2

The Five Pitfalls of Problem Solving

As Chap. 1 demonstrates, spontaneous approaches to solving problems can end badly, especially when we rely on assumptions we don't question (or even acknowledge), and jump to conclusions. In this chapter, we use five real-life cases to explore the primary pitfalls of assumption-based problem solving.

Case 1: When the Music Industry Went Out of Tune

Anyone old enough to have bought CDs probably remembers the first time they downloaded an MP3 file over the Internet. For most people, this took place in the last few years of the past century. As Witt wrote in his account of these years, *How Music Got Free*,[1] 1997 was the year MP3 file-sharing went viral among US college students. Napster, the website that made peer-to-peer file-sharing mainstream, debuted in 1999. One year later, it had 20 million users downloading 14,000 songs a minute. "MP3" had become the most searched-for term in Internet search engines, surpassing even "sex."

Even the least business-savvy observer could tell the business of music was under pressure, and the record industry wasn't blind to the threat. It fought an all-out battle against the file-sharing revolution. The first line of defense (and most vulnerable point of attack music executives discovered) was in the recording studios and CD manufacturing facilities. It had become shockingly frequent for a new album to be available on file-sharing sites weeks before its release in stores, something pirates could only accomplish if helped by insiders. The record companies took elaborate measures to reduce theft, including

B. Garrette et al., *Cracked it!*, https://doi.org/10.1007/978-3-319-89375-4_2

airport-style security screenings for all plant employees leaving the work premises every day.

This proved ineffective. "Inside jobs" continued: one CD factory manager smuggled 2000 albums out of a North Carolina facility over eight years. Regardless, if anyone could walk into a record store at 8 a.m. on the day a CD was released, rip it, and post it online to the entire world minutes later, security measures were futile. The recording industry soon concluded it had to stop the file-sharing itself.

Since file-sharing was illegal, music executives did what honest citizens do in such a situation: they called in law enforcement. Unfortunately, despite intense lobbying, this produced no results. Neither the Department of Justice nor Congress seemed to have any appetite for siding with millionaire executives in prosecuting teenagers playing with computers in college dorms. It didn't help that the music industry was deeply unpopular on Capitol Hill, having mightily resisted Congress's attempts to regulate explicit lyrics. Recording studios were equally unconvincing in arguing that file-sharing was doing massive economic damage, given that in 2000, their revenues were still growing, and the highly concentrated recording industry remained hugely profitable. As a later investigation and settlement would reveal, this profitability was bolstered by illegal price collusion. The recording industry made an unconvincing victim.

Since playing defense didn't work, recording studios went on the offensive, despite the risk of alienating younger consumers. In 2000, they sued MP3 operators left and right. While the Recording Industry Association of America (RIAA), their industry association, sued manufacturers of MP3 players, 18 record companies jointly sued Napster.

This momentous lawsuit, *A&M Records vs. Napster*, ended in a clear legal victory for the record companies. The outcome came swiftly by the standards of legal battles, and in July 2001, Napster was unplugged. But it was a pyrrhic victory. The years 2000–09 were a "decade horribilis" for the record companies, who saw two-thirds of their revenues evaporate. The battle they had fought—and won—wasn't the right one.

Pitfall 1: Flawed Problem Definition

At the heart of this disaster was the way the music industry viewed file-sharing. To music executives, file-sharing was piracy, pure and simple. That it took place online didn't make it different from selling bootleg CDs in the night markets of Bangkok in the 1980s or trading homemade cassette tapes in the

1970s. Downloading MP3 files was theft on a grander scale than anything the industry had known before, and it called for harsher measures and greater resources. But it was the same old problem.

This assumption was implicit and industry executives didn't seriously question it. They framed the problem that MP3 and Internet technologies posed essentially as: "How do we stop (or drastically reduce) the illegal sharing of music files to protect the business of selling CDs?"

A very different and more productive question could have been: "How can we make money in a world where technology is changing the distribution of music?" One company—Apple—asked this question. When Apple launched the iPod in January 2001, followed by the iTunes store in 2003, it created a new business model for digital music distribution. The iTunes music store sold tracks, not albums, created a seamless and portable experience for consumers, and introduced digital rights management (DRM) to limit piracy. This didn't make piracy disappear, just as travelers' checks didn't eliminate bank robberies. But it created a large and profitable business. Sales of music downloads took off, peaking at $4 billion in 2012 (when they started to erode under the pressure of subscription-based alternatives such as Spotify and Tidal). The real business opportunity for Apple wasn't in the sale of music tracks, but of iPods: with over 50 million units sold annually from 2006 to 2010, Apple generated annual revenues of around $8 billion and laid the groundwork for the iPhone and its phenomenal success.

The music industry did briefly try to play this game, too. By 2002, the record labels made costly and short-lived attempts to launch music distribution services such as PressPlay and MusicNet. But even as they launched these services, their obsession with fighting piracy and protecting the sales of albums remained paramount: for instance, MusicNet downloads self-destructed after 30 days, and PressPlay didn't let you burn more than two tracks from the same artist to a CD. With such "stunningly brain-dead features," as *PC World* called them in its list of the "Worst Tech Products Ever Released," no wonder the services didn't take off.

The contrast between the record companies and Apple illustrates the importance of stating the right problem. The problem as the music industry defined it wasn't one it could solve. As soon as technology made it possible to compress a music track into a digital file of a few megabytes, and Internet access became widespread, it should have been clear that forcing consumers to buy entire albums for $14 was a dying business model. In the USA, CD sales fell from $18.2 billion in 2000 to $1.5 billion in 2015, a 92-percent drop. By failing to recognize the disruptive power of technology, music industry executives condemned themselves to solving the wrong problem and fighting the wrong battles.

Not that, had they defined the problem differently, the outcome would have been rosy. Under any scenario, the digital revolution would have reduced the total profit pool of the industry. But it is striking that industry incumbents sponsored none of the major business models that emerged. When you frame the question as an unsolvable problem, it's hard to see opportunities.

Flawed problem definition is the first pitfall of problem solving, and conversely, stating the problem effectively is the first step ("State") in the 4S problem-solving method we'll introduce in the next chapter. Chapter 4 expands on this to show you how to develop an effective problem statement.

Case 2: The Grameen–Danone Strengthening Yogurt

In October 2005, Franck Riboud, CEO of Danone, a multinational corporation with €13 billion revenues in dairy products, beverages, and baby food, had a lunch meeting in Paris with Professor Muhammad Yunus, father of the microfinance concept and head of Grameen Bank. Their conversation that day was memorable: Yunus mentioned it in his 2006 Nobel Prize acceptance speech and referred to it extensively in the prologue of his book *Creating a World Without Poverty*[2] to exemplify "the power of a handshake."

Yunus and Riboud discussed the problem of child malnutrition in poor communities, especially in Bangladesh, Yunus's homeland and one of the world's poorest countries. They realized that their two organizations could join forces to find innovative solutions. Danone produced high-quality and healthy food, especially for babies and children. Thanks to its leadership in nutrition-related R&D, Danone could develop an adequate and affordable product. Danone was also highly regarded for its strong commitment to corporate social responsibility. Grameen (which means "village" in Bengali) had no competence in food or nutrition, but had direct access to potential users. The Grameen Bank had extended its microfinance services to the poorest and most remote areas of the country, and Yunus's reputation as a hero of the poor was unquestionable. Grameen had diversified its activities in several other industries (e.g., in mobile telecom through Grameenphone). All Grameen branches were "social businesses"—philanthropic enterprises that generated "no loss nor dividend," but just enough to cover their operational costs. Riboud was open to try the social business approach in a country such as Bangladesh, where Danone didn't operate yet.

The Yunus–Riboud meeting led to the creation of a yogurt-producing joint venture called "Grameen Danone Foods Limited" (GDFL), the first example of a social business involving a multinational corporation.

Things moved fast after the initial October 2005 handshake. Within three days, a small team designed the business model for GDFL. Then, in March 2006, Franck Riboud traveled to Bangladesh and launched GDFL officially. Four months later, GDFL purchased a plot of land in Bogra, a city of 200,000 about 190 miles northwest of the capital Dhaka. After a triumphal plant inauguration featuring soccer superstar Zinedine Zidane, the venture produced its first yogurt in February 2007 under the Shoktidoi (strengthening yogurt) brand name.

The venture's performance, however, didn't live up to the founders' expectations.[3]

First, the choice of product proved problematic almost immediately. Shoktidoi is a dairy product, and its storage and transportation require refrigeration, which is a problem, given Bangladesh's climate and lack of infrastructure. Marketing a dry or stable grocery product that doesn't require refrigeration would have been more effective and efficient, but Danone had divested its biscuit and grocery businesses several years earlier, in a move to refocus on "healthier" dairy products. Another option was dried baby food, which Danone made, but thought selling it to poor women was too controversial and risky. European food companies still vividly remembered the mishaps of Nestlé with baby milk powder in developing countries some 30 years earlier. Nestlé had spent years recovering from accusations of deterring poor mothers from breastfeeding their babies.

Besides a lack of refrigeration, which made yogurt difficult to store and distribute, another challenge was that milk is considered almost a luxury item in Bangladesh. Both the supply and the price of milk are volatile, which made the cost of Shoktidoi too high and too unstable, making it too expensive for poor communities.

Customer perceptions were also problematic. Danone spent a lot on R&D to include the necessary nutrients in the product. Shoktidoi was to be marketed as a child nutrition solution whose benefits would appear only with regular use. However, parents bought the yogurt as an occasional and affordable treat, limiting its health impact. All things considered, yogurt was far from an optimal choice.

Marketing in rural areas was another challenge. Building on Grameen's microfinance experience (microloans are distributed by "Grameen ladies"),

GDFL created a team of independent female sales representatives—Shokti Ladies—to sell Shoktidoi door to door. The company believed this was the only way to reach poor communities in remote rural areas. Creating such a salesforce would also create jobs for poor women, further contributing to GDFL's poverty alleviation objective.

Danone executives quickly realized the Shokti Lady network was unsustainable. The number of women employed by GDFL varied dramatically, in line with variations in the supply of milk and the resulting changes in the product's price. While 273 Shokti Ladies were active in February 2008, only 17 remained in September of the same year. GDFL had to launch a new hiring campaign from scratch. Over the years, the rural salesforce remained weak and volatile, hovering around 500 Shokti Ladies from 2010 on. The underlying problem was that most Shokti Ladies didn't stay for long because they couldn't earn a decent living by selling Shoktidoi.

More fundamentally, the whole rural marketing initiative never took off. As early as 2008, GDFL marketed Shoktidoi through small general stores to increase sales volumes. In June 2009, shops accounted for 80 percent of sales of Shoktidoi. By using this distribution network, GDFL marketed to the urban middle class much more than to the rural poor. This allowed for higher prices and traditional marketing techniques, such as TV advertising campaigns and product extensions (e.g., flavored yogurts and drinks).

Thanks to this new revenue stream, GDFL developed the business slowly—but it never achieved its objectives of alleviating childhood malnutrition. In 2015, eight years after production started, and after several strategic reviews and reorganization initiatives, GDFL sold around 2000 tons of yogurt, which accounted for only two-thirds of the plant's capacity. Supermarkets in urban areas accounted for the vast majority of sales and the impact on poor communities was marginal.

Despite these outcomes, Danone and Grameen executives argue that GDFL is a success because of what they learned from this bold experiment. The mere existence of GDFL and Danone's commitment to its development triggered an intense wave of motivation in Danone employees. Creating and marketing products that contributed to the health of the greatest number of people became an integral part of Danone's strategy. The GDFL experience also paved the way for the creation of Danone Communities, a non-profit initiative sponsored by the company now considered one of the most successful social business networks worldwide.

Pitfall 2: Solution Confirmation

GDFL's difficulties didn't stem from a poorly defined problem. Both Yunus and Riboud set out to deal with a significant problem that was both well identified and well documented. According to the United Nations Children's Fund (UNICEF), nearly half of all deaths in children under five are attributable to malnutrition, which translates into the loss of about three million young lives every year.[4] This is a serious problem that is currently unsolved, but not unsolvable: data show that the number of malnourished children has declined significantly over the past 25 years.

Yunus and Riboud wisely made the problem manageable by focusing on a specific country, Bangladesh, and even on a particular region in the country where the problem was especially salient. When they considered the issue, 40 percent of children in Bangladesh suffered from stunted growth, one of the highest rates in the world. By limiting the scope of their joint venture, Yunus and Riboud narrowed down a significant global issue to a problem they could own. Danone also committed significant resources to the initiative and implemented GDFL at incredible speed—considerably faster than typical investment decisions.

On the flip side, this remarkable effectiveness drove GDFL into the *solution confirmation pitfall*. Rather than beginning with the problem—child nutrition—and analyzing it to find a relevant and cost-effective solution, Danone and Grameen started from the potential solutions they had to offer. The choice of sales channel was driven by the assumption that Grameen Bank's distribution system could be replicated for the venture. Despite the difficulties they experienced in using this approach, which challenged the validity of this belief, GDFL never gave up and tried to relaunch the same salesforce concept again and again. Similarly, on the product end, the assumption was that the solution was somewhere in Danone's existing product portfolio. No one seriously challenged this assumption. As baby food was deemed too risky, the only plausible option seemed to be yogurt. However, other options existed. A good example is ready-to-use therapeutic food (RUTF), which is now improving the lives of hundreds of thousands of African children under the aegis of both the World Health Organization (WHO) and the UNICEF.[5] The product—peanut butter mixed with dried skim milk, vitamins, and minerals—provides sufficient nutrient intake for complete nutrition recovery. It can be stored at home for three to four months without refrigeration, even at tropical temperatures.

Candidate solutions are powerful components of any problem-solving process. There is a difference between using them as hypotheses to be tested and simply assuming they're correct. In a rigorous problem-solving process, Yunus and Riboud's product and distribution solutions would have been viewed as working hypotheses to be validated using factual evidence. In this case, as in many others, a laudable action orientation and the sponsorship of senior executives conspired to turn these hypotheses into unchallenged beliefs. In the next chapter, we'll introduce the role of hypotheses and candidate solutions in the second step of the 4S problem-solving approach: "Structuring" problems. We'll discuss the pros and cons of hypothesis-driven problem structuring in Chap. 5 and consider an alternative approach using issue trees instead of hypotheses.

Case 3: The Call Center Story

As human resource (HR) director of CallCo, a large operator of call centers, Lisa[6] faced a tough problem: how could she find good people?

For CallCo, as for most talent-driven companies, recruiting was an arduous process. Ads had to be placed, resumes sorted, tests organized, and interviews held. At the end of this process, fewer than 10 percent of the applicants received an offer, and even fewer joined. To keep up with its planned growth, CallCo was continually raising its targets and increasing the size and scope of its recruiting.

Lisa saw several problems. Her first concern was with the quality of the hiring decisions. While experienced call-center supervisors conducted multiple interviews, they would often disagree on a candidate, and there was no surefire way to tell whose judgment was better. As a sophisticated HR professional, Lisa knew that decades of academic research showed that interviews are poor predictors of on-the-job success. She knew there must be a better way.

Second, Lisa saw signs that the company's recruiting might be biased: she couldn't miss the fact that the proportion of minorities CallCo recruited was much lower than in its pool of applicants. This raised the disturbing possibility that CallCo wasn't only missing good talent, but exposing itself to reputational and legal challenges if it was discriminating against minority candidates.

Lisa's third concern was equally important—and even more urgent: the cost of recruiting and training people was out of control. The recruiting process itself was expensive, mostly because of the time supervisors had to dedi-

cate to interviews. Then, once they joined, operators had to undergo a period of training and on-the-job coaching before they could be productive. The problem was that many of the new hires didn't stay long enough for CallCo to recoup the cost of hiring and training them. With a staff turnover of over 30 percent (and even more among new hires), CallCo wasted almost half of its investment on people who didn't stay.

After some research, Lisa identified that BigHRData, a provider of HR analytics solutions, offered a promising solution to her problem. BigHRData's model relied on an online personality questionnaire submitted to applicants. The same personality profile would be administered to CallCo's employees, both new and more seasoned. Using machine-learning algorithms, BigHRData could then discern the personality traits associated with a longer tenure in the company—and select applicants with those characteristics. As more applicants and new hires populated the database, the algorithms would become smarter at predicting who would stay and who would go, helping CallCo get better at selecting the right people.

This solution had the potential to address all three of the problems Lisa had identified. By using BigHRData's models as a first filter before the interview process began, CallCo's supervisors would meet with higher rated interviewees, reducing the number of interviews per offer. Using data, as opposed to the manual screening of resumes, ensured an unbiased selection, which provided a solid line of defense against potential accusations of discrimination. Most important, BigHRData had impressive references from companies who had implemented its solution and who had achieved an increase in the one-year retention rate of new hires.

Pitfall 3: Wrong Framework

Lisa wondered whether she should join the long list of BigHRData's clients. But something troubled her. After some thinking, she put her finger on it—BigHRData was forcing her to think of the problem in a specific way, to use a specific lens: it offered a *framework* to address the HR issue, and this framework used unstated, disputable assumptions.

The first assumption is that an online personality questionnaire measures something meaningful—personality. Not all personality tests are reliable: with some tests, if the same person takes them twice, the result may be very different. Another issue is whether applicants can easily game the desired personality traits and the questionnaires that measure them.

Even if personality can be reliably measured through a quick online test, BigHRData's approach implies a second assumption: that personality is an important driver of the high turnover at CallCo. Employees may be leaving CallCo for many reasons: because the pay is too low, or their supervisor is a poor manager, or they found a better job somewhere else … Shouldn't Lisa explore these possibilities before she buys into the idea that employee personality predicts tenure at CallCo?

Lisa's focus—her problem statement—centers on the recruiting process, not on the reduction of turnover. But if a solution is predicated on a link between recruiting and turnover, the assumptions about that link should be explicit. It's possible there is a correlation between certain personality traits and tenure at CallCo. The data BigHRData is processing is probably not meaningless. But by focusing *exclusively* on that link, BigHRData's solution is adopting a framework—a way of reasoning—that links personality to outcomes such as tenure at CallCo. To choose this framework is to exclude other causal factors from the analysis—factors that may be much more important.

To discover these factors, Lisa conducted exit interviews with employees leaving CallCo. She found that the leavers unanimously found their jobs at CallCo deeply unsatisfactory, due to low pay, poor working conditions, and brutal management. According to those leaving, employees who remained at CallCo shared this dim view—but just couldn't secure a better job elsewhere.

Although she was reluctant to draw conclusions from a few interviews, Lisa thought about what BigHRData's personality model would recommend in this context. If it worked as advertised, it would identify the personality traits of those CallCo employees that no other employer wanted to hire, and look for these same traits in different applicants! This could result in lower turnover, which might account for the success of the model in other companies. But what would it do to job performance—a factor that had been, so far, absent from the discussion? How would it affect CallCo's ability to develop some of its operators, over time, into supervisors and managers? Was this the solution Lisa was looking for, or would it do more harm than good?

Using the wrong framework—the mistake Lisa narrowly avoided—is the third pitfall of problem solving. In this example, as in most other business situations, *different frameworks* can be applied to the same problem. The assumption implicit in BigHRData's framework is that "job tenure is a function of personality." The alternative Lisa formulated after her exit interviews assumes instead that "job tenure is driven by multiple factors, including job satisfaction." While these aren't mutually exclusive, they can lead to very different conclusions.

Frameworks are like theories—they're a way of seeing and understanding our world. They carry with them implicit assumptions about what causes what. They tell us what to pay attention to in a particular situation—what variables are important—and they provide us with a story to explain and understand it. But frameworks, like theories, have an insidious nature: by suggesting what we should attend to, they also tell us what to ignore. Frameworks frame reality. We see and pay attention to what's in the frame(work), but ignore what's outside of it. As the literary theorist and philosopher Kenneth Burke put it, "A way of seeing is also a way of not seeing."[7] Our choice of frameworks can blind us to important aspects of a problem, leading us to develop ineffective and costly solutions.

This cognitive bias goes by at least two names: "the law of the instrument," coined by Abraham Kaplan[8] (another philosopher), and "Maslow's hammer," after the eminent psychologist Abraham Maslow (of "the hierarchy of needs" fame). Maslow captured the essence of the bias when he stated, "I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail."[9]

The key point the CallCo story illustrates is that we must recognize the assumptions implicit in the conceptual frameworks we use to understand and solve problems. If we don't, the pitfall we face is allowing our problem-solving efforts to be led astray by the wrong frameworks. Because frameworks are a crucial tool in structuring business problems, we'll devote a second chapter—Chap. 6—to the "Structure" step of the 4S method.

Case 4: New Strategy at J.C. Penney

On June 14, 2011, the American department store chain J.C. Penney announced that Ron Johnson, head of Apple's wildly successful retail stores, would become Penney's new CEO.[10] The stock market reacted to the news with glee by bidding up Penney's share price 17.5 percent, adding over $1 billion to its market capitalization. Johnson had been brought in to turn around the ailing retailer, which saw its sales steadily erode from their peak in 2006 and its razor-thin return on sales bounce between 1 percent and 3 percent compared to the 4–5 percent returns generated by its rivals. As a result, Penney's stock price had fallen to $30 per share just before the announcement from a high of $82 in March 2007.

Johnson began his tenure as CEO on November 1, 2011, and quickly pursued dramatic changes. His solution to Penney's declining fortunes consisted of two pillars, which would be reflected in a rebranding initiative. First, Johnson

would eliminate Penney's obsession with sales promotions and price discounts—there were nearly 600 sales in 2011 alone—and replace it with a simple, everyday low-pricing approach. Messy clearance racks and confusing price tags would be eliminated. Second, Johnson would transform Penney's from a crowded and cluttered department store selling many of its own labels organized by product category, such as "men's suits," to a collection of 100 boutiques spaciously organized by brand, such as Levi's and Martha Stewart, with a kind of town square in the middle. As part of this makeover, store employees were encouraged to dress in their own style and many were outfitted with hand-held checkout devices. The company communicated these dramatic changes as part of a major rebranding effort. It unveiled an updated corporate logo in which "J.C. Penney" became "jcp," launched an aggressive ad campaign emphasizing Penney's new "fair and square pricing," and embarked on a direct marketing campaign using style guides that highlighted new trends and ensembles of different brands.

These changes represented a dramatic departure from what Penney's customers expected from the century-old retailer. Johnson publicly unveiled them at a jcp launch gala held in New York City in January 2012. To implement this new strategic vision, he would invest hundreds of millions of dollars. The return on this investment became clear in February 2013 when Penney's announced its 2012 results. They were awful. The firm's revenues had plunged by $4.3 billion from the previous year, and same-store sales had fallen 25 percent. Penney's recorded a $1 billion loss, and its stock price fell to $18, less than half its value from the year before. Cash on hand dropped from $1.5 billion to $930 million, leading Standard & Poor's to cut the company's debt rating to CCC+, deep in junk bond territory. By April 2013 Johnson was out as CEO, only 18 months after he started. He was replaced by the CEO he had replaced—Mike Ullman—who quickly rolled back Johnson's changes.

Pitfall 4: Narrow Framing

What went wrong? Probably many things, but the problem definition pitfall doesn't appear to be among them. Johnson had over two decades of experience in managing national retailers, likely giving him an intuitive understanding of the key drivers of performance. The board of directors had examined J.C. Penney's performance problem before Johnson's arrival and concluded that Johnson's profile fit the bill. This suggests they agreed the company needed a complete overhaul of the consumer proposition and a new CEO to

implement it. It seems plausible that Penney's truly needed a strategic turnaround, starting with a redesign of the in-store experience.

There are clear signs that Johnson fell into the solution confirmation trap. Both his merchandising strategy—branded products sold at undiscounted prices in cool-looking stores—and the way he promoted it, with Steve Jobs-style keynote speeches, seem lifted from the Apple playbook. And once his mind was set on making this Apple-style strategy work for J.C. Penney, Johnson paid no attention to signs it was failing. Those who questioned the strategy or advised him to slow down its execution were dismissed, because, Johnson assured, "skepticism takes the oxygen out of innovation." Skeptics had, however, ample reason to be worried: the company missed its sales targets in the first quarter of 2012, saw a 19.7 percent stock price drop in a single day in May, was criticized in June by analysts who claimed consumers didn't understand the pricing strategy, and saw archrival Macy's gleefully announce market share gains and record profits. It took a real believer to ignore the alarm bells ringing and stay the course. Clearly, Johnson was one.

If Johnson's bold strategy had succeeded, we would, in hindsight, celebrate his courage and steadfastness in imposing it. Sure, the CEO was passionate about the strategy and relentless in his desire to execute it aggressively: isn't that the leadership any ambitious strategic transformation requires? The real issue isn't *how* Johnson pursued the strategy, it's that the strategy just didn't work.

This is puzzling. Johnson was an experienced, highly successful retail executive, described by some press reports as "an industry icon" who "turns anything he touches to gold." When he moved to J.C. Penney, he left a lucrative job leading the retail arm of the world's most admired company, betting his career, his reputation, and some of his fortune (Johnson invested $50 million in J.C. Penney warrants) in the process. How could such an extraordinary player place such a huge bet on a strategy that was so wrong?

Press reports shed some light on this mystery. Johnson may have correctly identified the problem as one of consumer appeal, but he spent little time and effort investigating its causes. Outgoing CEO Ullman noted in an update to Penney's board of directors that Johnson hadn't asked a single question about how the business was operating when they met. Johnson decided from the start that the crux of Penney's issue was its consumer proposition. But why, exactly, were consumers dissatisfied with J.C. Penney? What did they like and dislike about the store? It seems Johnson didn't know and didn't try to find out. In 2012, Johnson told *Businessweek* magazine: "I thought people were just tired of coupons and all this stuff. The reality is all of the couponing we did, there were a certain part of the customers that loved that … So our core

customer, I think, was much more dependent and enjoyed coupons more than I understood." That the CEO of J.C. Penney didn't understand that its core customers loved coupons and discounts demonstrates his understanding of the problem was, at best, superficial.

Perhaps Johnson, under time pressure, decided he had no time to learn everything about the preferences of his consumers. Even if that were true, Johnson could have deployed his new strategy in a gradual, learn-as-you-go manner, for instance, by running small-scale pilot tests in a few stores to gauge customer acceptance of his everyday low-pricing and boutique-centric format. Johnson, however, acknowledged no uncertainty about his solution. He just assumed he was right and moved quickly to implement the new approach nationwide, spending nearly $120 million on the Levi's boutiques alone according to one press report. Asked if he would test these ideas before rolling them out, Johnson reportedly scoffed, "We didn't test at Apple."

Johnson's misfortune illustrates the *narrow framing pitfall*. When we tackle a complex and multifaceted problem that we superficially understand, it can seem intractably broad. In these cases, it's tempting to frame the problem narrowly to make it look like one we've worked on before. We can then reason by (superficial) analogy to quickly identify a solution instead of investing in thoroughly understanding the problem. Although this approach to generating a solution is efficient, it can have disastrous consequences, as it did in the case of Ron Johnson and J.C. Penney.

Johnson ignored his superficial understanding of Penney's customers and quickly jumped to an Apple-inspired solution—undiscounted, branded merchandise sold in a hip setting by quirky salespeople supported by a fresh, minimalist brand. The assumption, which proved to be wrong, was that Penney's customers are similar to Apple Store customers. This assumption also explains why Johnson didn't see a need to pilot-test his solution. If Apple Store and Penney's customers are similar, what worked at Apple will work at J.C. Penney. Johnson's faith in the validity of his assumption seems to have blinded him to the downside risk of his solution.

When we face complex, human-centered problems that we understand poorly, such as the one Ron Johnson faced at Penney's, we should avoid framing them by analogy with others situations. Instead, we should invest in understanding problems from the perspective of the people who experience them. Doing so can help us identify opportunities for solutions that we would otherwise miss. We should also resist the temptation to zero in on one solution, and instead generate multiple potential solutions to the problem at hand. We can then avoid "betting the farm" on one idea that may not work by prototyping and testing potential solutions to identify the best one.

The design thinking path to problem solving, which we'll introduce in the next chapter, addresses these objectives. In Chaps. 8 and 9, we'll explore the design thinking process in depth and show how it relates to the "State," "Structure," and "Solve" stages of the 4S method.

Case 5: A Fat Chance for Sugar

Research shows the main cause of obesity, diabetes, and coronary heart disease is the overconsumption of sugar—not fat. British scientist John Yudkin made this discovery in the late 1950s. He made the point public in his book *Pure, White and Deadly,*[11] which received significant attention in the 1970s, although policy-makers largely ignored his findings. When Yudkin died in 1995, his research had long been forgotten.[12]

In 2009, Robert Lustig, a pediatric endocrinologist at the University of California San Francisco, surfaced Yudkin's work in a video titled "Sugar: The Bitter Truth."[13] In a 90-minute talk that garnered over 7.6 million views on YouTube, Lustig summarizes his research and offers a compelling demonstration that fructose, a form of sugar ubiquitous in packaged foods and soft drinks, is the "poison" that is causing the worldwide obesity epidemic. While Yudkin's prophetic book presented the same insights, Lustig admitted he'd never heard of Yudkin before completing his research.

Meanwhile, for 40 years, nutritionists and public health authorities issued dietary guidelines focused on reducing saturated fat consumption and downplayed the role of sugar. The evidence that obesity, diabetes, and heart disease were on the rise despite significant cuts in the consumption of meat, butter, eggs, and cheese in most developed countries didn't disrupt the consensus view that fat was bad. While everyone was arguing openly against fat, which is relatively innocuous, the packaged food and beverage industry was surreptitiously saturating our diet with harmful sugar. Today, nutritionists struggle to reverse a health disaster they didn't predict and actually might have precipitated.

So, how did they get it so wrong for so long? One of the main reasons is that the correct story was communicated awkwardly, while the erroneous story was communicated persuasively.

First, the wrong story was simpler to understand, which made it easier to tell and sell. Most of us intuitively trust the claim that you get fatter if you eat more fat. The semi-scientific version of the same story is that a calorie is a calorie, no matter where it comes from, so you get fat because you overeat, no matter what you eat, and don't exercise enough.[14] This belief is wrong since some food items, such as alcohol and sugar, are addictive and don't satiate

hunger, making them much more harmful than others. Behind the scenes, food and beverage companies, who widely introduced high-fructose corn syrup in their products (soft drinks in particular), fueled this misconception by funding studies that confounded the impact of fructose with a larger set of dietary factors that correlate with obesity and sickness.

Second, empirical evidence and shrewd communication supported the fat hypothesis, which helped it gain traction in both the scientific community and the political sphere. The story began in the mid-1950s, when US President Eisenhower suffered a heart attack. Unlike most politicians, Eisenhower insisted on making his illness public. His chief physician gave a press conference, instructing Americans on how to avoid heart disease: stop smoking and cut down on fat and cholesterol. This advice was rooted in the research of University of Minnesota professor Ancel Keys, who posited that an excess of saturated fats raises cholesterol, which clogs coronary arteries, leading to heart disease.[15]

Keys was brilliant, charismatic, and combative. The US president and his physician publicly supported his views. This combination led to persuasive communication at a crucial moment. The epidemic of heart disease was gaining momentum, especially among middle-aged men. Doctors and patients were relieved to hear that a simple and practical solution would solve the problem. The scientific community called for Keys to validate his hypothesis. To do so, he gathered data on the health and diet of 12,770 middle-aged men in Italy, Greece, Yugoslavia, Finland, the Netherlands, Japan, and the USA from 1958 to 1964. Although the resulting "Seven Countries Study" seemed to confirm his hypothesis, it may have been one of the first misuses of "big data" in scientific history. The study suffered from serious limitations. First, the choice of countries was flawed. While including five countries from Continental Europe, Keys left out the two largest: France and West Germany, which both exhibited a relatively low prevalence of coronary heart disease despite a diet rich in saturated fats. Second, while Keys found a correlation between dietary fat and heart disease, he couldn't establish causation or rule out other possible causes.

Keys was effective at convincing other scientists and policy-makers. He was also clever at gaining institutional support and power. He placed his allies in the most influential societies and associations in the American healthcare community, which made him able to direct research funding in the direction he wanted. His hypothesis became a dogma. The US Congress created a committee that issued dietary guidelines based on Keys's results. These guidelines spawned offspring in most Western countries. For the first time in the history of nutrition, governments told their citizens not to have a balanced diet

(i.e., eat reasonable quantities of everything), but to ban (or at least reduce) the intake of a particular nutrient.

A third explanation for the widespread belief that dietary fat, not sugar, caused obesity and heart disease was Yudkin's relative lack of persuasiveness in the way he communicated the rival theory that incriminated sugar. This wasn't due to lack of status or credibility. Yudkin was internationally recognized as the UK's leading nutritionist. The US congressional committee in charge of creating dietary guidelines even auditioned him! But he failed to convince them and most other institutions.

Yudkin's core argument was relatively straightforward. He knew that people had been carnivorous since the beginning of humankind, and that even breast milk was rich in saturated fat, which never generated wide-scale health problems. In contrast, refined sugar had been part of people's diets for only a few hundred years, which made it a better suspect to explain modern health disorders.

However, the underpinning theory that linked sugar to sickness was more difficult to convey. It rested on insights from biochemistry and was counterintuitive: how can sugar generate more harmful fat in the body than fat itself? Understanding this paradox required advanced knowledge in biology, chemistry, and anatomy.[16] The empirical evidence also came from cumbersome laboratory experiments rather than from large sample studies.

Ancel Keys compounded the communication problem by fighting his rival ruthlessly. He called Yudkin's theory "a mountain of nonsense," and accused him of issuing "propaganda" for the meat and dairy industries. He ridiculed both the man and his findings. Yudkin never responded in kind. He was soft-spoken and mild-mannered, unskilled in the art of controversy and political combat. His writing was fastidious, precise, and undemonstrative. He was an excellent scientific investigator, but much less adept at telling a compelling story.

The convincing story came four decades later, thanks to Lustig's video, a masterpiece of scientific communication that emphasizes simple and striking messages. Lustig starts by making his counterintuitive conclusion very clear. He then debunks the rival theory rationally and effectively. He uses compelling examples and metaphors to bolster his message. For example, he shows that sugar is almost as harmful as alcohol (a sugar derivative, chemically speaking), and asks the audience whether they would give a Budweiser instead of a Coke to their kids. Lustig dives into the details of his scientific demonstration through somewhat complicated charts, but never loses sight of the big picture and his core message. Finally, he discusses the economic and political implications of his view and ends with a call to arms against the evil of sugar. A great video!

Pitfall 5: Miscommunication

This example illustrates the crucial importance of communication for motivating action. Being right isn't enough. Solving the problem is worthless if you can't convince decision-makers to adopt the solution. Yudkin's example shows that poor communication of a good recommendation leads to frustration, wasted time, and inaction.

This happens far too often in organizations. How many consulting reports have been skeptically received, then archived and forgotten, producing no tangible impact? Was the recommendation irrelevant or was it poorly communicated? Who knows—and does it matter? An unconvincing recommendation is as ineffective as an irrelevant solution.

This isn't a novel idea; advice abounds on how to communicate ideas effectively. While Yudkin's failure illustrates the perils of poorly communicating the correct solution, Keys's example shows the opposite problem: how brilliant communication of the wrong answer is even more harmful than poor communication because it leads to misguided and even detrimental actions. This is why focusing on communication techniques in isolation from problem solving is a risky endeavor. While books and methods for improving business communication are plentiful and useful, the value of our approach rests in the connection between rigorous problem solving and convincing communication. Consequently, the fourth step in the 4S method is "Sell," which we'll cover in Chaps. 10 and 11.

* * *

Examples of experienced business people who make surprising and costly mistakes in problem solving abound. Most errors arise from one or several of the five pitfalls we've just discussed. First, a flawed problem definition can lead to irrelevant solutions. Second, the confirmation bias can lead problem solvers to believe a solution is valid without testing it and ignore evidence that it won't work. Third, choosing the wrong framework to understand a problem can blind us to important aspects of the issue, leading us to develop ineffective and costly solutions. Fourth, narrow problem framing can stimulate superficial analogies, resulting in inappropriate solutions. Finally, even if we overcome the first four pitfalls, valuable solutions don't sell themselves. A poorly communicated solution is as ineffective as an irrelevant solution. In the next chapter, we introduce the 4S method (State, Structure, Solve, and Sell) to help you overcome these pitfalls.

Chapter 2 in One Page

- Problem-solving pitfall 1: flawed problem definition:
  - *The music industry viewed file-sharing as piracy rather than a strategic disruption of music distribution. Defining the problem as "how to stop piracy" made it impossible to solve.*
- Pitfall 2: solution confirmation:
  - *Grameen–Danone joint venture: The two CEOs had a candidate solution that went unchallenged despite its obvious drawbacks.*
- Pitfall 3: wrong framework:
  - *To improve hiring decisions, the call center company is tempted to use machine-learning algorithms to select job applicants for the personality traits of current, longer-tenured employees. But does the underpinning framework, which links personality with tenure, favor better hiring decisions?*
- Pitfall 4: narrow problem framing:
  - *Ron Johnson failed in his bold strategy to revamp J.C. Penney department stores, framed by analogy with the Apple store.*
- Pitfall 5: miscommunication:
  - *As demonstrated in the "fat vs. sugar" example, poor communication of a good solution leads to frustration, waste of time, and inaction.*
  - *Brilliant communication of an erroneous idea can be even more harmful.*

Notes

1. Witt, S. (2015). *How Music Got Free: The End of an Industry, the Turn of the Century, and the Patient Zero of Piracy.* New York: Viking.
2. Yunus, M. (2007). *Creating a World Without Poverty: Social Business and the Future of Capitalism.* New York: Public Affairs.
3. Garrette, B., & Karnani, A. (2010). Challenges in Marketing Socially Useful Goods to the Poor. *California Management Review*, *52*(4), 29–47.
4. UNICEF. (2017). *Undernutrition Contributes to Nearly Half of All Deaths in Children under 5 and Is Widespread in Asia and Africa*. Retrieved from http://data.unicef.org/topic/nutrition/malnutrition/#.
5. World Health Organization. (2016). *Maternal, Newborn, Child and Adolescent Health*. Retrieved from http://www.who.int/maternal_child_adolescent/topics/child/malnutrition/en/.
6. "Lisa" is a composite of several situations. Identifying details have been changed.
7. Burke, K. (1935). *Permanence and Change: An Anatomy of Purpose*. New York: New Republic Inc.
8. Kaplan, A. (1964). *The Conduct of Inquiry: Methodology for Behavioral Science*. San Francisco: Chandler Publishing Co.
9. Maslow, A.H. (1966). *The Psychology of Science*. New York: Harper & Row. p. 15.
10. Sources for the JC Penney story include: Reingold, J. (2014, March 20). How to Fail in Business While Really, Really Trying. *Fortune.com.* Retrieved from http://fortune.com/2014/03/20/how-to-fail-in-business-while-really-really-trying/.

    Reingold, J. (2012, March 7). Ron Johnson: Retail's New Radical. *Fortune.com.* Retrieved from http://fortune.com/2012/03/07/ron-johnson-retails-new-radical/.

    Martin, S. (2011, May 19). How the Apple Stores Model of Retail Defied the Odds. *USA Today*. Retrieved from https://usatoday30.usatoday.com/tech/news/2011-05-18-apple-retail-stores_n.htm.
11. Yudkin, J. (1972). *Pure, White, and Deadly: How Sugar Is Killing Us and What We Can Do to Stop It*. London: Penguin Books, reprint 2012.
12. Leslie, I. (2016, April 7). The Sugar Conspiracy. *The Guardian*. Retrieved from https://www.theguardian.com/society/2016/apr/07/the-sugar-conspiracy-robert-lustig-john-yudkin.
13. Lustig, R. (2009). *Sugar: The Bitter Truth.* University of California Television. Retrieved from https://www.youtube.com/watch?v=dBnniua6-oM.
14. Lustig, R. (2013, April 29). Still Believe a 'Calorie Is a Calorie'? *The Huffington Post.* Retrieved from https://www.huffingtonpost.com/robert-lustig-md/sugar-toxic_b_2759564.html.
15. Leslie, I. (2016, April 7). *op. cit.*
16. Lustig, R. (2012). *Fat Chance: The Hidden Truth about Sugar, Obesity, and Disease,* London: 4th Estate.