

Chapter 4

ASK WHAT CHANGED

A body at rest will remain at rest and a body in motion will remain in motion unless acted upon by an outside force.

— Sir Isaac Newton's First Law of Motion

Have you ever had a conversation like this? You point out to a friend that the stock price of Hunky Chunky Potato Chip Company doubled in the last six months. Then your friend explains, "Yeah, that's because people love potato chips. Their love borders on addiction." Or you comment that far fewer people are attending Major League Baseball games this year, and your friend's explanation is that baseball is so boring.



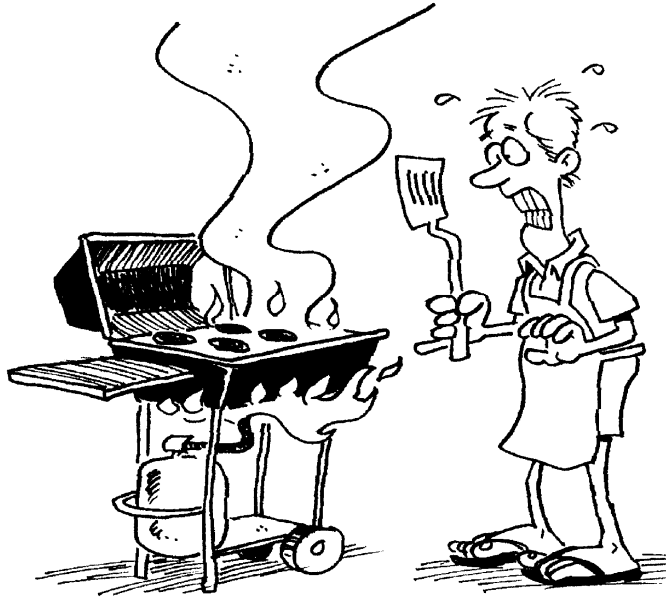
Your friend explained nothing. If people love potato chips so much, didn't they love them last year too? Then why wasn't Hunky Chunky Potato Chip's stock just as high six months ago? If baseball is so boring, why were so many people attending last year? To explain a change in some variable, you have to point to something else that changed, not to something that stayed the

same. What *did* change? Are people disgruntled over the baseball strike? Did ticket prices go up? Have people fallen in love with another sport? Something caused the change you're observing. The trick is to identify the key elements that changed and not the fundamental elements that didn't. We doubt that baseball has gotten less exciting or that people just recently discovered potato chips. It is entirely possible that the popularity of potato chips and baseball ebbs and flows, but then the variable that changed is the popularity itself.

The Malfunctioning Barbecue

Years ago I (CLH) installed a new part in my gas grill barbecue. The female and male gas lines didn't physically, permanently connect; they were designed so that one just slips inside the other with a remaining gap. The new parts didn't seem quite right. There wasn't much overlap. This concerned me, given the possibility of a gas leak in close proximity to a hot grill.

My concerns amounted to nothing. Everything worked for years until the evening the underside of the grill suddenly looked like a blowtorch. I immediately shut off the gas line. Days later I adjusted things and tried again, with the same result: the flames were under the grill instead of inside the grill, which is good neither for cooking hamburgers nor for living a long life. My conclusion: the parts had never been right, and now was my chance to buy the right parts.



The owner of the gas grill store listened patiently to my story and then asked if I had ever cleaned the parts. "Huh, what?" I replied, surprised. "Clean them?" "Did it work before?" he asked. "Uh, yes," I replied. He inserted a long, thin brush into the pieces and drew out a thick wad of spider webs and other gunk. For five years the gas grill "somehow" had worked, even though it had pieces that I suspected were too short. When it finally didn't work, I was sure that it was due to the length of the pieces and nothing else. But it had worked for five years! I forgot to ask myself what had changed. Something had obviously changed to make it stop working and it wasn't the length of the pieces. What could change with such a simple hose assembly? Now I know: Dirt, gunk, and spider webs.

The NASA Code

When I (CLH) worked at NASA Ames Research Center as a scientific programmer, my software group experienced the following situation so frequently that it became one of our inside jokes. Many of NASA's scientists wrote their own software for wind tunnel experiments and fluid dynamics simulations. They would often come into our office and ask us, as the software

experts, why their code wasn't running. Their software program had been running properly, they would explain, but then it mysteriously stopped. They were looking for reasons and had come to us because they were out of possible explanations. It was as if they expected us to say that the VAX minicomputer or the Cray supercomputer just wasn't working today because somehow the circuits broke or the operating system went haywire.

But the reason was always the same: they would admit that they changed their code. "But I changed only one line of code," they would say, exasperated. As we well knew, their one change broke their code and was the smoking gun that we needed to fix the problem. These NASA scientists couldn't believe that their one innocent change caused the problem and, so, looked elsewhere. We knew that a computer designed and tested by hundreds of engineers and proven through years of faithful service was much less likely to cause their problem than one hastily written line of code buried within a highly interdependent software program.

Rising Gas Prices

In the summer of 1999, Californians were upset because gas prices had jumped 40 cents a gallon in the few months since March. It was natural for people to blame the world oil market, basically OPEC, and the greed of oil companies. Although it's true that the price of every 42-gallon barrel of oil had risen, it had increased by only about \$3. At most, this could explain perhaps ten cents of the 40-cent increase per gallon. That left the remaining 30 cents to be blamed on the greed of oil executives, or so it seemed, until we consider that this gas price hike happened only in California and not in the rest of the country. Hmm...

Here's what I (DRH) wrote in a 1999 article:

Why did California refiners suddenly get greedier in the last three months? Can't we assume that, whatever their level of greed, they've been that way for quite a while? So what changed in California that didn't change in the rest of the United States? The answer is the amount of gasoline produced in California.²⁴

The amount of gasoline refined in California dropped seven percent during that period, mainly due to fires at two California refineries, one at the Tosco refinery in Avon on February 23 and the other at Chevron's Richmond refinery on March 25.²⁵ Interestingly, California's Air Resources Board had left the state gas market unprotected from production shocks such as these fires by requiring that all gasoline sold in California be a specific kind, different from that sold in neighboring states.²⁶ I wrote:

Ordinarily, when the price of a commodity rises in one region and that commodity is easy to ship from another region, people called arbitrageurs make money by buying where it's low and selling where it's high. The arbitrageurs' increased shipments drive down the price in the high-price region. But that hasn't happened in California.²⁷

The reason for the price increase was the fires. The reason the price increase was so severe was the regional nature of gasoline production in California. When people notice higher prices at the gas pump, they want to explain the change, but they frequently resort to explanations that rely on factors that haven't changed. Some of these factors may have made the change more severe, as with the California gas refining laws. Some of these factors were just "there" and didn't necessarily exacerbate the change, such as the greed of the gas companies, who are just as greedy elsewhere. We need to consider what really caused the change. Because if nothing changed, why did something change?

We Deliver, Maybe

I (CLH) have an office connected to my house. For the office address I gave to clients, I added a "Suite J," partly for fun, partly to mirror my old downtown office that was Suite L, and partly to keep my personal and business mail separate. Later, I realized this was silly, so I started phasing out the Suite J in my address. Then, one day, after almost three years of uninterrupted mail delivery, the Post Office marked some of my mail "Returned Undeliverable" and sent it back to the sender. I know this because I talked to a supplier who complained about a late payment for a bill I never got. I sent my office manager to talk to the people at

the Post Office, who told him that Suite J is not part of our official office address and having it on our mail may cause it to be undeliverable. As you've probably noticed, this fails to explain how I got Suite J mail delivered for almost three years. Also, at least one of the missing pieces of mail did not have Suite J in the address because it was personal mail for a vehicle registration. So the Post Office failed to explain why, if nothing had changed, something had, indeed, changed.

A friend has a related Post Office story. Blair stopped his mail for two weeks when he went on vacation and then contacted the Post Office to resume his mail when he returned. After he had received his mail for a week or so, all delivery ceased. Perplexed, he went to the Post Office to inquire about the problem. Blair explained the sequence of events and said that he hadn't gotten any mail for days. The clerk looked at him inquisitively and asked, "Specifically, what mail hasn't been delivered?" Blair was dumbfounded. "I get a pile of mail each day. How am I supposed to know exactly what personal letter, magazine, catalog, bill, or junk mail didn't come today?!"

What had changed? A postal employee had somehow reinstated the hold on Blair's mail.

The Lessons Learned

Remember the story about David's father's attempted suicide in Chapter 1? David's first task was to determine why his father was upset enough to attempt a sleeping pill overdose. David's father had seemed fine less than two weeks earlier but now he was in the hospital. What had changed? The pain in his legs had started the whole process of depression and suicidal thoughts. Now the solution was clear: Try to eliminate the pain.

In our quest for understanding, knowing what drives any given situation is paramount. If we didn't have a problem before and now we do, something must have changed. And the first step toward fixing the problem is discovering what that something is. Whether it is a revised computer code or someone's incompetence, the first challenge is to open the curtain and see what is behind it.

In the potato chip stock example, knowing what was powering the sales growth could help you as an investor. Now might be a great time to buy, or a great time to sell—it depends on what is really happening. Investors who ask what changed and whether the change is permanent or not will have a distinct advantage.

If you learned the true reason for California's high gas prices, you could prevent similar problems at other times or in other places and save drivers billions of dollars. There is a lot of value in that information. (See Chapter 12 for more on the topic of information and its value.) Saving billions of dollars and making the economy more efficient is, of course, the very ideal of public policy analysis. The risk is to, instead, fall prey to the simplistic argument blaming greed because we have no reason to think that the level of greed has changed. How can the California state government do a better job without first truly learning from the gas price increases taking place? Based on our experience, we don't hold out much hope. As Newton warned, *that* body may stay at rest until an outside force requires *it* to change.

