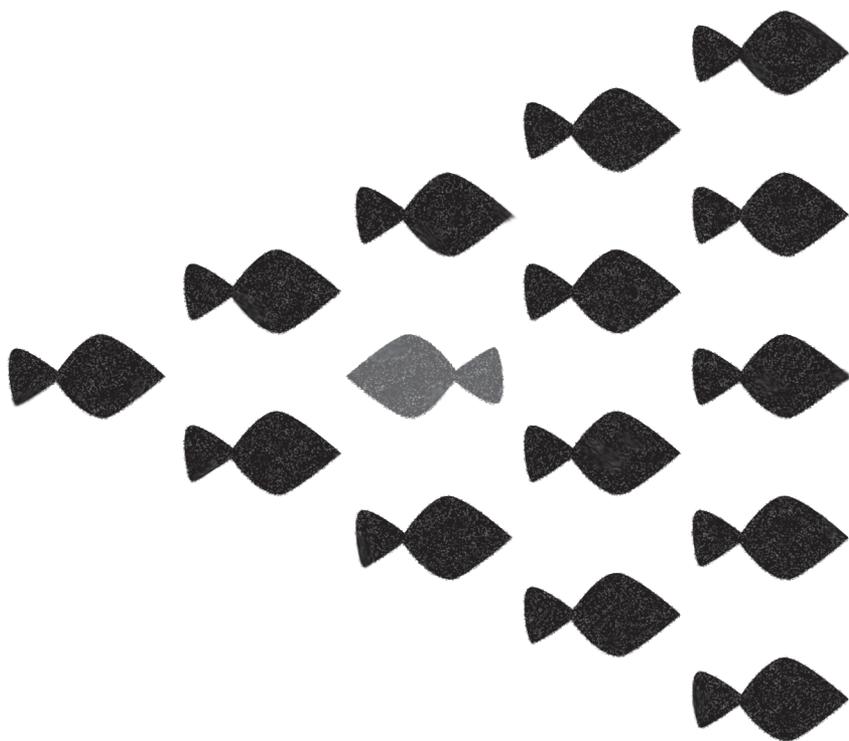


Higher Unlearning:

39 Post-Requisite Lessons for
Achieving a Successful Future



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101 Lessons in Thinking Inside-Out the Box

LESSON 1: Knowledge Can Kill— Unlearn or Die

"The most necessary part of learning
is unlearning our errors." — Zeno

Question 1: Estimate the number of people, you expect to die in the United States from the following causes over the course of the following year:

- A. Homicides _____ or Suicides _____
B. Floods _____ or Tuberculosis _____
C. Tornadoes _____ or Asthma _____

If you're like most people, you will rate the number of deaths from homicides, floods and tornadoes as being higher than suicides, tuberculosis and asthma, but this is wrong. In fact, the numbers for the latter have been consistently higher than each of the former since records have been kept.

The reason so many people get the answer wrong is because homicides, floods and tornadoes are more vivid and easier to recall. Unfortunately, what people recall often bears little or no correlation to the facts. The result is that people commonly expose themselves to greater risks for longer

periods of time; or alternatively, they worry about the wrong things—such as being whisked away by a flood or a tornado.

If you wish to bolster your odds of surviving in the future, unlearning could be critical, as the following story highlights.

In 1601, James Lancaster, an English sea captain, set sail from England to India. Overseeing a crew of 278 sailors on four separate ships, Lancaster conducted an experiment to evaluate the effectiveness of a treatment to prevent scurvy. He administered three tablespoons of lemon juice to the members of his ship and left the crews of the other three ships untreated—effectively creating a control group. Halfway through his journey, Lancaster’s experiment yielded startling evidence: none of the sailors on his ship had died of the disease, but 110 of the sailors on the other ships—or 40 percent—had succumbed to the dreaded malady. With such clear and compelling evidence, one might have expected the British Navy to begin immediately administering lemon juice to sailors. It did not.

Nearly a century and a half later in 1747, James Lind, a British Navy physician who was familiar with Lancaster’s work, carried out the first example of a scientifically controlled clinical nutrition study of the disease. He prescribed oranges and lemons to patients suffering from scurvy and found they were cured in a matter of days. Six years later in 1753, Lind published his seminal work, “A Treatise of the Scurvy.”

Armed with this well-documented information, one might again have expected the British Navy to make haste in prescribing regular doses of

citrus fruits to all of its sailors. It did not. In fact, it took an additional forty-eight years for the disease to be eradicated.

Why did it take the British Navy almost two centuries to adopt a new, albeit simple, method for treating a disease that could have spared the lives of untold numbers of its sailors? A variety of factors were at work, but prominent officials and the sailors alike had different ideas for the best way to prevent scurvy, and these erroneous ideas prevented them from being receptive to new knowledge. In short, before they could fully assimilate the new information, they had to unlearn their old beliefs.

It is easy to dismiss the scurvy case as an isolated example from history and chalk it up to poor scientific knowledge, the slow diffusion of new information, bureaucratic inertia or just plain stupidity. Unfortunately, the British Navy isn't alone in its slowness to unlearn.

Consider the case of Australian physician Barry Marshall. In 1984, Marshall traveled to Brussels, Belgium, to a prestigious conference of ulcer specialists to present his research suggesting that ulcers were caused by bacteria. His presentation was greeted with laughter because the audience of ulcer experts judged the idea to be preposterous.

A year later, after drinking a vial of bacteria and giving himself an ulcer, Marshall returned with even more compelling evidence, but was shouted down with a chorus of boos by the group. It took the American Medical Association a full decade before it accepted Marshall's research and announced that the vast majority of ulcers are caused by bacteria and not by

stomach acids, stress or spicy foods as leading ulcer experts had erroneously believed. In 2005, Marshall and his researcher partner, Dr. Robin Warren, were awarded the Nobel Prize in medicine.

This begs the obvious question: Why were hundreds of thousands of ulcer patients treated with unnecessary, costly and often ineffective treatment for more than twenty years? The answer is because many people, including highly educated medical specialists, have a difficult time unlearning old knowledge.

It would be reassuring to think that society has progressed much since 1984 and that it won't repeat similar errors in the future, but it would be wise to remain humble. To demonstrate, I'd like to share a mildly shocking insight with you: Six times as many people died in their cars as a result of the terrorist attacks on September 11, 2001, as did those in the planes that crashed into the World Trade Towers, the Pentagon and in the rural farm field in Pennsylvania—combined.

Impossible, you say? Not if you change your frame of reference and consider that since September 11, 2001, millions of Americans have decided to forego flying and instead have chosen to drive to their destinations. In this light, the numbers become more plausible because, statistically speaking, driving is far more risky than flying. In fact, it has been estimated that since 9-11 more than 1,700 Americans have died in automobile accidents than otherwise would have if only those travelers had chosen the safer method of travel—flying.

Alas, before people can accept that airplanes are more likely to get them safely to their destination, they first need to unlearn that driving is safer than flying. This isn't an easy or even natural thing to do, but just as sucking on a lemon has saved and prolonged the lives of numerous sailors roaming the high seas, so too can unlearning prolong and maybe even save your life.

Homework Assignment 1: Research the following question: Which is the greater threat to a child's safety: your neighbor's swimming pool or the unlocked gun in his closet? (The answer will also be provided later in the book.)

LESSON 2: Don't Climb the Highest Mountain

"In some sense our ability to open the future will depend not on how well we learn anymore but how well we are able to unlearn."

— Alan Kay

Question 2: What is the world's tallest mountain?

Did you say Mount Everest? You're wrong. The answer is Mauna Kea and, as measured from its base to its summit, it is 33,465 feet high—or 4,436 feet taller than Mount Everest.

Mauna Kea's distinguishing characteristic is that three-fourths of the mountain lies under water. Mount Everest remains the *highest* mountain as measured from sea level to summit, but Mauna Kea is the *tallest* as measured from the bottom of its base to its top.

Both the question and the answer serve as a useful metaphor for the concept of unlearning, which I define as follows:

unlearn: v. [the act of unlearning; verbal n, to unlearn]

1. the act of releasing old knowledge
2. to see the world not as one would like to see it, but as it really is
3. to be un-uninformed
4. to acquire wisdom either by replacing old information that has been supplanted by new knowledge, or alternatively, by relinquishing known falsehoods

Unlearning is a critical skill, especially in today's world of rapid and accelerating change. To understand why, consider this: scientific and technical knowledge is now doubling every seven years.

This may sound a tad astounding until one considers that there are now 6 billion-plus people populating the globe and 90 percent of the scientists ever to roam the planet are alive at this very moment. Moreover, these scientists and their growing legions of students are adding new knowledge in fields as varied as biotechnology, chemistry, genomics, material science, nanotechnology, neuroscience, robotics, quantum physics and numerous other fields at a prodigious rate.

Aided in their quest, the world's researchers and entrepreneurs are now armed with a bevy of sophisticated new tools capable of doing everything from probing and plumbing subatomic particles deep inside the human body to visualizing the outer expanses of the universe. Further accelerating matters, these discoveries are now being enhanced with the aid of wickedly powerful supercomputers, and then shared with fellow researchers on the other side of the globe, via social networks and wireless

and fiber optic connections, in the proverbial blink of an eye.

One often overlooked implication of this growing tsunami of scientific knowledge is that as impressive as our knowledge base is today, it will represent only half of what society will know in just seven short years and a mere 25 percent in fourteen years.



To get a glimpse of the near future, it helps to go back in time, let's say fourteen years, and consider how the advances in just two fields (semiconductors and fiber optic bandwidth) have enabled the creation of the cell phone and Internet and how those devices, in turn, have transformed society.

If you think of future knowledge as an iceberg, the portion of the iceberg that lies above the water can be thought of as representing existing knowledge. The portion that resides below the water is the equivalent of future knowledge. And, just as the hidden part of Mauna Kea causes many people to overlook the fact that it is the tallest mountain in the world, future knowledge will also cause people to overlook obvious trends that will have an impact on their businesses.

Unless, that is, they are open to unlearning.

Unlearning, unfortunately, is neither a natural skill nor is it an easy one to acquire, and it is here that the metaphor of an iceberg is particularly apt. Imagine you are the captain of a ship entering waters conducive to the creation of icebergs. To survive it is important to beware not only of the presence of the growing number of icebergs, you must also understand that the greater threat is that portion of the icebergs that are submerged and can't be seen.

And just as a modest-size iceberg sank the “unsinkable” *Titanic*, the growing number of future “icebergs” (e.g, biotechnology, nanotechnology, robotics, the semantic web, RFID, quantum physics, etc.) will similarly take down the most “unsinkable” of industries. To avoid this fate, it'll be necessary to change course quickly and often, and unlearning is an essential skill every leader and organization must possess in order to safely navigate the future. Or, as Mark Twain once said about his time as a riverboat captain on the Mississippi River, “Two things seemed pretty apparent to me. One was in order to be a pilot a man had to learn more than any man ought to learn; and the other was that he must learn it all over again every twenty-four hours.”

In between the old learning and the new learning, however, resides the often overlooked requirement of unlearning; but, just as the bulk of Mauna Kea or the majority of an iceberg can't be seen, it is necessary to be aware of its dimensions. Thus, one of the first tricks to unlearning is to simply acknowledge its existence as a vital component of the broader “mountain” of learning.

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Homework Assignment 2: In 2001, Wikipedia was created by one man beginning with 100 entries. In its tenth full year (2011), more than 684 million people access 10 million different encyclopedia articles that were drafted by 75,000 individuals in 264 different languages. Describe how knowledge providers such as encyclopedia companies and teachers have had to unlearn as a result of Wikipedia.

Extra Credit: Describe how voice and speech recognition technologies, e-Books or social networking tools will require further unlearning in the future.