock price movements as a social mood measuring stick.

**MOOD METERS**

**FutureMe.org** is a web site where you can schedule transmission of an email to yourself to arrive at any time between now and 30 years into the future. Researchers Johan Bolen of the Los Alamos National Laboratory in New Mexico and Alberto Pepe of UCLA applied a mood-rating system to the text of over 10,000 such emails sent in 2006 to characterize the senders beliefs and feelings about the future.

The researchers discovered that emails scheduled for delivery in 2007–2012 were significantly more pessimistic (read: negative) about the future than messages targeted for delivery in the following 6-year period 2013–2018. This raises the question whether this type of social mood meter could have been used to forecast the global economic meltdown that began in 2007. In other words, do the online searches we do today provide a way of measuring the social mood that gives rise to events tomorrow?
As an illustration of this possibility, the Seattle firm Veratect, Inc. used a proprietary computer algorithm to monitor online chat rooms, blogs, and offline information sources looking for hints of civil unrest and outbreak of global diseases. The idea behind this work is that such data sources contain information that officials can use to respond more quickly and effectively to problems like the spring 2009 swine flu outbreak. According to the firm, their work alerted readers of their subscription-only newsletter to a potentially severe outbreak of influenza before swine flu hit headlines all over the world. More specifically, Veratect claims that it posted a report on April 6 outlining an unusual number of respiratory cases in Mexico, and then followed up that report on April 16 with an alert to the Center for Disease Control in Atlanta. It’s worth noting that search engine giant Google reported similar types of results from analyzing search requests in Mexico during the same period. Of course, these are all just data that still must be classified, positive or negative, in order to get a measure of how the data points to people’s feelings about the future.

What we seek is a kind of “sociometer,” an instrument that plays much the same role in measuring the “temperature” of a population’s mood as a thermometer plays in measuring the temperature in a room or in your body. It’s important to note that neither measuring instrument, the sociometer or the thermometer, surveys the entire population, be it the views of each individual in a group or the motion of each and every molecule in a room. Both take a representative sample of the population and infer a “heat content” for the entire population from that sample. One might say that if the reading of the sociometer is “hot,” then the mood of the group is positive, while if it’s “cold” the mood has swung to the negative.

Our question about Internet data-mining procedures is whether these methods can serve to generate a good measure of social mood in different populations? Skeptics wonder whether companies claiming to do this are actually able to ferret out meaningful signals from the snowstorm of data sources, or whether they’re just good at finding patterns in the data after the fact. For our purposes, though, what matters is not the pattern-recognition aspect but rather whether this type of data-mining gives rise to a reliable way of measuring social mood. A method for interpreting how that mood will be translated into actual events is a kind of add-on extra. So we’ll keep this possibility of the Internet in mind as we look at a few other candidates for a good sociometer.
The most obvious candidate for measuring the social mood is just to ask people how they feel about the future. In essence, this is what surveys and public-opinion polls do in order to create the endless stream of media reports forecasting the outcome of elections, football games, Oscar winners, presidential popularity, and other questions of topical concern. Of course, pollsters employ a huge variety of statistical tricks and sampling procedures designed to identify a small subset of the population that is representative of the population as a whole. Nevertheless, comparing the results of these polls to the actual outcome of events doesn’t inspire much confidence that polls are a very useful measure of social mood (or anything else, for that matter).

Part of the problem with using surveys as a sociometer is that they reflect only what people say they think or feel. And people might—and do—say almost anything. But when it comes to crunch time in the election booth or in a betting pool at the local sports bar, people often act in an entirely different manner from what they say. This phenomenon surfaces regularly in surveys surrounding the outcome of elections, as pollsters continually misread the mood of the population and forecast results wildly at variance with what actually takes place. The most famous failure of this sort is the 1936 Literary Digest election poll, in which the magazine sampled 2.27 million owners of telephones and automobiles concluding that Franklin Roosevelt would lose the election to Republican Alfred Landon. He didn’t; in fact, it wasn’t even close. The problem was that a lot of 1936 depression-era Roosevelt voters didn’t own telephones or automobiles so never got the chance to voice their opinions. Modern pollsters now know enough to avoid these kinds of obvious mistakes. But the gap between words and actions still remains.

There are other objections to the use of surveys and questionnaires as sociometers, too. For instance, the data are not readily available on all timescales, there is not a huge database of historical data to draw upon, and the measurements are filled with inaccuracies of many types. Moreover, behavioral psychologists have shown time and again that the results of a poll are strongly conditioned by the form in which the questions are framed by the pollsters. Taken together, these objections force us to look farther afield for a sociometer of choice. In particular, our preference is to identify a social mood meter based upon actions rather than words. Here are a couple of candidates.
WHY "STUFF" HAPPENS

ANNUAL BIRTHS

When people look forward to the future and think tomorrow is likely to be better than today, they are much more inclined to have children than when they feel the future is dangerously uncertain. This seems pretty self-evident and is actually borne out by the historical data on births. Now how can I make this claim, since to compare births with the historical record of optimism/pessimism about the future involves being able to measure the views people have about the future, i.e., the social mood? Mostly, such studies have employed current economic conditions like employment rates, average worker earnings levels, and the like to characterize the mood, arguing that when people have jobs and are seeing increased earnings they are more optimistic about the future than when they’re unemployed and/or experiencing a decline in purchasing power from their paychecks.

As a piece of recent evidence for the relationship between annual births and social mood, the US National Center for Health Statistics reports that not only are there fewer jobs in the recession, there are fewer births too. US births fell in 2008, the first year of the current recession, ending a “baby boomlet” that had been in place since the start of the decade. The agency also reported that 2007 was a year that saw more babies born in the United States than in any other year in the country’s history. Experts note that the Great Depression and all recessions since then were accompanied by a reduction in births. Digging just a bit deeper into the report, we find that the worst-hit states were Florida and California, the two states most affected by the downturn in housing prices.

Unfortunately, while annual births are strongly correlated with measures of positive and negative social mood like stock price movements, the birth record is also not a very useful sociometer for a lot of reasons. First of all, by their very nature annual births are recorded only . . . annually. So it’s not possible to use these data to see anything other than events that unfold on a timescale that’s yearly or longer. Also, the data on births are not entirely straightforward to obtain, at least in many parts of the world. Finally, the data are conditioned by changing social mores and shifts in attitudes toward having families as opposed to having a career. In this latter connection, we need only look at the plummeting birth rates in western Europe over the past couple of decades as runaway economic growth and increasingly positive outlooks about career prospects, especially for women, have reduced birth rates to below replacement level.
A recent story on the Internet carried the headline “Recession Means Fewer Babies: US Births Fell 2 Percent.” Later in the story, we find the statement “The downturn in the economy best (my italics) explains the drop in maternity, some experts believe.” Well, there’s hardly any idea so bizarre that you can’t find “some experts” who won’t believe it. But just in case you might be thinking along the lines of “some experts” that a low number of births are a consequence of bad economic conditions, not a precursor, have a look at the picture in Figure 2.4. Note especially the period in the late 1920s, where annual births were already falling long before the crash of 1929. So it wasn’t the crash that caused people to be uncomfortable with starting a family. They were already uncomfortable.

### INTERNET MARKETS AND SEARCH TRENDS

Earlier we mentioned that the collective wisdom of an Internet market like Intrade can often reflect the collective mood of the populace, a mood that then translates into actions like the outcome of a papal or presidential
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election. Even more importantly, measures such as movement in the odds on a particular event in a market like Intrade serve admirably as a way of characterizing and measuring the fluctuations of the social mood in a given population. As the notion of social mood and its measurement is the central pillar upon which our theory of social action and behavior rests, we should look a lot harder at this argument claiming that an Internet market movement serves as a useful “sociometer” for measuring the group mood. But there are problems.

The first problem in using an Internet market to measure the mood of a population is the question, Which population? The famous New Yorker cartoon showing two dogs, one at a computer terminal and one sitting on the floor, illustrates the point. The dog at the terminal looks to the other and says, “On the Internet, no one knows you’re a dog.” And so it is. On an Internet market you have no idea who the other bettors are, where they live, or in general, what actual population they belong to (other than the population of that particular Internet betting site). So what social mood is it that the betting site is actually measuring? At least with the Standard and Poors 500 Index (S&P 500), you can believe that it mostly represents American interests, while a movement on the Straits-Times Index in Singapore reflects bets being made primarily by Singaporeans, or at least people from Southeast Asia. But on the Internet, no one knows if you’re an American or a Singaporean or . . . a dog.

The second barrier to using changes in Internet market odds as a sociometer is that there is very little historical data available to calibrate such market movements with actual events. These markets are simply too new to have amassed any substantive body of past data to mine.

These are the two most serious obstacles to the use of Internet trading markets as our sociometer of choice. The second barrier might disappear over the course of time. But the anonymity of the Internet is still likely to make it very difficult to overcome the first one.

In the last year or so a number of firms have sprung up to provide what’s coming to be termed sentiment analysis. This involves mining the vast sea of data on the Internet in an attempt to turn opinions into hard data reflecting the collective consciousness of Internet users. The reason this work holds out promise as a commercial undertaking is that online opinion has become a sort of virtual currency that can make or break a product in the marketplace.

Here’s an illustration of how the basic idea underlying the services offered by firms like Scout Labs, Jodange, and others in the sentiment
analysis business can be used in practice. In May 2009, the ticket marketplace StubHub identified a rising negative sentiment on blogs after a baseball game between the New York Yankees and the Boston Red Sox was delayed by rain. It seems that stadium executives had mistakenly told many fans that the game had been cancelled, and StubHub was denying fans refunds on the grounds that the game was actually played. But after seeing virtual storm clouds brewing up in the blogosphere, the company offered discounts to the affected fans. This incident has now caused StubHub to re-think its bad-weather policy. As John Whelan, StubHub’s director of customer services, put it, “This is a canary in a coal mine for us.”

A closely related possibility for a sociometer is something like Google Trends, which gives a more-or-less real time indication of what search terms are “hot” in a given region of the world. While still suffering from the lack of historical data, this indicator is a stronger candidate than the Internet markets because it reflects things that people in a given geographic region are concerned about at a particular point in time. Of course, it’s still a huge step from seeing a surge of searches in Mexico using words like \textit{phlegm}, \textit{flu}, \textit{fever}, and \textit{pigs} to infer something like a swine flu epidemic. Nevertheless, textual data-mining tools are improving daily and such searches might well turn into a usable and useful sociometer. But not quite yet.

Before leaving this category, let me present an exercise in measuring social mood via this type of “text mining” cum interview that holds considerable promise as a sociometer. This is something called a \textit{Semiotic Image Wall}. I’ll describe it within the context of a study done in 2008 together with my colleague, Leena Ilmola, for the government of Singapore, which aimed at characterizing the social mood in that city-state.

The first step is showing (via the Internet) the images depicted in Figure 2.5 to a sample of the population, in this case a few hundred Singaporeans who responded to an invitation issued by the government to participate. Respondents were asked to choose the image that best displayed their view of Singapore today, as well as the image that best fit their view of Singapore’s future. The respondents were also asked to describe \textit{why} they selected the images they did. For instance, one participant chose the ducks image at the lower right as descriptive of his (or her) view of Singapore today, saying “The orderliness of the ducks, with the same mould (sic!) from the same ‘factory’.” The point of the exercise was not to study the images that were chosen, though. Rather, it was to dig into the verbal responses themselves. The images were simply vehicles to elicit the verbal responses, which were the actual focus of analysis.
Using proprietary software for extracting semantic content and connections from the various responses, structures linking various words and concepts were then generated. We used these semantic webs to identify words and phrases suggesting positive or negative social mood in the population. A similar analysis was carried out on more than 90,000 articles over a 20-year period taken from the Straits-Times, the main newspaper in Singapore, looking for words and phrases suggestive of the population’s view of the present and the future.

This analysis led to a division of the population into four groups according to whether an individual was positive/negative about today and tomorrow. The four groups each play a very different role in society. Those uniformly positive and thus happy with today and looking forward...
to tomorrow are the Drivers of society, while those happy with today but pessimistic about tomorrow are the Frustrated group, those most likely to emigrate. On the other side of the fence we have people who are unhappy with the current situation but optimistic about the future, the Followers, and finally the Alienated, those who are unhappy today and think tomorrow will be at least as bad. Figure 2.6 shows how the population in Singapore in 2008 broke down into these four categories. The Drivers dominated the picture, followed by the Alienated, suggesting a bipolar division in society between the Drivers and the Alienated, with the Frustrated and the Followers being more like observers of this struggle.

Using this type of breakdown, we can identify those “zones” where government and social institutions can breathe easy (the “free zone”) versus times when they should be concerned (the “alert zone”). This split is shown in Figure 2.7.

The take-home message from this exercise in measuring social mood is that interviews evoking people’s feelings about the present and the future, coupled with technological tools for “mining” those interviews instead of asking directly how people feel, can lead to very useful conclusions as to how a society is divided at a given point in time, as well as how it is likely to evolve over a relatively short-term horizon.

On the negative side, the process of semantic textual analysis is time-consuming and labor intensive. Also, it does not offer an obvious procedure for projecting into longer-term futures. So we must continue the search for
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Figure 2.7 Zones of social mood.

a sociometer that combines the desirable features of the semiotic image wall with some easily applied, natural procedure to forecast the mood in the future from where it is today. Enter Wall Street!

FINANCIAL MARKET INDEXES

A few years back, journalist Kenneth Chang stated, “A market is the combined behavior of thousands of people responding to information, misinformation and whim.” This pithy observation captures admirably the spirit of why the movement of a financial market index, such as the Dow Jones Industrial Average (DJIA), serves so well as a sociometer. As Robert Prechter states, “The stock market is far more significant to the human condition than it appears to casual observers and even to those who make their living by it. The level of aggregate stock prices is a direct and immediate measure of the popular valuation of man’s total productive capability.”

In other words, a stock market is in effect a huge casino where people place bets about the future on all timescales. As bets come in, the market assimilates them in nearly real time into a single number: a change of price in the various stocks that investors and speculators are betting on. A market index like the DJIA or the S&P 500 index simply measures price change in a representative sample of the major stocks being traded on a given exchange. Such indexes serve as a “thermometer” of the overall market. So if investors are optimistic about the future on a given timescale, they tend to buy stocks with that time horizon in mind and the index rises. Conversely, when they are pessimistic about the future, the majority of investors sell and the index declines. Thus, as Prechter puts it, the stock market is “literally a drawing of
how the scales of mood are tipping. A decline indicates an increasing ‘negative’ mood on balance, and an advance indicates an increasing ‘positive’ mood on balance.” It’s that simple.

Let’s have a look at why a financial market index is such a sterling candidate for our sociometer of choice. We’ll turn to some of the possible objections afterwards.

- **Data availability**: In most industrialized countries, financial markets have been around for a century or more. As a result, there is a lot of data available on all timescales.

- **Ease of gathering data**: In contrast to many of the candidate sociometers discussed earlier, obtaining the financial data is pretty straightforward. At the simplest level, you get it from your daily newspaper. For finer-resolution data, numerous data sources exist to provide weekly, daily, hourly, or tick-by-tick data, sometimes even for free. So there is no problem at all in getting whatever data you want on whatever timescale you choose.

- **Clean data**: In experimental science, one of the most vexing problems is missing or corrupted/contaminated observations. There’s no problem in this regard with financial data. It’s about as “clean” as any data you’ll find anywhere about anything.

- **Data analysis tools**: There is probably no set of data that has been analyzed and re-analyzed by more tools and procedures than financial data. Bookstore shelves sag under the weight of volumes that have been published outlining procedures for projecting financial data into the future. And the Internet is filled with adverts offering a bewildering array of tools and/or advice for this purpose. So, again, absolutely anyone can analyze the patterns in these data to as fine a degree as they might wish.

There is no candidate sociometer that I can think of that can even begin to touch financial data insofar as the above desiderata is concerned. But when I’ve offered this argument in lectures, members of the audience so routinely raise the same concerns that it’s worth taking a moment right now to address the most frequent ones. And by far the most common reservation centers around the fact that stock prices are determined by actions of investors. But
investors making direct decisions on buying and selling represent only a minuscule fraction of the total population. So how can a financial market index represent the mood of the entire population? Let me lay to rest this tiresome—but very common—complaint once and for all.

The distilled essence of this objection seems to be that a social mood meter must directly take into account the views of everyone in a society. Of course, public opinion surveys and questionnaires fail even more miserably at this than a stock index, while holding on to the illusion of being a democratic measure by claiming to infer overall societal views from a “representative” sample of the entire population. So the question to be answered is whether a stock index can serve as a representative measure of the views of an entire population about the future. Beliefs that an index like the DJIA cannot do this founder on (at least) two fallacies. I call them the Independence (or Free Will) Fallacy and the Homogeneity Fallacy. 

The Independence Fallacy: Most people seem to believe that investors (read: traders and speculators) make their decisions to buy, sell, or hold totally independently of all members of the social group to which they belong. In short, investors exercise total independence of choice in their decisions. If this were true, then the DJIA would indeed only reflect the actions of traders and not the beliefs of an entire society. But of course this “free will” assumption is completely untenable.

The actual order-givers on the financial exchanges do not exist independently of the society of which they are a part. Traders have friends, families, and acquaintances, read newspapers, go to bars, watch television, and, in general, are influenced in the very same ways as other members of society. And it’s difficult to imagine that these influences do not affect the decisions traders make about the future direction of financial prices.

So just as a thermometer doesn’t have to measure the position, velocity, and interactions of every single air molecule in your living room to produce a very good estimate of the room temperature, a financial market index doesn’t have to measure directly the views about the future held by each member of population in order to accurately measure the overall social mood. A representative sample is good enough. And the actions of traders and investors are as good a sample as any, and a lot better than most, as the next fallacy suggests.

The Homogeneity Fallacy: A rather quaint aspect of many public opinion surveys is the tacit belief of pollsters that everyone’s view counts equally.
Polls state things like “98% of the population think President Joe Blow is doing a lousy job of managing US foreign policy” or “54% of purchasing managers in Chicago believe the economy will be growing in the next quarter.” Implicit in such statements is the assumption that the view of each respondent in the survey counts the same in the measure of how the group feels about President Blow’s policies or how the purchasing managers in Chicago feel as a group about the economy. But in the real world we know that opinions, unlike votes, do not count equally. Some people’s views are simply more equal than others when it comes to contributing to the overall group sentiment. Some people and some institutions are just more influential in shaping the overall mood of a population than others.

What does this rather obvious statement have to do with use of a financial market index as a sociometer? That’s easy. People who are actively engaged in financial matters tend to be people who play a more visible role in the formation of social mood than those who are not so engaged. In other words, what Warren Buffett or an editorial writer at The New York Times or even your own stock broker think about the future has a much greater impact on how the society as a whole feels than the view of your barber or your plumber. Some people and some institutions are able to influence a far wider circle of the population with their beliefs than others, and thus weigh-in far more heavily in the formation of the overall social mood. So while Liberty, Equality, and Fraternity are ideals to aspire to, they may not be the dominant forces in the nitty-gritty of everyday life (especially Equality).

Finally, there is the ever-increasing connectedness of the world’s financial markets. What happens in New York, for instance, is with high correlation reflected in how stocks open the next day in Asia. And how they close in Asia influences what takes place at the opening bell on Wall Street.

Taking all these factors together, the argument in favor of using a financial market index as a surrogate for the social mood of a population is more compelling than the argument for any of the other candidate sociometers we’ve considered. So this is the path we’ll follow in the remainder of the book. I hasten to emphasize that this does not mean that a financial index is necessarily the best possible sociometer. Nor does it suggest that such an indicator is infallible as a measure of a group’s view of the future. It isn’t. On the other hand, it seems to work! And since good science like good politics is the art of the possible, we’ll invoke that principle until something better comes along.
A few years ago as I was just beginning to get into the spirit of the ideas outlined in this book, I was invited to give a series of lectures on complex system theory at the National Supercomputer Laboratory in Petropolis, Brazil, a lovely Germanic-style town in the mountains outside Rio. At the time, I was grappling with the ideas just outlined for using a stock market index as a sociometer to measure the mood of a population. But all the examples I had at hand involved the US stock market. I began wondering whether perhaps the notion of the DJIA as a measure of social mood was something peculiarly American and did not transcend national and cultural boundaries. So I decided to test this possibility using my audience in Brazil.

The basic idea of the test was primitive in the extreme. Before going to Brazil I looked up the monthly averages of the Bovespa Index, the measure of the main Brazilian stock market in Sao Paulo, and plotted it over the period 1992–2006. I then asked my Brazilian friends to tell me what they thought were the most significant social, political, and economic events that took place in Brazil over this period. Peter Kendall at Elliott Wave International was then kind enough to clean up the data and prepare the chart in Figure 2.8, which displays these pivotal events marked on the chart of the Bovespa Index.

The story told by this graphic is compelling. Whenever the social mood in Brazil turned negative, bad things like a currency devaluation, a bank failure, or a presidential impeachment were the *plat du jour*. On the other hand, when the Brazilian mood swung upward and people were looking forward to the future, economic recovery, election of a populist president, and the profitable sale of productive government assets dominated the headlines.

When I visited Petropolis and gave this presentation, it was shortly after the “surprise” election of Lulu DaSilva as Brazil’s first socialist president. At the time of that landslide victory in 2002, da Silva had not been taken very seriously as a candidate by the pundits and other talking heads in the Brazilian media. But to one sensitized as to how social mood impacts a collective event like a presidential election, his victory should have been no surprise. As the chart shows, at the time of the election the social mood in Brazil was at a low not seen in more than a decade. Under such circumstances the electorate almost always kicks out the incumbent, just as we saw earlier for US presidential elections. And so it was in Brazil, too.
Figure 2.8  The Bovespa Index and major events in Brazil, 1992–2006.

The Brazilian experiment encouraged my belief in the idea that social mood as a biasing factor in human events was not just a phenomenon confined to American brains. To further support this hypothesis, Figure 2.9 shows a chart for a 50-year period in postwar Japan using the Nikkei
As with the election of da Silva in Brazil, a socionomist would have bet heavily on Yukio Hatoyama’s victory in the Japanese election at the end of August 2009. As is always the case in times of negative social mood, voter frustration must find an outlet somewhere. In the face of worsening economic conditions in Japan, that frustration involved kicking out the Liberal Democratic Party for only the second time in the post–World War II era, handing a landslide victory to Hatoyama.

**A PREEMPTIVE STRIKE ON EVENT CAUSALITY**

In a Technology, Entertainment, and Design (TED) Lecture about happiness, Harvard psychologist Daniel Gilbert asks the audience to choose between experiencing two very different events: (1) winning $340 million
in the lottery, or (2) having an accident that leaves you a paraplegic. A real no-brainer, right? After posing the alternatives, Gilbert goes on to show data about happiness taken from people who have actually experienced one of these two radically different types of events. He asks the audience to choose which people are happiest a year after either winning the lottery or becoming a paraplegic. Answer: Both groups have essentially the same level of happiness with their lives one year after the Big Event!

If happiness, however you define it, in any way reflects how people feel about the future, optimistic or pessimistic, then it’s very difficult to reconcile Gilbert’s study with any notion that events cause mood. Even in this case of very extreme events, whatever momentary mood shift the event brought to the lottery winner or the paraplegic quickly wore off, and the two converged to essentially the same view of their future. Of course, this study is at the level of individuals and you may think that it doesn’t apply when we move up to an entire society. Let’s see.

The Central Hypothesis of Socionomics discussed in the opening chapter shows an arrow pointing from Social Mood to Social Behaviors/Collective Events, implying a temporal influence moving from how a society feels about the future to the types of events the future is most likely to turn up. But the diagram shows no arrow pointing in the opposite direction from events to mood. In the hundred or so presentations about these ideas I’ve made over the past few years, I don’t think there’s been a single time when someone didn’t raise this objection. The general thrust is to say something like, “I can believe that the mood of a population somehow impacts events. But surely a dramatic event like 9/11 or a presidential assassination affects how people feel, too. There must be some kind of feedback from events to mood in addition to the arrow you show from mood to events.” My guess is that the reader of this book already started formulating just this argument many pages ago. So before we go even one page further into our story, let me lay to rest this natural—but fundamentally flawed—argument once and for all (LOL!) by examining its components. I want to now look much deeper into the extremely contentious claim that events don’t matter.

In the world of academic finance, and even in the general financial press, one often sees the term external shock put forth as a mechanism purporting to explain why a price changes for some good or capital asset like a stock or bond. The belief underlying such statements is that there is a system (the financial market) that sits behind a thick, plate-glass window insulating it from the rest of the world. In some never-quite-described
fashion, that outside world broadcasts influences through the glass that serve as external inputs to drive the market from its current price level to a new one. The taken-for-granted background assumption underpinning this phantasmagorically unrealistic picture of the world is that it’s possible to decouple the financial markets from the rest of life; they exist literally outside the world of everyday human affairs.

As we stated in the book’s Overview, this a view of the world taken over almost verbatim from Newtonian physics, classical-mechanics version, in which an observer of a system of moving particles (think planets) can measure the motion of the particles, while remaining totally outside the system. Quantum theory stamped paid to this dubious picture of reality, even in physics. And a turn to the human realm shatters this fictitious plate-glass window into a million little pieces. Put simply: There is no outside! Everything—and I mean everything—is inside. And it’s not even a good approximation to imagine otherwise. So there are no such things as “external” shocks; everything that happens takes place within a system of which the financial markets are but a part, interconnected with everything else.

At first glance, you might think all this interconnectivity undermines the earlier claim that there is no feedback from events to mood. After all, if everything is connected then such a feedback would necessarily have to exist. Let’s look just a bit deeper and try to unravel this seeming paradox.

Consider a blockbuster, literally knockdown, event like the 9/11 attack that took out the Twin Towers or a presidential assassination. Chances are you’d say to me, “Surely, John, an event like that would affect your mood.” Well, maybe it would affect my immediate emotional state (and maybe not). But after years of careful study, Robert Prechter has found that even as a secondary influence the net effect of such events is zero. There is not a shred of evidence (read: data) to suggest that such an event affects the mood of the population as a whole, at all.

Let’s illustrate this with an actual example, one of the most dramatic single events of the twentieth century: the assassination of President John F. Kennedy in Dallas on November 22, 1963. As stated earlier, I’ll invoke the standing assumption that the social mood is measured by the Dow Jones Industrial Average (DJIA). Figure 2.10 below shows the monthly DJIA over a period that includes November 1963. Now if the social mood (the DJIA) were indeed impacted by that dramatic assassination event, one would expect to see a pronounced dip, or at least change, in the DJIA around that month. Can you pick out November 1963 on this chart? I won’t keep
Figure 2.10  The Dow Jones Industrial Average in a period including November 1963.

Figure 2.11  The Dow Jones Industrial Average with November 1963 marked with an arrow.
you in suspense. Figure 2.11 shows the same chart with November 1963 marked with an arrow. The point here, of course, is that November 1963 is indistinguishable from the months on either side of it. In short, when it comes to affecting social mood, events don’t matter—much!

I have shown you only the monthly average and not changes on a shorter timescale. It actually does seem to be the case that there is a kind of “shock factor” at work for such world-shattering events like the Kennedy assassination, and the mood (read: the DJIA) does move in the immediate aftermath of such an event. Presumably, this is a knee-jerk response to the fear and uncertainty that people feel when something out-of-the-blue like the 9/11 attack takes place. But if I had shown you a minute-by-minute chart, what you would have seen is an almost immediate return to “normal” (i.e., the mood prior to the event) within a few minutes or, at the latest, a few hours of the shock.

So the only kind of feedback the data supports is an ultra short-term emotional reaction to the surprise factor of the event. And as the Kennedy assassination illustrates, even for an event with a huge surprise factor like this, the shock-based movement in the social mood very rapidly fades.

Just in case you might be thinking that the Kennedy assassination is an isolated singularity in regard to the impact on social mood of dramatic events, let me cite a few other examples drawn from a report prepared by Mark Jickling of the Congressional Research Service of the US Library of Congress, in response to concerns from Congress that the financial markets might go into free fall upon reopening after 9/11. Jickling published a study on September 14, 2001 that looked at the after-effect on stocks of four dramatic historical events: the attack on Pearl Harbor, the Kennedy assassination, the October 1987 crash, and the Asian financial crisis of 1997. Here are Jickling’s findings of the effect of each event on stocks (i.e., the social mood).

**Pearl Harbor:** Following the Pearl Harbor attack, stock prices declined by about 5% and then recovered slightly. But as the market was in a downtrend at the time anyway, the long-term effect on prices was minimal.

**The Kennedy assassination:** On the day of the assassination the DJIA fell about 3%. But prices recovered within a week. So the principal effect was restricted to the day of the assassination itself.

**The Crash of October 1987:** On October 19, 1987 the DJIA fell by a record 23%. The index bounced back over the next 2 days, but remained
below the pre-crash level for several months. Jickling then states: “A puzzling aspect of the 1987 episode is the absence of any concurrent historical event to justify the magnitude of the price drop [my italics].” This telling remark shows that Jickling himself was caught up in the event causality mindset of how things happen, looking for an external event to account for the shift in the social mood!

The Asian Crisis of 1997: On October 27, 1997 the DJIA fell by a record 554 points, over 7% of its value, but climbed a record 337 points the next day. Again I quote Jickling: “The most plausible explanation for this ‘yo-yo’ market behavior is that investors in U.S. stocks fell victim to a brief panic. Certainly the Asian crisis could be reasonably construed as a threat to the U.S. economy, but the reaction of the market appeared to be out of proportion to the dimensions of that threat.” Here is yet one more indicator of event causality, looking for some outside event as a “cause” of the panic.

And so it goes. Other cases of the same sort include the terrorist attacks on the London subway in 2005 and the Madrid train bombings in 2004. In all such cases, as soon as the event flashed across the news wires the social mood (aka the financial markets) sold off—and then recovered within hours of the event. Put simply, events do not impact the social mood, other than possibly for some very short “panic period” immediately following the public announcement of the event.

Thus far we’ve laid great emphasis on the fact that there is no feedback from events to mood, and presented a pretty strong case supporting that claim. By now, you might even believe it. But what about other types of feedback from events to the mood of individuals or, perhaps, from social mood back to individual mood? After all, we have already conceded that events certainly do affect the individual’s mood in the very short-run, and the collection of the individual moods in turn gives rise (somehow) through the connective structure in a society to the social mood. So perhaps we can sneak-in some event causality via this type of indirect impact on social mood through the medium of individual mood. Or maybe the social mood itself feeds back to individuals, which in turn then leads to a change in social mood. In short, you may argue for a diagram something like the one on the next page.

I think all of us, even me, would accept that one, or even both, of these feedback channels exist. The question before us is whether either of them actually changes the social mood. Let’s consider each case in turn:
• Events to Individual Mood (Path A): Here the way an individual feels about the future is affected by an event like a terrorist attack. That might lead to a change of social mood via the individual’s connection to others. But, in fact, we have seen that the occurrence of an event does not change the social mood, at all. Thus, despite the effect the event has on an individual, that effect is not incorporated into the social mood in any measurable, or even observable, way.

• Social Mood to Individual Mood (Path B): Here the conjecture is that a change in social mood, whatever its cause, changes the mood of the individual. Whether that change in individual mood then feeds back to change the social mood depends entirely on how the individual is connected within the group. If the existing mood is poised in an unstable state, and if the individual’s position in the connective structure is such that his or her change in mood coming from the existing mood percolates through the system, then a “mood-changes-mood” pattern might take place. This pattern may indeed be the process by which an existing mood shifts to something different. But the path by which this happens cannot really be known, so the entire feedback process from social mood to individual mood and back again to social mood is an unobservable,
unmeasurable pathway in the social system, i.e., it’s metaphysical, not at all scientific, and is pretty much equivalent to a random change that happens to set off a cascading process from one social mood to another. But whatever it may be, it certainly is not an event-caused change in mood, social or individual.

Since the meltdown of the global financial markets in 2008, economists have scratched their heads wondering how their theories missed this cataclysmic event. One of the consequences of this head-scratching has been a revival of interest in the work of maverick economist Hyman Minsky, who labored in relative obscurity before his death in 1996. Minsky’s arguments about the nature of the capitalist economy are eerily prescient and address directly the illusion of event causality. Here’s what he had to say about the idea of external shocks and financial collapses.

First of all, Minsky argues that the notion of stability of the economy is itself destabilizing! In other words, the longer a period of economic stability lasts, the more society moves toward being a house of cards built on easy credit and excessive risk. Minsky’s basic argument is that in periods of stability investors take on more risk. They eventually borrow too much and overpay for assets (like houses!). Ultimately, speculative borrowers take on so much debt that they cannot even meet the interest payments on their loans without refinancing based on using the increased value of their assets as collateral. But when their collateral begins to decline in value, investors are forced to liquidate thereby precipitating a crash in the economy. In short, the economy ultimately becomes one huge Ponzi scheme whereby old investors get paid off by money “borrowed” from new investors.

Mainstream economics (the event causality type) regards capitalism as essentially stable, moving toward steady growth. In this fictitious world, crises only occur via errors by policymakers (too high interest rates by the Fed, for example), or by external shocks like the 1973 rise in oil prices. Minsky’s claim is that the capitalist system itself is subject to crises from within, whereby the good times ignite the cycle just described leading to a crash.

There is much more to be said about Minsky’s ideas, but for the purposes of this book the above sketch suffices to show how the notion of event causality simply does not exist in the real economy à la Minsky. Everything is inside the system; there are no “external shocks” that move the system
from good times to a state of crisis. In short, the entire notion of an external shock is an illusion dreamt up by economists to make their models cohere with the framework of Newtonian physics.

The most important lesson emerging from Minsky’s work is the central importance of the endogenous nature of social mood. The best place to get a feel for this is working day-to-day in the markets. As we move through a turn, it’s a wonder how much worse or better fundamentals get after a swing, up or down, is in place. Remember the move up in the early 1990s? The Savings & Loan crisis was still young, the Persian Gulf War was directly ahead, and the economy was still sinking when stocks turned up. It was the other way around in 2000. So the evidence resides in the turns. They would never happen if a feedback loop from events to mood were in control.

Robert Prechter has given a good account of the infinite regress implicit in this argument of events influencing mood and vice-versa. He says

If events formed a feedback loop with mood, then social trends would never end. Each new extreme in mood in a particular direction would cause more reinforcing actions, and those actions would reinforce that same mood, and so on forever. This is an untenable idea.

**LET’S REVIEW THE BIDDING**

The material of this chapter is the foundation upon which the rest of the book rests, and the story we’ve told above has come in many pieces with several twists and turns. Armed with the varied collection of examples presented in the next three chapters, we’ll be in a position to see how the Central Hypothesis can be used in action to forecast what is and isn’t likely on all timescales. In addition, the outline of a research program required to transform the Central Hypothesis into a formal scientific theory will start to emerge from these deliberations.
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