授课文本

To Err is Wrong

Hits and Misses

In the summer of 1979, Boston Red Sox first baseman Carl Yastrzemski became the fifteenth player in baseball history to reach the three thousand hit plateau. This event drew a lot of media attention, and for about a week prior to the attainment of this goal, hundreds of reporters covered Yaz's every move. Finally, one reporter asked, "Hey Yaz, aren't you afraid all of this attention will go to your head?" Yastrzemski replied, "I look at it this way: in my career I've been up to bat over ten thousand times. That means I've been unsuccessful at the plate over seven thousand times. That fact alone keeps me from getting a swollen head."

Most people consider success and failure as opposites, but they are actually both products of the same process. As Yaz suggests, an activity that produces a hit may also produce a miss. It's the same with creative thinking. The same energy that generates creative ideas also produces errors.

Many people are not comfortable with errors. Our educational system, based on the "right answer" belief, cultivates our thinking in another, more conservative way. From an early age, we are taught that right answers are good and incorrect answers are bad. This value is deeply embedded in the incentive system used in most schools:

Right over 90% of the time = "A"
Right over 80% of the time = "B"
Right over 70% of the time = "C"
Right over 60% of the time = "D"
Less than 60% correct, you fail

From this we learn to be right as often as possible and to keep our mistakes to a minimum. We learn, in other words, that "to err is wrong."

With this attitude, you won't be taking many chances. If you learn that failing even a little penalizes you (e.g., being wrong only 15% of the time garners you only a "B" performance), you learn not to make mistakes. And more important, you learn not to put yourself in situations where you might fail. This leads to conservative thought patterns designed to avoid "failure."

I have a friend who graduated from college with a master's degree in journalism. For six months, she tried to find a job, but to no avail. I talked with her about her situation, and realized that her problem was that she didn't know how to fail. She went through eighteen years of schooling without ever failing an examination, a paper, a midterm, a pop-quiz, or a final. So she was reluctant to try any approaches where she might fail. She had been conditioned to believe that failure is bad in and of itself, rather than a stepping stone to new ideas. Look around. How many people do you see who are afraid to try something new because of this fear of failure? Most of us have learned not to make mistakes in public. As a result, we remove ourselves from many learning experiences except for those occurring in the most private of circumstances.

A Different Logic

From a practical standpoint, "to err is wrong" makes sense. Our survival in the everyday world requires us to perform thousands of small tasks without much thought. Think about it: you wouldn't last very long if you were to step out in front of traffic or stick your hand into a pot of boiling water. In addition, engineers whose bridges collapse, stock brokers who lose money for their clients, and copywriters whose ad campaigns decrease sales won't keep their jobs very long,

Nevertheless, too great an adherence to the belief "to err is wrong" can greatly undermine your attempts to generate new ideas. If you're more concerned with producing right answers than generating original ideas, you'll probably make uncritical use of the rules, formulae, and procedures used to obtain these right answers. By doing this, you'll bypass the imaginative phase of the creative process, and thus spend little time testing assumptions, challenging the rules, asking what if, or just plain fooling around with the problem. All of these techniques will produce some incorrect answers, but in the imaginative phase errors are a necessary by-product of creative thinking. As Yaz would put it, "If you want the hits, be prepared for the misses." That's the way the game of life goes.

Whenever an error pops us, the usual response is "Jeez, another screwup, what went wrong this time?" The creative thinker, on the other hand, will realize the potential value of errors, and perhaps say something like, "Would you look at that! Where can it lead our thinking?" And then he or she will go on to use the error as a stepping stone to a new idea. As a matter of fact, the whole history of discovery is filled with people who used erroneous assumptions and failed ideas as stepping stones to new ideas. Columbus thought he was finding a shorter route to India. Johannes Kepler stumbled on to the idea of interplanetary

gravity because of assumptions which were right for the wrong reasons. Thomas Edison knew 1,800 ways not to build a light bulb. Freud had several big failures before he developed psychoanalysis. One of Madame Curie's failures was radium.

Automotive inventor Charles Kettering, one of the 20th century's great creative minds, had this to say about the value of learning to fail:

> An inventor is simply a person who doesn't take his education too seriously. You see, from the time a person is six years old until he graduates from college he has to take three or four examinations a year. If he flunks once, he is out. But an inventor is al most always failing. He tries and fails maybe a thou sand times. If he succeeds once then he's in. These two things are diametrically opposite. We often say that the biggest job we have is to teach a newly hired employee how to fail intelligently. We have to train him to experiment over and over and to keep on trying and failing until he learns what will work.

Nature serves as a good example of how trial and error can be used to make changes. Every now and then genetic mutations occur - errors in gene reproduction. Most of the time, these mutations have a deleterious effect on the species, and they drop out of the gene pool. But occasionally, a mutation provides the species with something beneficial, and that change will be passed on to future generations. The rich variety of all species is due to this trial and error process. If there had never been any mutations from the first amoeba, where would we be now?

Is Failure Bad?

Your error rate in any activity is a function of your familiarity with that activity. If you are doing things that are routine for you, then you will probably make very few errors. But if you are doing things that have no precedence in your experience or are trying different approaches, then you will be making your share of mistakes. Innovators may not bat a thousand - far from it - but they do get new ideas.

Errors serve a useful purpose: they tell us when to change direction. When things go smoothly, we generally don't think about them. To a great extent, this is because we function according to the principle of negative feedback. Often it is only when things or people fail to do their job that they get our attention. For example, you are probably not thinking about your kneecaps right now. That's because everything is fine with them. The same goes for your elbows: they are also performing their function - no problem at all. But if you were to break a leg, you would immediately notice all the things you could no longer do, but which you used to take for granted.

Negative feedback means that the current approach is not working, and it is up to you to find a new one. We learn by trial and error, not by trial and rightness. If we did things

correctly every time, we would never have to change course, and we'd end up with more of the same.

After the supertanker Exxon Valdez broke open off of Alaska in the spring of 1989, thereby polluting the coast with millions of gallons of oil, the oil industry was forced to rethink and tougher. up many of its safety standards regarding petroleum transport. The same thing happened after the accident at the *Three Mile Island* nuclear reactor in 1979 - many safety standards were changed. The explosion of the Challenger space shuttle caused a similar thing to happen. Similarly, the sinking of the Titanic led to the creation of the International Ice Patrol, and legally mandated iceberg reporting.

I like to ask people if they've ever been fired from a job. If they have, they typically say something along the lines of "Yeah, it was really traumatic, but it turned out to be the best thing that ever happened to me. It forced me to come to grips with who I was as a person. I had to look at my strengths and weaknesses with no delusions at all. It forced me to get out of my box and scramble. Six months later, I was in a much better situation."

We learn by our failures. A person's errors are the whacks that lead him or her to think something different.

Is Success Good?

This leads to another question: Is success a good thing? Sometimes the answer isn't so obvious. Just as it's possible that failure can lead to something good, sometimes success can lead to something bad. There are two ways in which this can happen.

First, success tends to lock you in a pattern, and you get the attitude, "If it's not broken, why fix it?" This attitude prevents you from experimenting and trying other approaches that in the long run may do you a lot more good.

Second, success - perversely enough - can create situations that undermine your original intentions and end up creating bigger problems than the ones you started with.

Here are some examples:

- In preparing for the Olympics, the coach of a leading crew team invited a meditation instructor to teach awareness techniques to his crew. He hoped that such training would enhance their rowing effectiveness and improve their sense of unity. As the crew learned more about meditation, they became more synchronized, their strokes got smoother, and there was less resistance. The irony is that their performance decreased and they went slower. It turned out that the crew was more interested in being in harmony than in winning. So the meditation teacher was dismissed.
- During the Soviet-Afghanistan war, the Soviets believed that their savage attacks on the civilian population would intimidate the Afghans into sub. mission.

Ironically, their attacks had just the opposite result. Because Afghan warriors historically stayed close to home to guard their women and children, the Soviets' driving Afghan dependents into refugee camps liberated the Mujahideen from family responsibilities and turned them into formidable opponents.

- France's mobilization efforts in the first weeks of World War II were so successful that tens of thousands of key workers in vital war industries enlisted. As a result, these industries were practically brought to a halt, thereby placing the country at even greater risk. Several months later, the new recruits were returned to their jobs.
- In the mid-1960s, the Japanese resort town of Atami lobbied hard to get a high-speed "bullet train" link to Tokyo, then three hours away. After the railway was completed, tourism declined — in part because the romance of going away for the weekend was lost in a place that could be reached in only fifty minutes.

Is success good? Is failure bad? Well, like Yaz, I'd rather have a higher batting average than a lower one. Nonetheless, as I look back over my life, I find that I was successful at some endeavors where I would have been better off had I failed. That's because the success prevented me from experimenting and trying different approaches. Conversely, there are places where I'm glad I failed because it forced me to look for a second right answer that, in hindsight, was much preferable to the first.

Summary

There are places where errors are inappropriate, but the imaginative phase of the creative process isn't one of them.

Errors are a sign that you are diverging from the well-traveled path. A large part of creative thinking is not being afraid to fail. As director Woody Allen put it, "If you're not failing every now and again, it's a sign you're not trying anything very innovative."

Remember these two benefits of failure. First, if you do fail, you learn what doesn't work. Second, the failure gives you an opportunity to try a new approach.

TIP: If you make an error, use it as a stepping stone to an idea you might not otherwise have discovered.

TIP: Differentiate between errors of "commission" and those of "omission." The latter can be more costly than the former. If you're not making many errors, you might ask yourself, "How many opportunities am I missing by not being more aggressive."

TIP: Before embarking on an idea or project, ask yourself:

"What bad things can happen if we're successful?"