ion of the finding has changed in
to a cognitive bias. Consider these

er comes quickly: most drivers say
er and for most respondents almost
rectly, because it requires an assess-
At this point in the book it comes as
difficult question by answering an
o the average without ever thinking
the cognitive interpretation of the
ple are asked about a task they find
'Are you better than average in start-
ney readily rate themselves as below
d to be overly optimistic about their
ich they do moderately well.
founders and participants in innova-
tent will the outcome of your effort
This is evidently an easy question; the
ll sample it has never been less than
will succeed, these bold people think
wn hands. They are surely wrong: the
ch on the achievements of its competi-
on its own efforts. However, WYSIATI
rally focus on what they know best—
immediate threats and opportunities,
ney know less about their competitors
ine a future in which the competition

, who coined the concept of competi-
ote from the then chairman of Disney
sive big-budget movies are released on
ay and Independence Day), he replied:

out your own business, you think, "I've
ot a good marketing department, we're

> going to go out and do this." And you don't think that everybody else is thinking the same way. In a given weekend in a year you'll have five movies open, and there's certainly not enough people to go around.

The candid answer refers to hubris, but it displays no arrogance, no conceit of superiority to competing studios. The competition is simply not part of the decision, in which a difficult question has again been replaced by an easier one. The question that needs an answer is this: Considering what others will do, how many people will see our film? The question the studio executives considered is simpler and refers to knowledge that is most easily available to them: Do we have a good film and a good organization to market it? The familiar System 1 processes of WYSIATI and substitution produce both competition neglect and the above-average effect. The consequence of competition neglect is excess entry: more competitors enter the market than the market can profitably sustain, so their average outcome is a loss. The outcome is disappointing for the typical entrant in the market, but the effect on the economy as a whole could well be positive. In fact, Giovanni Dosi and Dan Lovallo call entrepreneurial firms that fail but signal new markets to more qualified competitors "optimistic martyrs"—good for the economy but bad for their investors.

OVERCONFIDENCE

For a number of years, professors at Duke University conducted a survey in which the chief financial officers of large corporations estimated the returns of the Standard & Poor's index over the following year. The Duke scholars collected 11,600 such forecasts and examined their accuracy. The conclusion was straightforward: financial officers of large corporations had no clue about the short-term future of the stock market; the correlation between their estimates and the true value was slightly less than zero! When they said the market would go down, it was slightly more likely than not that it would go up. These findings are not surprising. The truly bad news is that the CFOs did not appear to know that their forecasts were worthless.

In addition to their best guess about S&P returns, the participants provided two other estimates: a value that they were 90% sure would be too high, and one that they were 90% sure would be too low. The range between the two values is called an "80% confidence interval" and outcomes that fall outside the interval are labeled "surprises." An individual who sets confidence intervals on multiple occasions expects about 20% of the outcomes to

be surprises. As frequently happens in such exercises, there were far too many surprises; their incidence was 67%, more than 3 times higher than expected. This shows that CFOs were grossly overconfident about their ability to forecast the market. *Overconfidence* is another manifestation of WYSIATI: when we estimate a quantity, we rely on information that comes to mind and construct a coherent story in which the estimate makes sense. Allowing for the information that does not come to mind—perhaps because one never knew it—is impossible.

The authors calculated the confidence intervals that would have reduced the incidence of surprises to 20%. The results were striking. To maintain the rate of surprises at the desired level, the CFOs should have said, year after year, "There is an 80% chance that the S&P return next year will be between −10% and +30%." The confidence interval that properly reflects the CFOs' knowledge (more precisely, their ignorance) is more than 4 times wider than the intervals they actually stated.

Social psychology comes into the picture here, because the answer that a truthful CFO would offer is plainly ridiculous. A CFO who informs his colleagues that "there is a good chance that the S&P returns will be between −10% and +30%" can expect to be laughed out of the room. The wide confidence interval is a confession of ignorance, which is not socially acceptable for someone who is paid to be knowledgeable in financial matters. Even if they knew how little they know, the executives would be penalized for admitting it. President Truman famously asked for a "one-armed economist" who would take a clear stand; he was sick and tired of economists who kept saying, "On the other hand . . ."

Organizations that take the word of overconfident experts can expect costly consequences. The study of CFOs showed that those who were most confident and optimistic about the S&P index were also overconfident and optimistic about the prospects of their own firm, which went on to take more risk than others. As Nassim Taleb has argued, inadequate appreciation of the uncertainty of the environment inevitably leads economic agents to take risks they should avoid. However, optimism is highly valued, socially and in the market; people and firms reward the providers of dangerously misleading information more than they reward truth tellers. One of the lessons of the financial crisis that led to the Great Recession is that there are periods in which competition, among experts and among organizations, creates powerful forces that favor a collective blindness to risk and uncertainty.

The social and economic pressures that favor overconfidence are not