

2023-07-25 21:36:36

...

Mindshift day2

Expressions:

- turning point
- excruciating/agonizing 想到了Harry Potter里面的钻心咒crucio
- meet one's Waterloo 
- Waterloo/downfall/undoing/bane 
- get your money's worth/get a bigger/better bang for your buck 
- a cascade of/firehose/waterfall/torrent
- Suddenly something click.
- click/aha moment/a lightbulb moment
- click/hit it off一拍即合
- persist and fight one's way into...
- dive into/embark on/carve out a new career
- peter out 药用久了，失去了药效，免疫了
- grudgingly/reluctantly ≠ ungrudgingly
- do a number on/take a toll on 伤害 比如年轻时要风度不要温度，老了很可能就要被老寒腿所困扰
- be through with: I'm through with this job.
- open a new world

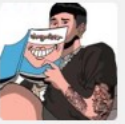
Content:

Life is full of paradoxes. For example, be authentically yourself, but change.

My takeaways:

- be through with a job后，除了心态上的转变（embrace the uncertainties）之外，可以选择exercise作为入手点，通过运动改善状态，改变大脑 
- 主动尝试，主动学习，learning how to learn，通过学习让大脑产生更多的连结，形成lattice work，改变大脑构造

Your "my takeaways" has effectively addressed the title of today's read "Learning Isn't Just Studying" which has not been touched upon in class. Kudos to you! Content aside, I'd like to share one of my tricks in regard to making short notes: try incorporating more emojis when you are Flomoing, to make it visually more appealing and mentally more retrievable.



May 🌻 :



Here's my ^{st/x} steal-and-emoji-fied version: The trick is, while you are looking for the most fitting emoji, you build more connections between the word and your brain. More often than not, you might have to settle for a mediocre close-match emoji or get your creative juices flowing to invent your own combination. By doing so, you will create additional "nodes" to facilitate effortful retrieval.

close but
no cigar



Mindshift
 +  +  = 

- Expressions -

- △ xx wasn't given short shift.
- △ flounder x 2
- △ xx is outside my playbook 
- △ eclectic    
- △   nemesis archenemy
- △   boom bane blessing curse
- △   click cut & dried

- Content -



⇒ Takeaways

- ① core skillsets 
- ② beginner mindset 
- ③

S	W
O	T

1



Learning ≠ Studying

?

- biological underpinnings - Exercise
- know what makes the brain tick
- Mindset



-  →  - peter out
-  - excruciating agonising
-  - imbraglio
-  - Waterloo - downfall - undoing
-  - ungauzingly
-  - do a number on
-  - get your money's worth - get the best bang for your buck

2

What are other words for grudgingly?

involuntarily
warily
unwillingly
reluctantly
hesitantly
 begrudgingly
unenthusiastically

ChatGPT



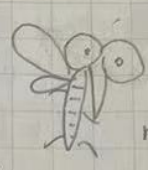
~~imbrogl~~io

We tried to untangle the imbroglia of conflicting opinion during the meeting.

excruciating
~~agonizing~~



- breakup
- throbbing migraine

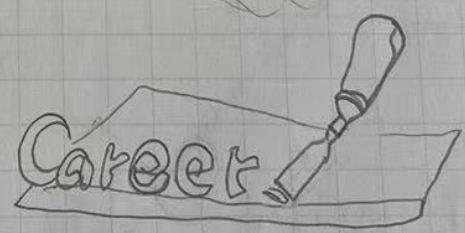


are the bane of my existence during summer months.

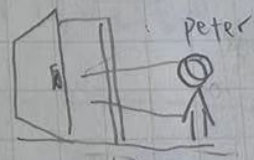


get a bigger bang for your buck (\$)

~~oooooooo~~
a cascade of



Carve out a new career

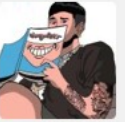


Peter Peter Peter peter peter

- peter out -

2023.07.26
Vocab Review

55555 I take a particular liking to "throbbing migraine", which is surely a case in point, and "peter out", arguably a textbook visual-vocab presentation. I'll incorporate your share into today's read to get the biggest bang out of your ingeniousness 🌹



yuki:



"migraine" "agonizing" "excruciating"



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The Ohio State University

<https://wexnermedical.osu.edu> › blog › migraine-head...

When to call a doctor about those migraine headaches

May 10, 2561 BE — There is no feeling quite like that of a pounding migraine headache. The agonizing pain can last hours or even days!



headache.ae

<https://headache.ae> › migraine-companion

Migraine Companion – Webinars/Events

... with **migraine** and other debilitating conditions that cause **excruciating** ... A **migraine** episode is characterized by moderate to severe, even **agonizing**, ...



Withcove.com

<https://www.withcove.com> › learn › talk-to-boss-about...

How to Talk to Your Boss About Migraine (Template ...

... who took our survey, the average pain rating during a migraine attack is 7.4 (with 10 being absolutely **excruciating** pain). So, pretty darn **agonizing**.



Medium

<https://medium.com> › ...

Understanding Cluster Headaches: The Agonizing ...

5 days ago — Group migraines are an uncommon and unbearably **excruciating** ... They are named an essential **migraine** issue, meaning they are not brought ...



Forme Medical Center

<https://formemedicalcenter.com> › Services

Migraines | Forme Medical Center | NY

Migraines affect 12% of Americans, including children, causing **excruciating** headache pain and nausea. ... The result is an **agonizing migraine**.

Chapter 3

Changing Cultures

The Data Revolution

IMAGINE IT'S THE year 1704, and you're a bright, ambitious thirteen-year-old Comanche brave on the plains of what will later be called Texas. You're coming of age in a world where everyone—*everyone*—gets around on their own two feet. No planes, no cars, no horses, no nothing. Life moves in slow motion, but you don't realize it because you've never understood there could be anything different.

But suddenly, one day, you see outsized, bizarre-looking creatures gallop up on four legs—they look like oversized antelopes with no horns. Odder yet, there are humans seated on them.

What you're seeing is what you will come to call a *tuhuya*—a horse. In an instant, you realize that there are creatures on this earth that can vastly speed up your life and everything in it. Oh, the changes in your hunting! In raiding!

More than anything on earth, you want a horse.

After your first horse-snatching expedition, your ride back home feels like a bird's flight, it's so fast. Just that few extra feet of height from a horse's back makes the whole world look bigger. You practice shooting arrows from horseback, and soon, you can zip an arrow *down* into a buffalo's chest, right behind the ribcage. Your pony works with you—he seems to intuit just where he needs to be for the shot. You and your friends find yourselves retooling your people's technology—building shorter bows,

purpose

which are much more maneuverable on horseback, and cobbling together saddles with stirrups, which give steadier aim.

With your dazzling new abilities, you can quickly pull down half a dozen buffalo. You can hook a leg over the withers and slip down the side of your horse while galloping past the enemy, your horse's body shielding you from arrows.

By the time you are a grown warrior, you and your friends are dazzling masters of horsemanship, in an era and culture where horses mean everything. The Comanches, in fact, took the culture of the horse to one of the highest levels in human history—their equine expertise astonished all who knew them.¹

Eras and cultures change—change is the only consistency. We're at yet another of the many turning points in human history. The modern-day “horse” that ushers in civilization's new world is the computer.



People funneling through the traditional academic degree system often don't realize how important computers can be, not to mention the mathematical thinking that underlies their operation. They don't see this, that is, until they start job hunting and understand the skills they're missing. (Both the United States and Europe are projecting big shortages in software developers.)²

By the time college graduates recognize they need new skills, though, it's often all too easy to believe that they can't retool. Going back to the university to get another degree is often just not possible. Few have the time or money. However, what many still don't realize is that innovative new software and computers now allow for retraining at low cost or for free.

Let's be clear. The point of this chapter *isn't* that everyone should become a computer scientist. Instead, the key idea, much like the central idea of this book, is that, whatever you *think* you are, you are actually bigger than that. You can find a way to go beyond. And you can often get started—or even complete an entire career transition—by reinventing yourself through the constantly updated world of online materials.

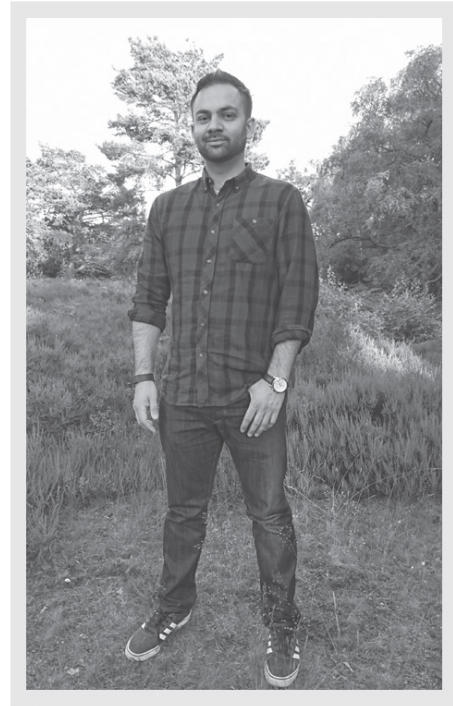
Whatever you *think* you are, you are actually bigger than that—you can find a way to go beyond.

By watching prototypical career changers, you can get ideas about how you can go about reframing yourself. And you, too, can discover possibilities beyond the boundaries you've unwittingly set for yourself.

Ali Naqvi and Math: “It’s Complicated”

Ali Naqvi grew up in Pakistan, where he was at the top of his class through most of elementary and middle school. He reveled in English literature, history, and social studies. But there was more—Ali’s father introduced him to golf at the age of seven, and he was instantly hooked. His amateur golf career soared—he won Pakistan’s national amateur championship while in middle school and began representing Pakistan in international tournaments. He started to dream of playing professional golf on the PGA Tour—the main series of golf tourneys in North America.

But there was a shadow over part of Ali’s learning. Math had always been his weakest subject—and he didn’t do much better in chemistry and physics. By middle school, Ali’s grades in math and science slumped below average. Ali tried to get help from his teachers, but their only response was “do more practice problems” and “work harder.” His parents sent him to tutors in the evenings, but Ali found

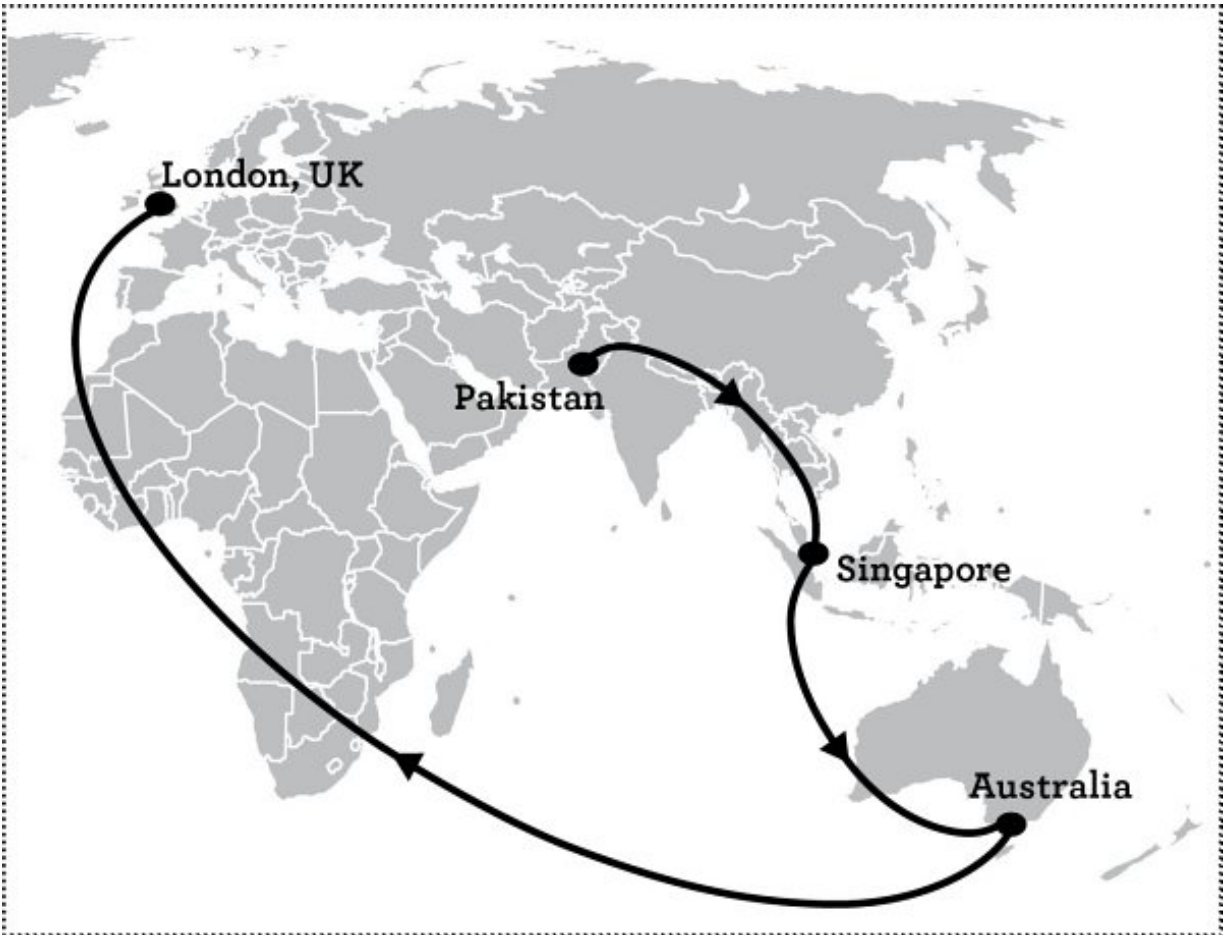


Ali Naqvi is a business partner at Neo@Ogilvy, which is the global media agency and performance marketing network for marketing giant Ogilvy & Mather.

himself just imitating the solutions to the problems his tutor set out; he didn't truly understand the underlying concepts.

Ali was genuinely trying as hard as he could. But one of his biggest problems was that he simply couldn't see any connection between what he was learning in math and what he saw around him in "the real world." Perhaps as a consequence, nothing sank in. He fell further and further behind his class, and his self-image as a student became compartmentalized: He was a grade A student in English, history, and social sciences, but a C-minus student in math and science.

By the time Ali got to high school, he was in serious trouble—barely passing math. It was around this time that his father was transferred and the family moved to Singapore. Here, Ali was enrolled in an international school with an American curriculum. (Pakistan follows the British system, a legacy of colonial rule.) There was an initial inching upward in his math—his new math teacher was a heavy-metal-loving ex-hippie who tricked him into learning math concepts using Metallica songs (the chorus "exit light, enter night," for example, led to balancing out two sides of an equation). But he got a new set of teachers in his sophomore year, and the terrifyingly steep-looking learning curve in precalculus and physics threw him right back into his old tailspin.



As a youngster, Ali Naqvi would never have believed how his career would unfold, and where it would take him.

At this point, Ali basically stopped trying. He notes: “I’m not proud of it, but I accepted that I was just one of those people who was never meant to be good at math. I consoled myself by telling myself I was ‘creative.’ I ended up failing math and barely passing physics and chemistry. I couldn’t graduate with my high school class.”

It would take years for Ali to reach his educational epiphany.

Insight from Neuroscience

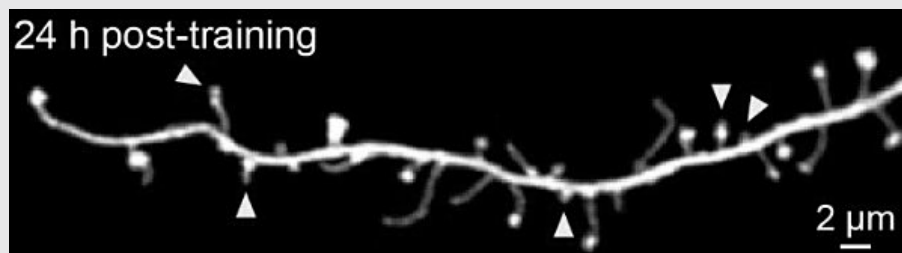
Becoming an expert in something new, whatever the subject, means building small chunks of knowledge using day-by-day practice and repetition. Gradually, these small chunks can then be knit together into mastery. It can seem natural to do this

when learning a physical skill, say, how to play the guitar. After all, missing even one day of guitar practice can lead to fumble fingers the next day.

It may be less obvious that the same practice and repetition applies to learning in math and science. In these more cerebral “sports,” you also need to practice and repeat little mental chunks. For example, after first working through a difficult homework or example problem, you can practice working the problem again from scratch without checking the solution for clues. The next day, you try this “from scratch” practice again, perhaps several times. If the problem is a tough one, you might practice it repeatedly over a number of days. You’ll be surprised that what on the first day seemed completely impossible seems easy after a week’s practice. “Deliberate practice” of the tougher aspects of the material allows you to develop expertise much more quickly.³

You can’t do this with every problem, of course, but if you pick a few of the key problems to learn by heart, much like learning chords so you have them down pat, they will serve as a foundation and structure for the other material you are learning. Simply doing lots of easy problems instead of systematically stepping back to understand, practice, and repeat the toughest problems is like playing air guitar to learn how to play a real guitar.

Why is this? Insight comes in the form of this light microscopy image by biochemist Guang Yang of NYU Langone Medical Center in New York. When we learn something and then go to sleep, new synapses—vital neural connections that help us grasp and master new subjects—begin to form.⁴ The triangles in the picture point toward those connections, formed overnight.



Focusing your attention on learning something, followed by sleep, is a magic combination that allows for new synaptic connections (indicated here by triangles) to form. These new synaptic connections are the physical structure that underpins your ability to learn something new.

However, only so many connections can form in a single night of sleep. This is why it’s important to space learning out day by day. Additional days of practice allow for more—and stronger—neural pathways to develop.

Advanced practitioners in the STEM (science, technology, engineering, and math) disciplines realize that understanding new and sometimes difficult concepts doesn’t just entail an instantaneous aha moment of understanding.⁵ Moments of insight, which arise from new synaptic connections, can fade away—the connections withering—if they are not repeated soon after the original connections are formed.

→ Key Mindshift

Deliberate Practice of Little Chunks of Learning

Practice and repeat little chunks of learning over the course of several days. This will create the neural patterns that underlie your gradually growing expertise. The more difficult the little chunks are to learn, and the more deeply you learn them, the more rapidly your expertise will grow. ?

Golf: Ali's Influential Side Dream

To this day, Ali can't remember how he did it, but somehow he managed to pass the test—including the math problems—that allowed him to enter a first-year media and communication studies course in Singapore. This course served as a bridge to Monash University in Melbourne, Australia, where he ended up graduating with distinction in two and a half years.

Meanwhile, Ali didn't give up on golf. While in Australia, Ali had the chance to take lessons at the Melbourne Golf Academy from Australia's number one golf instructor—a man who coaches some of the best players in the world. Help was needed to build up the online portion of his business, and Ali suddenly found himself with a job as a web content manager.

The perks turned this into a dream job. Since Ali's office was at the driving range, he could practice his golf before and after work, as well as during lunch breaks. On weekends, he competed. Before long, he was one of the top players at his club, even competing in state championships.

But to make it to the highest levels in golf, you need to practice constantly and relentlessly. You can't hold a full-time job, as Ali had to do. Sadly, then, a career in golf didn't work out. However, Ali was to discover that his knowledge of golf would come in surprisingly handy.

A Scary Career Shift Begins

It was time for another move. This time, Ali decided to go to the United Kingdom to start a new life and a career in digital marketing—one of the few options he had from earning a media and communications degree. Two months after his move, with savings running low, Ali jumped at the

opportunity to join a start-up agency as a search engine optimization (SEO) account executive, despite his lack of experience in the area.

Necessity provided a powerful push. Of all the marketing disciplines, SEO was probably the least likely for Ali to have chosen. It is one of marketing's most technical areas—demanding the math and science skills that had proved so difficult for Ali. For example, an SEO executive needs a solid understanding of servers and databases—the bricks and mortar of the Internet. It also requires an encyclopedic knowledge of SEO ranking factors, including page titles, keywords, and backlinks. Also important is knowledge of web analytics—using hard-gleaned statistical data to intuit what customers are thinking and to discover common customer “pain points” that may translate into web searches.

Most important, being an SEO executive requires knowledge of how search engine algorithms work.

Paradigm Shifts

Search engine optimization. Coding. Computers.

Change.

When it came to the revolution of the horse, we've seen how there was something special in the Comanche culture—some unusual openness to innovation and change that allowed the Comanches to seize on the benefits of the horse more quickly than other cultures. Was it a small group of mentally flexible and physically adept innovators who spread the wealth of their new horse “technology” and ideas? Possibly. Was it a pragmatism born of scrabbling at the edge of a difficult existence, where the improvement that horses offered was unusually clear? It's hard to know.

But one thing is clear—some cultures and subcultures, for better or for worse, cling more closely to past legacies. This can make it difficult for useful new ideas to scamper through the minefield of propriety and into public use. Other cultures seem more open to new ideas. But even in these more innovative cultures, great swaths of even the most intelligent people can fight off change with every fiber of their being—as evidenced among scientists by the staunch resistance to the notion of neurogenesis in adult

humans, and opposition to the idea that bacteria could cause ulcers.⁶ As knowledgeable academics say, moving a university is like moving a cemetery—you can't expect any help from the inhabitants.

The history of science can form a sort of relief map that allows us to see the contours of how new ideas in science, business, and culture in general can form and flow. One of the greatest analysts of the history of science was the bespectacled physicist, historian, and philosopher of science Thomas Kuhn. In examining the strands of groundbreaking scientific breakthroughs—what he called “paradigm shifts”—Kuhn noticed a pattern.⁷ The most revolutionary breakthroughs, he found, were often made by one or two types of people. The first group was young people—those who had yet to be indoctrinated into the standard way of viewing matters. These individuals retained a freshness and independence of thought.

If you don't qualify as a “young person,” you're probably thinking, *Well, that knocks me out, then. I'm not in my teens or twenties, so no breakthroughs for me!*

But hang on. There was a second group of people—people who were *older*, but who were as innovative as young people—people who had *switched disciplines or careers*.

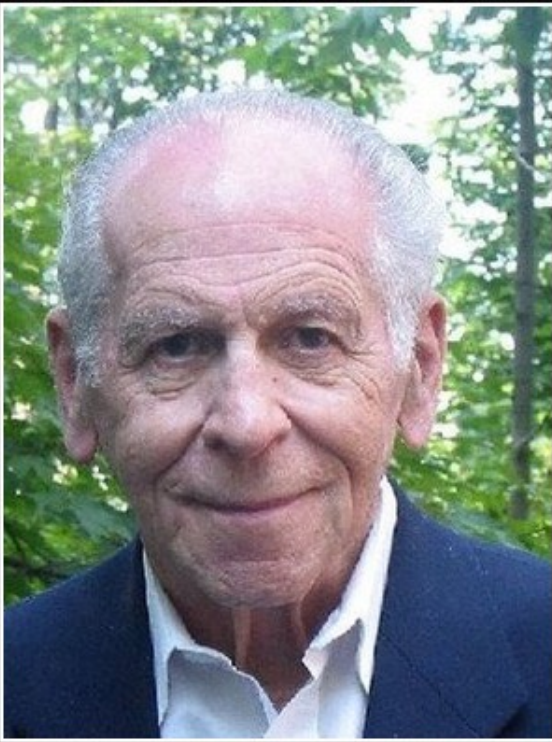
It was the change in focus—the career switch—that allowed this second, older group to see with fresh eyes. Often, it also allowed them to bring their seemingly unrelated prior knowledge to the table in new ways that helped them innovate.

Old or young, you may feel like you have a childlike incompetence when you are switching disciplines. This is typical. But keep in mind that the feelings of incompetence will gradually pass—and the power you possess by virtue of your willingness to change will be invaluable.

→ Key Mindshift

Switching Disciplines or Careers Brings Value

It's normal to feel inadequate when you might begin trying to understand a new subject or to broaden or change your career. Even though what you are doing is difficult, you are bringing fresh perspectives into your studies and work. This can not only be useful to your new colleagues—it can freshen your own personal outlook. Don't discount this.



Every act of conscious learning requires the willingness to suffer an injury to one's self-esteem. That is why young children, before they are aware of their own self-importance, learn so easily.

— *Thomas Szasz* —

AZ QUOTES

Heading for a New Horizon

Ali's story provides an ideal snapshot of career change in midflight, as it's occurring. As you will see, the process of changing disciplines and exploring new subjects is seldom straightforward.

Ali and I had first met at a dinner in London with his one-of-a-kind colleague, advertising executive Rory Sutherland—we had admired one another's work. At that time, Ali had been full-time in digital marketing for about five years. He enjoyed what he did; however, he increasingly had the feeling that he wanted *more*. He didn't want to just give superficial advice to clients on how to create better converting websites—he wanted to have some understanding himself of what was going on under the hood. Increasingly, he came to see his day job as a bit of a tease—one that shows him on a daily basis the amazing things that those with at least a modicum of computer programming skills can accomplish.

Ali began to wonder: *Why just them—why not me?* He decided that he wasn't going to die wondering; he officially became a part of the popular “learn to code” movement.

/ At our first meeting, Ali told me he had been ^{Ali}dabbling with online programming courses such as Codecademy, which many learners swear by.  / But like many who begin retraining themselves, he encountered his fair share of false starts. For Ali, it began to be a familiar cycle, bringing back unpleasant feelings from his battles in the past with STEM subjects: Start with enthusiasm → Make good early progress → Hit a steep learning curve when things are moving too fast → Compare himself to others who are progressing much faster → Begin to feel deflated and find excuses to procrastinate → Revisit after a while, only to find he had forgotten most of it and was back at square one.

But then he came across a book—*A Mind for Numbers*, by Barbara Oakley (yes, that's me). Ali was struck not only by the insights about learning in the book, but also by my story. I described how I'd gone from mathphobe to professor of engineering by essentially retraining my brain to grasp math and science. As Ali read about my early struggles with math, he felt I might as well have been talking about him. Ali went on to complete

the MOOC “Learning How to Learn” on Coursera and gained some perspective on learning with relation to his career.

Ali’s mastery of the essentials of learning, and then of coding, allowed him to feel much more comfortable with the “insides” of how computers operate. He then moved on to study web development. Perhaps subconsciously, he was building the broad intellectual tool kit he would need to underpin the more encompassing career that he truly desired.



Ali Naqvi’s Practical Pointers for Effective Retraining

Here are the techniques that have been particularly useful for me:

- I have a **Pomodoro** app on my phone. This allows me to work in twenty-five-minute bursts, followed by a five-minute break. This simple technique is incredibly effective in helping me focus on *process* rather than results. The feeling of achievement after having completed my planned daily number of Pomodoros is very gratifying. I’m not perfect, but looking at my Pomodoro app stats over many months, I’ve consistently been waging a successful war against procrastination.
- I’ve found **chunking**—grasping and practicing key mental techniques until I know them like a song—to be the missing link in my search for true ownership of whatever it is that I’m learning. Giving myself a *preview* of the lesson, key concepts, and summary primes my brain for what is ahead and is like a set of support rails that frame my study sessions. Learning a new concept and then *closing my eyes and recalling* what I have just learned leaves me with no hiding place. I can’t fake it anymore. If I’ve truly grasped it, I’ll be able to recall it. If not, I go again.
- I have started **fitting in my leisure activities around my study schedule**. I feel like I am able to enjoy my favorite Netflix shows, playing the guitar, listening to music, etc., guilt-free as long as I have earned it with some focused learning beforehand. The best part about it is that I go into that leisure time knowing my brain is still working toward my goals thanks to the “magic” of the diffuse mode (neural “resting states” where you aren’t thinking about anything in particular). During these “relaxed” times, I’m still learning—my brain is processing what I learned earlier.
- I’ve come to enjoy the practice of **applying metaphors** to concepts in whatever I am learning. I’ve always had quite a visual brain and a musical ear; coming up with colorful images with a fun soundtrack can even make quadratic equations fun!
- I’ve gotten into the habit of **thinking about the new concepts I have learned just before going to sleep**. This isn’t a focused study session (or I’d never fall asleep), but rather a relaxed version of recall. I think of it as “softly opening the door to my diffuse mode.” At least twice in the last couple of weeks, I’ve had moments of clarity when some difficult concepts hit me in the morning. I don’t think this is a coincidence.

- Another technique that has worked quite well for me is the practice of **teaching myself out loud**; that is, explaining concepts to myself as if I were a complete novice. I might look like a madman talking to myself, but you quickly realize how well you do or don't understand something when you have to teach it in a concise, simple manner.

Fast-forward a year. Ali has taken a number of MOOCs related to both programming and business development, and his life has made some fascinating leaps. He has been promoted twice at his advertising agency — first to business director and now to business partner. He's fallen in love with the woman of his dreams and gotten engaged. **A key theme in his life now is self-awareness. He says, "I'll soon turn thirty-two. It's clear that the best way for me to be successful is to focus on my strengths, while carefully choosing the weaknesses I want to work on."** With the wedding and married life on the horizon, I'm also factoring in the added responsibilities I will have as the main breadwinner in the family."



Ali has gained a decent knowledge of web development and data analysis by virtue of his on-the-side studies. Now, at last, it has become clear that his real strength lies in knitting those recently acquired skills together with what is perhaps his greatest “value-add”: relationship building. He is committed to motivating his talented team to pull together toward their shared goal. And he has long-term entrepreneurial goals in e-commerce that will meld his sporting experience and skills in digital marketing.

For a long time, Ali found it hard to forgive himself for what he saw as failures in his earlier undertakings, including his unsuccessful quest to become a professional golfer. He has since come to realize just how lucky he is to have had such rich experiences. The lessons he learned and the skills he gained are useful, not only in his current job, but in his overall career growth.

Ali Naqvi's Advice on Career Change

There will always be somebody out there who is better than you at something you want to do. You must realize that you are on your own journey, on your own path,

and you are being the “best version of you” rather than a bad version of somebody else. It’s normal to compare yourself to your peers; however, I think of it this way: There are a number of graphs representing different aspects of a person’s life—emotional maturity, creativity, discipline, career progression, financial security, etc. These graphs don’t all travel at the same trajectory for everyone. That person who kicked your butt in that golf tournament? They might kill to have your ability to play guitar. That student on the MOOC forum who seems to be able to get the programming problems so easily while you struggle? They might look at your reasoning and creative writing skills with the same level of awe as you do their ability to program. If your focus is *your truth*, you will get where you want to go when the time is right.

Focusing on the Present

One of the most valuable lessons Ali’s golf coach taught him was about gaining control over his emotions and attitude. Golf can be an infuriating sport—one unlucky bounce here, one lapse in concentration there, and your chances of winning start heading south. In tournaments, when things didn’t go Ali’s way, he struggled to contain his frustration.

The best bit of advice his coach gave him was: “The past is the past. You can’t change that. What you can control is your attitude on the next shot. The only thing in the world that matters right now is the next shot.”



Applying this wisdom to online learning, Ali notes: “Online learning is an incredible privilege afforded to our generation. However, learning a complex subject such as advanced statistics or programming on your own can often be an exasperating experience. I learned this lesson during my coding program: One missed colon here and your code doesn’t run. One false step in your procedure and your numbers are off. It’s at moments like these where I try to follow the same standard operating procedure that I learned in my golf days—that is, acknowledge my annoyance, then take a deep breath, think about what troubleshooting steps I can take, and focus on those.”

★ Now You Try!

“Chunking” as an Important Learning Meta-Skill

皇帝做习题

时间: 2009-09-14 来源: 网友提供 作者: 王小波 点击: 724次

明末清初，有批洋人传道士来到中国，后来在朝廷里作了官。其中有人留下了一本日记，后来在中国出版了。里面记载了一些有趣的事，包括他们怎么给中国皇帝讲解欧氏几何学：首先，传教士呈上课本、绘图和测绘的仪器，然后给皇上进讲一些定理，最后还给皇上留了几道习题。等到下一讲，首先讲解上次的习题——《张诚日记》里就是这么记载的，但这些题皇上做了没有，就没有记载。我猜他是做了的：人家给你出了题目，会不会的总要试一试。假如不是皇上不是这样的人，也不会请人来讲几何学。这样一猜之后，我对这位皇上马上就有了亲近之感：他和我有共同的经历，虽然他是个鞑子，又是皇帝，但我还是觉得他比古代汉族的读书人亲近。孔孟程朱就不必说了，康梁也好，张之洞也罢，隔我们都远得很。

我们没有死背过《三字经》《四书》，他们没有挖空心思去解过一道几何题。虽然近代中国有些读书人有点新思想，提出新口号曰：“中学为体，西学为用”；但我恐怕什么叫作“西学”，还是鞑子皇帝知道得更多些。

我相信，读者诸君里有不少解过几何题。解几何题和干别的事不同，要是解对了，自己能够知道，而且会很高兴。要是解得不对，自己也知道没解出来，而且会郁郁寡欢。一个人解对了一道几何题，他的智慧就取得了一点实在的成就，虽然这种成就可能是微不足道的，但对于个人来说，这些成就绝不会是毫无意义。比尔·盖兹可能没解过几何题，他小时候在忙另一件事：鼓捣计算机。《未来之路》里说，他读书的中学里有台小型计算机，但它名不符实，是个像供电用的变压器式的大家伙。有些家长凑钱买下一点机时给孩子们用，所以他有机会接触这台机器，然后就对它着了迷。据他说，计算机有种奇妙之处：你编的程序正确，它绝不会说你错。你编的程序有误，它也绝不会说你对——当然，这台机器必须是好的，要是台坏机器就没有这种好处了。如你所知，给计算机编程和解几何题有共通之处：对了马上能知道对，错了也马上知道错，干干净净。你用不着像孟夫子那样，养吾浩然正气，然后觉得自己事事都对。当然，不能说西学都是这样的，但是有些学问的确有这种好处，所以就能成事。成了事就让人羡慕，所以就想以自己为体去用人家——我总觉得这是单相思。学过两天理科的人都知道这不对，但谁都不敢讲。这道理很明白：以其昏昏，使人昭昭，这怎么成呢。

Cultures are changing, and new skillsets are becoming important. Learning how to learn is an important meta-skill that can help you keep up with rapidly evolving skillsets. Ali found that mastering chunks of knowledge—how to write a brief, readable module of code, for example—was an important missing piece in his ability to gain expertise in a new area.

What is a good tiny chunk for you to practice with over several days? Give it a try and notice how it grows easier to call to mind! If you'd like, note your improvement day by day with a sentence or two on your papers or in your notebook.

Chapter 4

Your “Useless” Past Can Be an Advantage

Slipping Through Back Doors to a New Career

THROUGHOUT HISTORY, SEEMINGLY ordinary people have suddenly emerged from nowhere to seize power and shake worlds. Take Ulysses S. Grant. He was a wood-chopping lowlife, drummed from the ^barmy for drinking; yet he became one of the greatest generals of the Civil War. In more modern times, a lowly TV graphics designer in Rhode Island would emerge to become Christiane Amanpour, one of the world’s leading television journalists. An adopted boy named Steve Jobs would emerge from lower-middle-class obscurity to go ^{rival} mano a mano against Bill Gates, who had the luxury of a world-class education from boyhood onward.

But there are more people with humble backgrounds—hundreds of millions more—who never become famous. Even so, by bringing seemingly useless knowledge from their past into their present, career changers and new learners allow society to move forward, filling needs with initially unrecognized competence.

Tanja de Bie, a project coordinator at Leiden University in the Netherlands, calls people like this “second chancers.” She should know. She’s one of them.

A dynamic woman with a knowing smile, a halo of hair, and an elegant Dutch lilt, Tanja exudes competence and confidence. But it wasn’t always

rival

this way. People fall off the conventional university educational track for many reasons. Tanja had been a successful student, but she eventually dropped out of her history program at Leiden University to support the financial needs of her and her partner's growing family—a boy and two girls—even as her partner was also pursuing his educational goals.

I first spoke with Tanja over the clanking sounds of a coffee shop in Southern California—she had been flown there from the Netherlands for the online learning conference we were both attending. Tanja had the same slightly starry-eyed stare I tend to get when I'm jet-lagged and in a foreign country, but her enthusiasm was infectious.

I am struck by how similar our early life stories are—like me, Tanja had had an early passion for the humanities and a bit of a headstrong approach to life. As a backbone of financial support for her family, she worked in a secretarial capacity in various sectors—a press agency, the municipality, and health care. Though she lacked a college degree, she gradually worked her way up from secretary toward management. She was eventually drawn back to Leiden University, this time in a working capacity, by their forward-thinking philosophy of “it's what you show, not what you know.” As a part of Leiden's policy department, she helped carry out various projects. But these still weren't enough for her active mind. At home in the evenings, she continued a hobby she'd developed a passion for nearly a decade before—online gaming.



Dutch administrator Tanja de Bie slowly realized that her “useless” knowledge from years of experience with her hobby provided powerful insights that helped her land her dream job.



Tanja works at Leiden University's branch in The Hague while being a devoted resident of the nearby city of Leiden.

Gaming

Online gaming is a very different ecosystem from that of the “real world.” It involves an odd juxtaposition of analytical abilities, real-world knowledge, and people skills. Tanja found herself particularly drawn to “play by post”—a form of role-playing that focused on writing narratives in forums. Her knowledge of history gave her storytelling unusual heft—she became a vice president of one of the gaming resource communities. She also created her own online games in history and fantasy, replete with great visuals and exciting historical set pieces. The online world she inhabited was a demanding one, requiring in-depth knowledge of HTML; an ability to navigate the online legal environment; an understanding of spambots; the facility to create polls, lock topics, make global announcements; and much, much more.¹

Tanja could turn to her hobby at home in the evening hours while also being able to drop anything at a moment’s notice to be there for her young children. She found it exciting to interact through forums with people from a dizzying array of time zones around the globe. Sometimes she stayed up until the early hours of the morning, excitedly typing out stories: “*You imbecile,*” *Le Roi* muttered. *His family members were giving him a headache yet again, wiping away all his hard work to encourage his English royal cousin to join his Catholic quest to the bigger glory of La France and Le Roi du Soleil. . . .*

Online gaming provided the additional excitement and creative outlet that Tanja needed in her life. Tanja is a natural storyteller, and online gaming provided an unusual creative outlet for her combined narrative and analytic talents. Tanja’s excitement and joie de vivre with online gaming spilled over into her work. It was, in fact, the subject of good-natured ribbing around the coffee machine as Tanja would occasionally relate gaming mischief from the evening before.

A heartwarming aspect of the online world Tanja was involved in is the many nice people. In the real world, these are the sort of people who donate blood, serve on volunteer fire departments, or stop to assist motorists. Online, they post helpful comments on forums, help beta-test new software,

and provide insightful product reviews. It's the kind of thing that reinforces a belief in humanity's innate decency.

But there's a flip side to the online world—the small percentage of people with a malevolent streak. These sinister types can have an outsized impact because of the massive online megaphone. Worse yet, the often anonymous online world has fewer of the social constraints that regulate in-person discourse. Normal people, expecting normal interactions with these more sinister sorts, are like puppies wandering up, tails wagging, in front of grizzlies.

Types known as “trolls” and “haters” enjoy creating problems in online communities. They take great glee in posting deliberately incendiary materials (“flame baiting”) and in harassing and hounding others. They are also adept at creating false identities (“sock puppets”) who chime in to make it seem that many are supportive of their views. Trolls can gain genuine supporters as well—often by representing themselves as misunderstood victims while praising more empathetic, kindly online users in private chats. “Haters,” on the other hand, are just that—they can rant on spitefully while remaining impervious to counterarguments.

These activities can have a devastating psychological impact, not only on individual victims, but on entire online communities, which can implode into negativity, causing users to flee.

It takes a special knack—developed over time—to understand trolls, haters, and others who cause strife, and to deal effectively with them.

Tanja developed this knack through her gaming.²

The Challenging, Changing Needs of the Workplace

Despite the sometimes-vicious politics in academia, universities can be enjoyable places to work. Tenured academics inhabit a secure world, reigning over college students who generally understand the benefits of “playing nice” with their instructors. In face-to-face conversation, few students would ever dream of making the types of inflammatory remarks that can be tossed off anonymously online.

Also, many professors—particularly those in intense and highly technical disciplines such as medicine or engineering—are the modern equivalents of cloistered monks. These fields demand years of total dedication that can leave those in them unaware of important trends in popular culture. This means that academics—including many of the busy, world-class experts who are invited to teach massive open online courses—can suffer from curious blind spots. (We all have blind spots, and highly intelligent professors are no exception.)

One day Tanja found herself near the office's coffee machine in conversation with one of the Leiden University administrators.

The topic? Online discussion forums.

Discussion forums have long played a benign role in online education.  They serve as the electronic equivalent of a coffee machine—a hub where learners can congregate and discuss the meaning of the material. Such forums have been used for decades in simple, local online classes of thirty or forty students, where there was no anonymity.

The discussion forums of MOOCs, however, are quite different. Instead of several dozen students posting on the forums, there can be thousands—and even tens of thousands—from all over the world. Tiny percentages of these students may behave badly—bullying others, uploading porn, and making threats. Others hide all sorts of vested interests, even fanaticism, that can undercut the free exchange of ideas.

Tanja was well aware of the potential for MOOCs' online forums to create incendiary problems for a university.  Even a single troll or hater could change the whole tenor of the discussions. And Tanja realized that the size of MOOCs was such that multiple trolls could arise—trolls who could watch other trolls and subsequently band together to give their disruptive behavior a sense of normalcy.

As Tanja and the administrator spoke that morning by the coffeepot, the reason for the interest in discussion forums became apparent. Terrorism is a vital topic, and Leiden University was acting as a world leader in tackling the topic from an online perspective. But terrorism, especially, can serve as a lightning rod  people with sharp, fixed opinions—people unwilling to listen to any other points of view, who are willing to do whatever they can to smear those who disagree with them. So a terrorism MOOC could serve

as an attractor for trolls and haters—like those Tanja had so much experience with in the world of online gaming.

Tanja couldn't help but ask—how, in the university's upcoming course on terrorism, was the university planning to handle trolls?

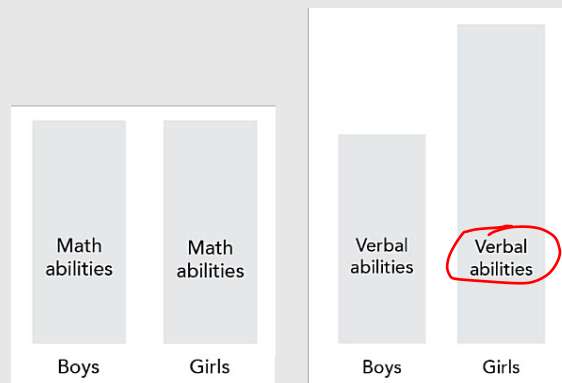
She was alarmed by the response: “What's a troll?”

A Gentle Aside About Gender

Tanja has an innate love of history and a natural gift for language. But she also has sharp analytical skills that reveal themselves in her love of the mechanics of games and in her participation in the world of online gaming. She's even able to design online games—a skill that goes well beyond novice levels of computer use. Although she tends to think of herself as a humanities-oriented person, it's clear that if she'd felt like it, she could have pursued a more analytical career.

No book that talks about career choice, career switching, and adult learning is complete without touching on the differences between men and women when it comes to “natural passions.” Tanja de Bie's life, and her bent for the humanities despite her obvious analytic skills, illustrates some of the ways women's abilities and interests can sometimes differ from those of men.

Although, overall, boys and girls have largely the same abilities in math, an individual girl frequently finds she is better with her verbal skills than her math, while a boy frequently finds he is better with his math skills than his verbal. These inclinations grow from testosterone, which serves as a developmental drag on children's verbal abilities. **Testosterone-laden** boys thus can find themselves with verbal abilities that are somewhat less than those of girls of the same age.³ (Keep in mind that this is just an average—individuals can vary quite a bit. And while boys can catch up later, by then, their self-image has already begun to solidify.)



(Left) There is little developmental difference between girls' and boys' skills in mathematics as children mature. (Right) Boys in general lag behind girls in their verbal development—in toddlerhood, boys start talking later and are less talkative than girls of the same age. (This image exaggerates the average differences to make them more clear in the next figure.)

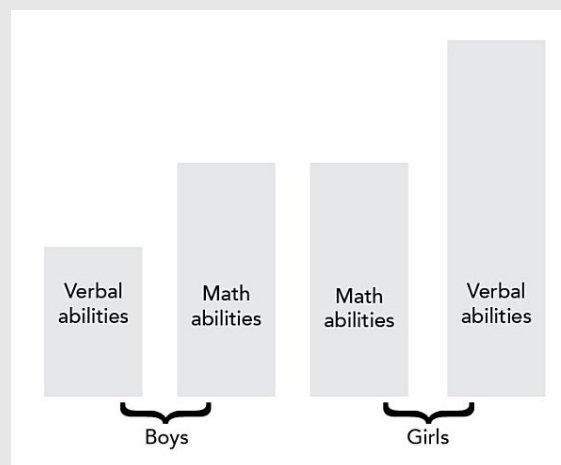
The image on the left is meant to give a sense of the developmental difference in boys' and girls' math abilities. Obviously, there is *no* real difference. But the image on the right gives a sense of the average differences in verbal abilities. Here, it is clear, boys lag behind girls.⁴

So, from toddlerhood on, girls are—on average—more verbally advanced than boys. The average boy, on the other hand, often finds that his math skills substantially outpace his verbal skills. If you put the two charts together, as below, you can see why boys frequently claim they're better at math, and girls claim to be better at verbal abilities. Both are right—even though both have the same ability, on average, for math!

We often develop passions around what we are good at. As it turns out, it often seems easier for girls to get good at subjects requiring strong verbal skills. For boys, quantitative subjects can seem easier than those involving verbal skills. Of course, testosterone can aid in muscle development, making sports seem attractive as well.⁵

Unfortunately, women's frequent big advantage—their advanced verbal skills—can inadvertently also serve as a disadvantage. Women sometimes come to believe that their passions lie solely in language-oriented areas when they also could have considerable math and science skills—on par with those of men—if only they also chose the seemingly steeper (for them) path to develop them.

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Seen together, it's clear: although boys and girls have largely the same abilities in math, an individual girl frequently finds she is better with her verbal skills than her math, while a boy frequently finds he is better with his math skills than his verbal. These inclinations grow from testosterone, which serves as a developmental drag on verbal abilities. Testosterone-laden boys are affected more than girls. (Keep in mind that this is just an average—individuals can vary quite a bit.) Although these differences fade away as children mature, early perceptions linger.

Tanja Is the Expert

“What’s a troll?” Tanja couldn’t believe what she was hearing. The university was about to do a MOOC on terrorism, and they were clueless about trolls?

Suddenly, the tables were turned: Tanja was no longer the lowly administrative assistant, there to support academics with years of hard-won expertise; *Tanja herself was the expert*.

That morning, Tanja began to give the administrator a feel for the dynamics of online communities, and how interactions in them are similar to and also different from those in face-to-face interactions. Tanja’s concern was for Leiden University, the oldest and, in many ways, the most prestigious university in the Netherlands. She knew that without moderators overseeing the forums, the actions of just a few trolls and haters could cause these spaces to degenerate into cesspools that not only reflected poorly on the university in the press, but could also drive prospective students away.

Fortunately, Leiden’s administrators knew better than to be picky about finding an academically credentialed expert. They just wanted answers — from somebody who really knew the arena. In short order, Tanja became the go-to person for questions about online forums for MOOCs. Soon, she found herself asked — as an important role in her job — to serve as the community manager on Leiden’s MOOC forums. This meant bringing on volunteer mentors and training them to ensure that the tens of thousands of students in Leiden’s MOOCs had a quality learning experience. Professors began to rely on her expertise as well. One of her first bits of advice to them? Don’t feed the trolls. In other words, don’t respond to inflammatory messages meant to provoke. And if the comments are really bad, eliminate them before they spread bad vibes through the community. 

In doing this job, Tanja was influenced by the attitudes of her grandmother, a classic grand lady of the 1930s who had received an exceptional education — something quite extraordinary for that era. Her grandmother once told her, “I do not care if you get into trouble. I expect you to from time to time, as you know how to speak your mind. But let me never hear you were impolite while doing so.”

Leiden’s unfolding commonsense approach to dealing effectively with the self-righteous and self-important on a mission to impose their own worldview may seem obvious in retrospect, but many universities could benefit from Leiden’s example. Leiden University has also been visionary

in creating a new position that acknowledges the unique needs of online learning. Tanja's formal title is now project coordinator and community manager, Leiden MOOCs at Leiden University.

"Tanja created her own job," said her boss, Marja Verstelle, when I visited Leiden University at The Hague. "She is extremely dedicated. She started by spending one day a week moderating forums, but then we found she was doing more—far more. When you're looking for innovation, you're very much in need. That's the situation we found ourselves in, and Tanja was there when we needed her."

→ Key Mindshift

The Value of Hobbies

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Hobbies often bring valuable mental flexibility and insight. If you're lucky, these insights can spill over and enhance your job. But even if they don't, your brain can be getting a workout.

→ Quiet → Project
1. your
2. like
3. Jelency

Moving into a New World

Tanja's cheerful attitude, coupled with her no-nonsense abilities to take charge and make effective decisions in the new online world the university was moving into, made her a standout despite her lack of a formal college degree. As Leiden's experience with Tanja revealed, the current university credentialing system, with bachelor's, master's, and doctorate degrees, sometimes just isn't nimble enough to address the rapidly changing needs of the modern workplace with its online demands. To Leiden University's great credit, they've boldly taken the initiative in creating new jobs and filling them with the right people. This has kept Leiden from experiencing the gradual decline in MOOC enrollments that less attuned universities have experienced. Rather than declining in enrollment, in fact, Leiden University has moved to the forefront in Europe in providing quality online experiences for massive numbers of students. MOOCs are creating jobs that require experts with new skills—smart universities see this.

Tanja sometimes feels she's living in her dream. In her day job, she gets to "play" on Facebook and Twitter—getting paid to do what she likes. She

also gets the perk of worldwide travel. Her opinions are valued—she is now a key figure in helping the university and major online providers facilitate events ranging from MOOCs to major international conferences.

Just as the Comanches discovered with their sudden leap into expertise in the world of horses, and as Ali Naqvi found with his shift into digital marketing, new jobs and skills are opening even as older ones fall away. But those new jobs often aren't labeled as such—and often don't even formally exist. Institutions sometimes don't even realize they need people with certain new skills, which are often so new that no one has received training in any formal program.

Tanja is a second chancer who doesn't rest in her gaming or her learning. In the past few years alone she's met with friends in London, Maryland, Pennsylvania, and California. She also games offline with dice with her children and their friends, strengthening family bonds and playing a fun and inspiring role in her children's lives.

Who knows what second—and first—chances she's building in her children's futures?

★ Now You Try!

Do You Have Special Skills or Can You Develop Them?

Over many years, Tanja de Bie developed a valuable skill in managing online communities. She wasn't afraid to use the online gaming community as a sort of career sandbox to learn, not only various aspects of programming and the mechanics of website construction, but most important, how large online communities develop and interact. Luckily, Leiden University was visionary enough to recognize that Tanja's abilities were just what they needed, whatever her academic pedigree.

Think about your own experiences. Do you have an unusual skill that's been overlooked, but that could be valuable? Are there new technical areas you could start now to gradually learn about that you've previously dismissed as something you weren't able to do? **Jot your thought down in your notebook, or on a piece of paper, under the title "Special Skills."**

Leaving a Job Often Leads to More Fulfillment

Surprisingly often, people's worst nightmare—having to leave a job they want to keep—ends up becoming one of the best things that's ever happened to them. This is was Kim Lachut's experience.

Kim was a “people person” who had found her dream job at her alma mater as a manager of alumni programs and services. She met amazing people, sometimes even celebrities, threw parties for them, and got paid to do it. What was not to like? Of course, the job required a lot of different skills—budgeting, locating and scheduling venues, arranging the catering, marketing, registration, lining up speakers—and she had to have backup plans to prepare for unexpected contingencies. All this required lots of attention to detail along with great people skills. Kim thrived.

Then management changed. Kim's work environment became tense and stressful, and she began dreading getting up on weekdays. She realized a job change was in order, but job offers for event planners didn't seem to be flooding her way. What else could she do, though, especially since she'd done nothing but event planning for the past decade?

But ~~precisely because~~ Kim was a people person, she had lots of connections. She met the director of the full-time MBA program, who was looking for a program coordinator to handle advising, recruitment, and management of students in the program. This was right up Kim's alley, especially since she was already familiar with the university and its way of operating. With the job came the responsibility of being the IT system administrator.



However, there was a major challenge: Kim had zero experience with IT or computer software. But she was determined to head to a happy work environment, so, when the job was offered, she took it. After the first nerve-racking days settling in, she discovered something unexpected—the skills needed for IT were similar to those she'd used in event planning.

For example, there were steps to follow when she was planning an event, much like processes she followed in programming. All she needed to think of was how to handle the various unfolding possibilities. Attention to detail was critical. Kim says, “If a process isn't correct or the system isn't working properly, it hurts our students. In my job, I train our users not only on the software, but also in how this software affects the people who matter most—the students.”

Kim discovered that the data-heavy IT field loves “people persons” like her, who can connect the dots between systems and the variety of individuals who use and are affected by those systems. Kim says: “I have become a self-proclaimed data geek who is able to incorporate my people skills by teaching others about how the system works, in a way everyone can understand.”

Kim Lachut was surprised to discover the IT world is a great fit for her strong people skills.

→ **Key Mindshift**

The Value of Career “Catastrophes”

Those with broad experience in the working world often observe that being forced to leave a job makes people far happier with the new job than the old—no matter how impossible this might initially seem.

Chapter 5

Rewriting the Rules

Nontraditional Learning

ZACH CACERES WAS a ninth-grade dropout who got his start in the working world cleaning toilets at age fourteen. He's in his midtwenties now, with a calm confidence that makes him seem much older. The confidence is only to be expected. Despite, or perhaps because of, his rough start, Zach has become the director of the Michael Polanyi College at the Universidad Francisco Marroquín in Guatemala City.



Zachary Caceres, director of a thriving college of the Universidad Francisco Marroquín in Guatemala City, managed to steer his way through a number of

I'm in Antigua, the onetime capital of Guatemala, sitting with Zach in the restaurant 7 Caldos. Zach learned Spanish only when he arrived in Guatemala several years ago, but he casually orders a beer, chatting in Spanish with the waiter as I stare with perplexity at the menu. *Kak ik*, Zach explains, is a strongly flavored turkey soup. *Pepián* is a meaty, spicy stew.

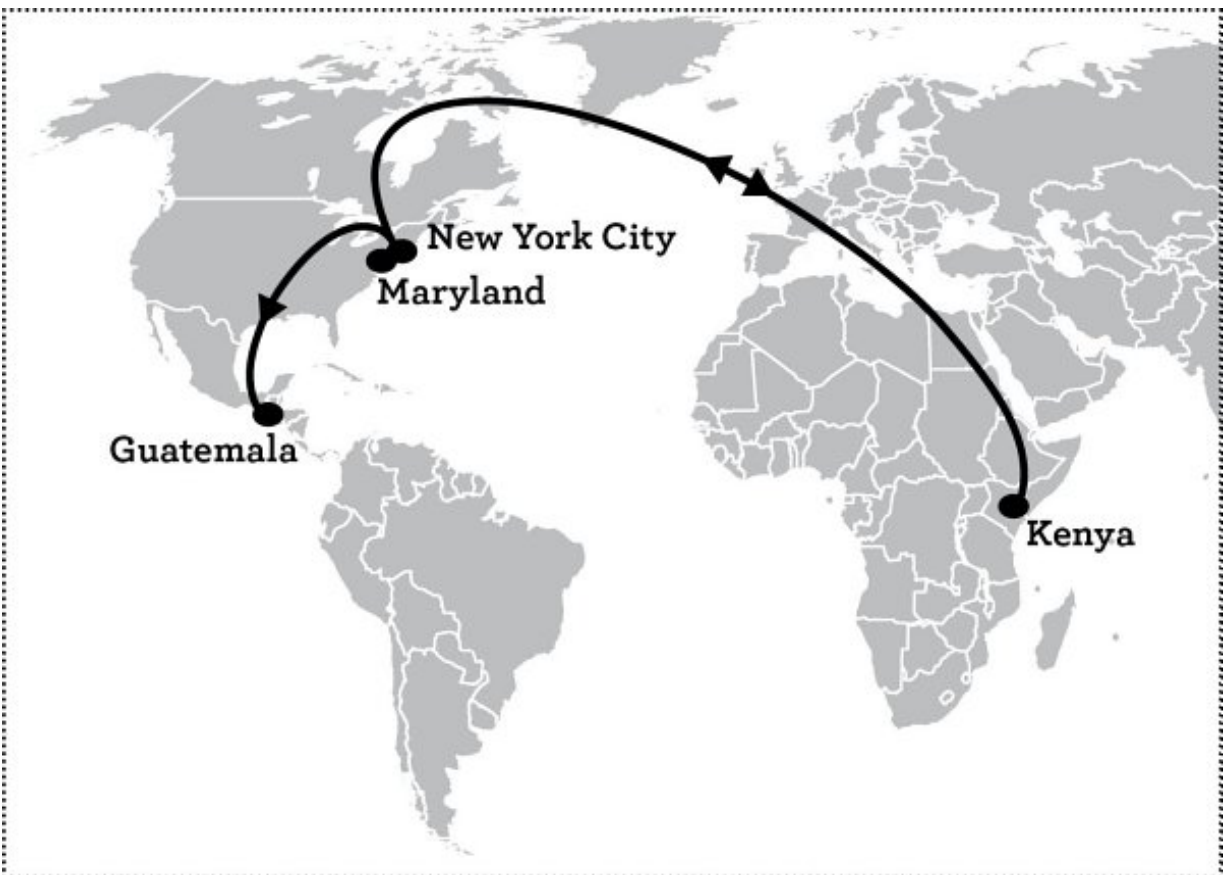
Next door is my hotel, the Casa Santo Domingo, a grand lodging built on the grounds of what was once one of the largest convents in the Americas. The massive stone walls of the convent crumbled and fell in the 1773 Santa Marta earthquake, so walking

*educational obstacles by seizing control
of his learning at an early age.*

among the crumbled ruins on the hotel
grounds feels like being in Pompeii.

I'm in Guatemala for a conference, but my real mission is to learn about Zach. This isn't as easy as it might seem, even when I'm sitting directly in front of him. It turns out that getting Zach to talk about economics, philosophy, history, or virtually any other subject is easy. Getting Zach to talk about *Zach*, however, is a tougher task.

Zach's father lost his job during the year Zach was born, going from a well-respected, successful engineer-turned-business executive to managing a trailer park in rural Maryland. Zach's school system, like many others, failed to meet the needs of the diverse group of learners within it. The wide economic divide in the county, worsened by a nearby resort town, only made things harder for students and teachers alike. There's finger-pointing aplenty about the cause, but the truth is that some U.S. public school systems are downright awful. To put matters mildly, Zach's school district did not meet his needs.¹



Zach Caceres' learning journey— to date.

The negative effects were real and personal. Teachers often showed up late and the students spent a good deal of time unsupervised in trailer “classrooms” with too few desks. Thirteen-year-old Zach and some of his classmates were often miserable, and they inflicted their misery in turn on one another. It was a bit like *Lord of the Flies*—to keep themselves entertained, the kids staged fights, like in *Fight Club*.

Zach was bullied starting from a young age. He was smaller than the other boys, bookish and nerdy. The main issue, for Zach at least, was the school’s fear-driven culture, where manipulative and abusive teachers, with a few rare exceptions, made life hell for anyone who thought differently. And Zach definitely thought differently.

“I’ve always been a contrarian,” Zach says, taking a swig of his beer as marimbas play in the background. “Everywhere I went while I was growing up, people were pissed off because I was disagreeing with them. I felt alienated. I thought, *I keep seeing all these things that are so wrong, that other people seem to think are so great. I must be dumb. I must be a bad person.*”

Zach’s independent, gifted, creative way of thinking was the root of the problem. As a child, for example, with his swift way of writing, he would produce far more than the other children. But the standardized tests were scanned and only a particular space was available for grading—meaning he was often judged deficient. And yet, as Zach’s mother notes, many of his classroom writings were used as exemplars for teacher workshops throughout the district.²

Optimistic that he might find *some* positive path toward helping others, early on Zach joined a peer-dispute mediation group where he and his fellow students were to resolve arguments. The mediation, as it turned out, involved uncovering students’ issues, which in turn became fodder for gossip. Zach recalls: “We went to a dispute-resolution conference and I told them what I thought: that they were just spreading gossip. It didn’t go over well. That evening, a boy ended up throwing ice at me in the hotel room we were all staying at. Next thing I knew, we were in a fight.”

A fistfight at a dispute-resolution conference.

Zach joined the Boy Scouts with enthusiasm. For his community service project, he created an after-school music program for elementary school

kids, complete with an instrument donation system to receive donations from people in the local community. But as he gradually discovered, his project ran along very different lines from the usual Boy Scout projects, like building and upgrading playgrounds. The projects were evaluated by a panel of parents, one of whom seemed to see Zach as a threat to his own son's success. After all his hard work in getting the musical program ready for launch, Zach was told that teaching and managing a music operation did not show sufficient "leadership capacity" and was thus ineligible as his Eagle Scout project. Disillusioned, Zach left the troop.

Zach's interest in music was to cause him similar problems at church. He was selected to travel to Utah with his youth group to compete at a youth talent convention with a jazz composition that incorporated the song "Amazing Grace." He was told (in the mid-2000s!) that "Jazz has no place in the House of God," and disqualified. Unconventional music wasn't Zach's only problem—his youth pastor eventually took him aside and said, "You have to stop pointing out all the inconsistencies in the things we're saying all the time."

Zach's intelligence, independence, and creativity—all of which would have been admired in another environment—caused him nothing but trouble. As he reached adolescence, his actions took a turn for the worse. With other boys, he would break in to construction sites and smash windows, throw paint on the walls, and steal materials. Together with his "bad boy crew," he threw rocks at cars, egged police cars, and once tried to burn down an abandoned house. He would charm and make out with girls on trips to Christian retreat centers. In short, he was becoming a little asshole—angry at life.

"It makes me sad to think about this time," says Zach. "So many of the people I knew from those days later died from accidents or drug overdoses. They exist now only on my Facebook friend list."

But all of these actions were essentially practice steps at asserting himself, even if his choices just deepened his frustration. Zach's relationship with his parents and family, the true lodestones of his life, frayed. He didn't understand himself or his relationships well enough to realize what was going on.

One difficult day in ninth grade, everything changed.

The woods by the bus stop had become Zach's refuge. He would hide there each day, letting the bus go by. Then he'd head home or simply wander around the neighborhood like the lackadaisical truant that he was. Day by day he grew more miserable—and bolder. One day, his mom was delayed in setting out to work. Zach, who couldn't even muster up the effort to hide, was caught.

The story tumbled out. Zach wasn't just ditching school that day; Zach was skipping school almost every day. And when he did go to class, he was miserable.

That evening when the family sat down for dinner, a television-show-like intervention ensued. Everyone was sitting around with grave expressions talking about Zach's "schooling problem," as if the problem centered only on Zach. One thing became clear: Zach wanted out. The bullying and poor teaching were putting him on a dark path.

The solution he proposed was gutsy—and scary.

gutsy ↳ gut punch 🤢💩

→ Key Mindshift

The Sometimes Lonely Path of the Creative

.....
Sometimes creativity can leave you feeling out of step with those around you. Millions around the world have experienced this "marching to the beat of a different drum" feeling, so if you have periods in your life when these feelings are particularly pronounced, it's nice to know you are not alone.

Finding Self-Sufficiency

Zach would have been fascinated, even as an adolescent, to learn of research that might have shed light on his situation. As it happened, premier sociology researcher Joan McCord had long been involved in a study of at-risk youths. This was the Cambridge-Somerville Youth Study, which was originally conducted in the late 1930s and early 1940s. The study examined how boys go awry in their lives—and how they might be directed onto a better path. ↳ go [diagram]

McCord was a vivacious, gifted academic who had herself gone through difficult circumstances. While in grad school, her relationship with her

abusive, alcoholic husband had finally imploded in divorce, which had left her as the struggling single parent of two boisterous boys. In the early 1960s, when women were expected to be homemakers rather than breadwinners, McCord's life became a treadmill of grading and teaching to support her children. But she still kept on with her studies, earning her doctorate in sociology from Stanford in 1968. She found herself drawn to research in criminology. The question that kept arising for her was: *How is it that people veer off track in their lives?*³ McCord's work with the Cambridge-Somerville Youth Study would provide unexpected answers to her question.

The study, which was one of the most ambitious programs ever developed to prevent delinquency, was initiated in the 1930s by a researcher named Richard Clark Cabot. It had been carefully designed to quantify what sorts of assistance to youngsters, in the form of counseling, tutoring, and other support, worked best to improve children's lives in the long term.

The study included more than five hundred boys in the Boston area. Both "difficult" (that is, juvenile delinquent) and "average" boys were included. The youngsters were first put into matched pairs controlling, to the extent possible, for family size and structure, neighborhood, income, personality, intelligence, physical strength, and many other characteristics. Then one person from each matched pair was randomly selected for the treatment, with the other going into the control group. The treatment group received a wealth of resources, while the control group received no attention or support at all.

Counselors were assigned to the treatment group. The counselors went with their young charges to athletic events, taught them how to drive, helped them get jobs, and even assisted with family counseling and the care of younger children.⁴ Many of the treated boys also received tutoring in



Influential American criminologist Joan McCord wasn't afraid to question prevailing wisdom about intervention strategies meant to help high-risk youths.

academic subjects, were given medical or psychiatric attention, and were sent to summer camps and other community programs. The control group, on the other hand, simply conducted their lives as usual.

In 1949, roughly five years after the experiment ended, researchers traced the subjects of the study. To the researchers' surprise, they found no measurable beneficial effects for the treated group of boys.⁵ The obvious conclusion to the researchers? It was too soon to evaluate the program's effects. The investigators felt that the program's benefits would become apparent once the boys were evaluated yet again, after another decade.

In 1957, while still a graduate student, McCord first came into the picture—she was offered a small sum of money to retrace the effects of the experiment on the boys. McCord's work was tedious, and yet, because the Cambridge-Somerville Youth Study had been carried out with exquisite attention to detail, also rewarding. The case records included twice-a-month reports made for more than five years, providing several hundred pages of detail for each boy. After months of painstaking scrutiny, McCord found the same results as previous researchers: none of the expected benefits of the study showed up. There was no difference, for example, in arrest rates, the number of serious crimes committed, or the ages at which crimes were committed. Clearly it was still too soon for researchers to tell whether the boys would experience long-term benefits from the program.⁶

The study's data sat teasingly. Something about the Cambridge-Somerville study kept drawing McCord back, but she couldn't figure out what it was. Had the follow-up studies somehow missed some vital clues? There were small hints that the treatment might indeed have been beneficial, despite the previous “no effect” findings. For one thing, some of the boys themselves, now adults, believed the assistance had been worthwhile.

The National Institutes of Health became intrigued as well. They agreed to provide financial support so that McCord could hire a small team to retrace the study's participants.

Since there had been more than five hundred boys in the then thirty-year-old study, McCord and her team faced the prodigious task of finding the study's original participants and comparing how their lives had unfolded. The team was forced to become amateur investigators, collecting evidence

from all angles—city directories, motor-vehicle registrations, marriage and death records, the courts, mental health facilities, and alcoholism treatment centers. Though they were looking for research subjects from a study that had been completed some thirty years before, they located an unbelievable 98 percent of them. Even more amazingly, some 75 percent of the men, then in their late forties and early fifties, responded to the team’s questions.

The feedback from the men themselves was straightforward. Two-thirds of the men thought the program had been helpful—they felt the program had “kept them off the streets and out of trouble.” They reported that they’d learned how to get along better with others, to have faith and trust in other people, and to overcome prejudices. Some men felt that without their counselors, they would have ended up in a life of crime.

The program should have made a big difference in improving the lives of those who had been in the treatment group. *But it was the opposite.* The treated group was strikingly different.⁷ Although the differences were obvious, they were easy to overlook, as they had been in prior reviews of the data, because the effects were so unexpected. Those in the treatment program were more likely to commit crimes, to show evidence of alcoholism or serious mental illness, to die younger, to have more stress-related disease, to have occupations with lower prestige, and to report their work as not satisfying. Not only that, but the longer the boys were in the program and the more intense the treatment, the worse the long-term outcomes became. The program was flat-out detrimental—this was true of both the at-risk kids and the average kids. Another crucial aspect of McCord’s study was the finding that the subjective reports by the study participants themselves were unreliable.

Why had the treatment—well meaning and carefully designed in every particular—been so harmful for so many?

Zach’s Reboot

Over the course of many heartfelt conversations, it was agreed that Zach would complete the ninth grade and then spend the summer researching alternative programs. With his parents, Zach toured private schools, which

were either unaffordable or not a viable alternative to the local public schools.

The more they went around, the more Zach could see only one solution: become a ninth-grade dropout. He told his parents, who didn't take him seriously at first. In the end, Zach persuaded both his parents by explaining that he wasn't going to stop his studying; he was just going to go about his education in a way that would allow him to actually *learn* something instead of sitting there in misery all day in school—in between getting kicked around. There were online programs, he pointed out, that offered a way forward.

Zach still remembers the first day that he didn't have to go to school: “I took a long walk in a nearby forest and had an experience I can only describe as spiritual.” He realized at last that he had the freedom to become his geeky, independent self without fear or shame.

Both of Zach's parents worked long hours—they had no time to school him themselves. So they instead gave him rules: he needed to talk to them regularly to show he was learning something, and he needed to somehow hold a job—he wouldn't be allowed to just hide in the house. Occasionally Zach's father would leave questions written on a napkin for him to find in the morning at breakfast.

On the day Zach dropped out, his guidance counselor told him that he was “about to sign away any hope of a good future.” His extended family also criticized Zach's choice, telling his parents that they were ruining his life by allowing him to leave school. Since he was no longer enrolled in school, Zach couldn't join the band, do any extracurricular activities at the local high school, use the library, or access college scholarships. It was a difficult time.

But it was a time when all of his previous bad behaviors fell away. The new, more positive outlets he developed for himself diffused his frustration and served as a constructive channel for his energy. His relationship with his parents immediately improved, and he stopped lying about where he was and what he was doing. In the end, Zach has come to believe that dropping out saved his education and is perhaps the most important decision he has ever made. Being out of the constrictive cradle of conventional education and away from the sometimes malign influences of his peers allowed him to begin to find his “authentic” self, even though it

did make negotiating with institutions harder because of his lack of conventional diplomas and credentials.

Zach's early, real-world education consisted of holding down a job, using a library card and the Internet, and bringing a lot of curiosity to play. He took some courses online, where he excelled, showing the power of his new learning environment. He became a constant reader—a habit that has served him well ever since in his learning. Zach's outside-the-system educational experience also had the inadvertent effect of putting him on an entrepreneurial path—he repaired electronics he found in dumpsters behind retail stores in order to sell them on eBay.

Zach's erratic, unusual education has left him with one regret: He lacks the solid foundation in math and science that would have made him better able to grapple with technology. But he's still managed to do pretty well. One factor that improved his learning skills was his involvement in music, which became easier as his day became more flexible after he dropped out of conventional schooling.

One day, Zach's father invited him to attend a jazz band concert being given that afternoon at the university. As the concert ended, the professor explained the band was open to all. Zach took the professor at his word and gave him a call. When that call wasn't returned, he called again. And later, again. Eventually, his perseverance paid off—a meeting was scheduled. Zach recalls asking, “What can I do for you if you teach me?”

That was Zach's first apprenticeship. He fell in love with music.

Zach was an early consumer of virtual music lessons—years before Skype became widely used. He even pulled together \$100 for a single online video lesson from guitar great Jimmy Bruno.

Learning to play the jazz guitar taught Zach how to be a more “structured geek.” Previously, his thinking and studies had often been random and haphazard, but the guitar demanded meticulous thinking. Zach gradually became aware of the importance of procedural fluency.⁸ That is, he became aware of the value of a daily practice regimen in creating solid neural patterns that he could call to mind smoothly.⁹

Zach also learned the importance of deliberate practice, in which he focused repeatedly on the most difficult aspects, to help stretch his learning beyond the comfort zone.¹⁰ There are cultural elements in the world of jazz

that push musicians toward these important aspects of learning. Zach notes, “If you show up at rehearsal and are playing the same licks, people make fun of you.” They call it the “woodshed.” As in, *Why are you not in the woodshed? Why are you not practicing?*

When Zach was sixteen, he enrolled at a local college to take for-credit courses with his musician mentor, who was a professor there. A year or so later, he was able to go to New York University (NYU). He officially entered as a college transfer student—which meant nobody scrutinized his high school background.

But in his senior year of college, during a final review of records prior to graduation, he was asked to send a copy of his high school diploma. Of course, he didn’t have one—he had earned his 3.98 GPA without the benefit of high school. (He had earned his GPA, incidentally, while working full-time *and* commuting two hours a day.) Once again, Zach found himself frustrated by bureaucracy—he was forced to get a high school diploma retroactively using the University of Texas High School online program.

Zach graduated summa cum laude from NYU with a combined degree in politics, philosophy, and economics. He also was inducted into the Founder’s Club, an award for achieving the highest academic bracket offered by the university. He became a research assistant to a historian at NYU and also received a grant to travel across Kenya with a federation of street traders to study informal economies. He became fascinated with entrepreneurship in the developing world.

One day, while working on a business start-up called Radical Social Entrepreneurs in New York, he received an e-mail from a man named Giancarlo Ibárgüen—the president of Guatemala’s prestigious Universidad Francisco Marroquín.^{[11](#)} Giancarlo invited Zach to visit and explore the possibility of collaborating on a number of projects. At age twenty-five, Zach took charge of the Michael Polanyi College within the university and created a radical, profitable experimental program in liberal arts studies. In this program, students design their own degrees.

It’s all reminiscent of the way Zach successfully went through his early years. Companies are pounding at the door for the new program’s creative, can-do graduates—100 percent are employed or have started their own company. It’s clear that Zach’s work with the Michael Polanyi College is

just a launching pad for greater things to come, both for the college and for him.

Zach loves what he's doing in the developing world. He says, "Third world countries have all the disadvantages that you might expect—poverty and a lack of educational infrastructure." But he also finds something tremendously freeing about working in this arena.

The bottom line is that Zach is highly entrepreneurial. It was hard for him to finally accept that his bent toward business—what was always jokingly described by others as his "side hustle" or his "latest crazy idea"—is actually his vocation. He studied economics in college because it allowed him to look at entrepreneurship and its effects from a big-picture perspective. He felt the usual business classes such as accounting and marketing were creating bureaucratic administrators more than they were training people to accomplish challenging new ventures.

"It's harder to do interesting things or have interesting ideas as an entrepreneur if you have exactly the same body of experiences and knowledge as everyone else," Zach says. "Getting an MBA can be a homogenizing process. Plus, skills like accounting or marketing can be learned as you go. You have to be trained emotionally and psychologically, not just rationally, for entrepreneurship. The abstract nature of so many business classes doesn't train the right habits of mind for building something from nothing, which is often just the unglamorous slog of solving boring little problems each day compounded over time."

Many highly successful entrepreneurs, Zach notes, are not intellectual at all. Because they are not intellectual, they receive intense feedback from reality—not from theories. In point of fact, they sometimes don't have the training—or the working memory—for highly abstract and sophisticated intellectual theories.

"Successful entrepreneurs start doing things like optimizing garbage routes, and, after ten years, they own many of the collection routes in a local area. They've solved a seemingly mundane but still very important problem. Their inability to understand conventional, highly sophisticated concepts allowed them to conceive of something that is extraordinarily useful and, in its own way, highly sophisticated. They become like the world expert of local garbage route optimization."

Zach smiles as he observes: “I know it sounds cheesy, but I do believe that there is genius in all people. Too often education snuffs out our differences, instead of giving people the autonomy to do something great.”

McCord Digs Deeper

Like Zach, Joan McCord followed her own internal aptitudes—the research avenues she explored were quite different from those of typical academics. She found it difficult at first to publish her findings that a seemingly helpful family support program was harmful. The program had used many of the approaches that are advocated even today, nearly eighty years later. Submission after submission was rejected. But publish she eventually did. McCord’s *American Psychologist* paper, “A Thirty-year Follow-up of Treatment Effects,” stirred enormous controversy.¹² It also prompted researchers to begin looking more carefully at well-meaning, superficially beneficial treatment programs. Soon, evidence began to mount of other treatment programs that did more harm than good or, at the very least, did no real good despite sizable expenditures.

There were a number of possible explanations for the poor outcomes that McCord observed. It might have been that intervention by the agency led the boys to be unhealthily dependent on other outside influence. Or possibly, after the boys got used to receiving services, they began to think of themselves as needing help.

Joan McCord’s son Geoff Sayre-McCord has followed in his mother’s footsteps with academic research—he is the Morehead-Cain Alumni Distinguished Professor of Philosophy and director of the Philosophy, Politics, and Economics Program at the University of North Carolina at Chapel Hill. Sayre-McCord told me: “Mom suspected that an important part of the explanation had to do with the kids adopting over time the (upper-middle-class) norms and values of the counselors, which were not well suited to their lives and prospects.”¹³

Joan McCord was a pioneer iconoclast who was willing to question whether well-meaning, beneficial-sounding programs truly met the goal of helping their subjects. McCord found that social programs almost never

constructed the procedures needed to reliably evaluate their success. In fact, she found that those working in social interventions often took affront to anyone who wanted to evaluate their programs, since they felt good intentions alone should have been a guarantee of their effectiveness.¹⁴ Program designers regularly avoid collecting the data that would provide valid evidence for the effectiveness of their interventions. Sayre-McCord, who has published extensively on moral theory, meta-ethics, and epistemology, conveys his mother's findings when he tells me: "More often, I think, people completely trust their gut instincts and the subjective reports, over the short term, from those in their program. Of course the Cambridge-Somerville Youth Study shows those are completely unreliable, but it is hard to shake people from their confidence. Also, I think, a lot of people (convinced of the value of what they are offering) think setting up control groups is just failing to help people who could be helped. They would much rather use the money to help more people than to set up some scientific study to confirm what they already 'know.'"

McCord would go on to become the first female president of the American Society of Criminology. She bravely disputed the effectiveness of all sorts of revered helping institutions—boys' clubs, summer camps, young offender prison visits, D.A.R.E. (Drug Abuse Resistance Education), and other popular programs. And she began a process, still slow to take hold in social science, of taking more careful stock of whether a social program actually does what it sets out to do.¹⁵

MacArthur Award winner Angela Duckworth's life's work has involved advancing our understanding of how to promote gritty, persistent, stick-to-it behavior.¹⁶ Duckworth points to the research of psychologist Robert Eisenberger at the University of Houston, who has found that giving children easy tasks with plenty of rewards *reduces* their industrious stick-to-itiveness.¹⁷ Assistance that makes things too easy, in other words, can backfire and stifle internal drive. The best nurturing for gritty people, Duckworth finds, includes both tough and loving relationships.

→ When we lift the cover off many programs and institutions, it can be surprising how far their results are from their stated objectives.¹⁸ Programs to train good teachers are themselves perhaps as elusive as genuinely beneficial social programs. Professor of education Lynn Fendler has made

the remarkable observation that “there appears to be no conclusive scientific research of any sort that substantiates the effect of any courses in the teacher education curriculum on the quality of teaching.”¹⁹ We may want students to find success through conventional pathways, but we need to accept that conventional pathways can be very problematic—sometimes for reasons we don’t yet understand. All of this can stifle the spirit of society’s most visionary and creative individuals.

→ Key Mindshift

Avoid Fooling Yourself

As Joan McCord’s work shows, sometimes we can feel so *certain* that our approach is correct that we don’t examine other possibilities. Part of learning well is being able to remain open to others’ ideas and to intentionally work to create situations where we can discover whether we are wrong.

Zach’s Mentors

Zach’s path is especially interesting because early on, at the end of middle school, he intuited that the ultimate social program—conventional schooling—wasn’t working for him. In the end, he chose an unusual, self-directed path that may have given him more of a chance of success than conventional schooling, or many of the off-the-shelf mentoring and guidance programs. Zach’s “off the school grid” path wasn’t perfect—it was hard for someone in his shoes to get the daily practice that can provide special early-formed skills and ability in math, music, or language. But it was highly successful for him.

Zach credits the role not only of music, but of good mentors and apprenticeships in his life. His first mentor was the music professor. “I did all kinds of menial stuff—cleaned his office. It wasn’t glamorous, but it was a way of saying thank you for access to his knowledge.” When Zach went to NYU, he helped the economic historian by going to the archives and reading thousands of pages of boring government documents about the financial crisis of New York City in the 1970s and photocopying key

documents. “It was really about finding positive sum relationships,” Zach notes. “Giving back, not just receiving.”

Mentors, Zach feels, give most of their time for free. For Zach, then, the key became how he could make himself valuable to the mentor. He notes: “How am I supporting what my mentor is doing? Because their knowledge rubs off on you through proximity, like osmosis.”

Mentoring through the social programs of the Boston study group didn’t seem to work, whereas the mentoring Zach received worked well. Zach’s intuition is that his mentoring worked precisely because it wasn’t institutionalized. He wasn’t in a mentorship program or organization, and he had no counselors trained to be professional mentors. Instead, the mentorships were relationships that arose spontaneously from searching for opportunities in day-to-day life.

→ Zach says, “These mentorships were not aimless and around some general sense of ‘positive influence’ on young people. I was in those relationships because I wanted to learn music, or I wanted to learn economics. I believe this is categorically different than the generic ‘positive influence’ mentorship because both parties are bringing something to the table.

“My mentors didn’t drive me places or give me lots of life advice. They told me things like, ‘This is how you analyze a classical composition. Go home and analyze this one and come back next week and show me how you did it.’ Or, ‘This is the subjective theory of value and why it’s important. Go home and read essay XYZ and come back next week and we can talk about it.’ They were not my friends, really. It was more like how I imagine a medieval blacksmith’s apprentice would operate rather than the interactions of a well-meaning twentieth-century social worker.”

Joan McCord’s research revealed that social programs are not necessarily a panacea. Zach’s own life showed the greater “social program” of a conventional education system sometimes just doesn’t fit, either because the conventional system is broken, the youngster is too unconventional to fit in, or both. In the end, a person’s own efforts to make their way independently in the world can also lead to a worthwhile, fulfilling life.

What Zach found through both mentoring and his own self-studies was a confidence in himself and his own ability to grapple with tough situations.

In a word, grit. And no matter how you slice it, the best person to learn grit from is yourself.²⁰

★ Now You Try!

Positive Paths to Learning

Zach's life story is inspiring because it reminds us that there isn't a one-size-fits-all formula for education and success. Zach used his learning to get himself off a path of delinquency and onto a more positive path. Finding your own positive path to learning can help improve your outlook in myriad ways. Now is a good time to reflect on your learning pathways, and the goals they lead toward. What are your learning goals? How can you best reach them? Under the title "Learning Goals," put some of your thoughts in writing.

Chapter 6

Singapore

pry

A Future-Ready Nation

PATRICK TAY IS one of the ^{up}sunniest, most optimistic men I've ever met. But there's more to him than just a positive personality.

Patrick holds two important roles. A lawyer, he is an elected member of Singapore's Parliament, representing the country's West Coast. His other formal role carries the portentous title of assistant secretary-general, director of Legal Services and PME Unit of the National Trades Union Congress (NTUC). (PME stands for "Professional, Managerial, and Executive.") Patrick comes from a hardscrabble, lower-middle-class family—he worked for years as a policeman before joining NTUC in 2002.

Despite Singapore's tiny size—its entire population of 5.5 million people is contained on an island averaging eighteen miles across—understanding Singapore is no easy task. The watery boundaries leave the little city-state like a peremptory end-of-sentence punctuation point at the end of the seven-hundred-mile-long Malaysian peninsula. Singapore contains a diverse population of Chinese, Malays, Indians, and other groups, all knit together by a common understanding of themselves as Singaporeans. Although the language of instruction in schools is English, most Singaporeans are bilingual or trilingual, speaking English, Mandarin, one of the many Chinese dialects, Malay, or the Dravidian language of Tamil.

Singapore is also unusual in that it has no natural resources other than a deep ocean harbor. The city-state doesn't even have enough fresh water for its population. Some precious water is imported across the causeway from the occasionally less-than-friendly Malaysia. More water is obtained through clever, Singapore-developed desalinization processes that are now used worldwide.



In 1965, unemployment in Singapore was in the double digits. Workforce literacy was a mere 57 percent.¹ Stuck in what could have been a cultural backwater, Singapore could have been like many of the other struggling colonies spun off from the British Empire after World War II.

But Singapore turned out differently.

A bustling hive of growth, Singapore now has 2.0 percent unemployment—among the lowest in the world.² Its per-person gross domestic product is a sizzling 321 percent of the global average.³ Singapore's children regularly score among the top students in the world in the PISA—an international assessment of fifteen-year-old students' abilities in math, reading, and scientific literacy.⁴ Crime rates are so low that parents feel comfortable allowing their teenage children to gallivant around the heart of the city in the middle of the night. When Singaporean women arrive early to a lunchtime gathering at a local restaurant, they will leave their handbags on tables to mark their spot as they head off to the restrooms. Like many people, Singaporeans do complain about their busy lifestyles and the high cost of living, but their lives are free of many of the ills that people in other nations complain about.

An important part of what Singapore is doing right may relate to how it is approaching learning lifestyles and career resilience. To explore this, and to pick up more of Patrick Tay's insights, I met with Patrick in his offices on the twelfth floor of the thirty-two-story NTUC Centre building in the central business district of Singapore. It's a short walk from the legendary colonial architecture of the highfalutin Raffles Hotel, where each room comes with its own dedicated butler. The mirrored skyscraper of the NTUC

Centre sits near the edge of the Singapore River and has a sweeping view across the inlet to the iconic, boat-topped Marina Bay Sands hotel.



Patrick Tay, a member of Singapore's Parliament as well as an influential figure in the National Trades Union Congress, has done much to help Singapore grapple in creative new ways with career resilience. Patrick is shown here in the gym — he is also a black belt in Tae Kwon Do.

Patrick has the upright posture and sturdy build of someone who knows that physical fitness leads to mental fitness. His broad, friendly grin puts me immediately at ease — he starts the conversation by announcing that he is married with three kids. Scholarships propelled him through the university, after which he completed a four-year program in law at the National University of Singapore. The government scholarship requirements meant that he had to then serve the country for six years.

He chose the police rather than the more usual role as a prosecutor. During this service, Patrick earned his master of laws, specializing in international law and international business.

However, Patrick is a bit of a crusader — always looking to have a positive impact on the lives of others. He'd kept himself involved in community work and legal outreach, often in an effort to fight for justice for the poor.

After he'd finished his service, his intention was to go into practice as a lawyer. But the NTUC recruited him because he was active in voluntary community work — *and* he had what he calls “deep skilling” as a lawyer.

Patrick joined NTUC in 2002. He shakes his head in disbelief at the rapid passage of time. “Here I am, fourteen years later, still working for the NTUC. There's a lot of satisfaction seeing that what you advocate for comes to fruition and benefits others. Not just five or ten others, but sometimes thousands, or hundreds of thousands. That's what keeps me going day after day.”

Patrick's assignments at the NTUC have taken him through a broad variety of industries, including shipbuilding, private security, health care, and now, the financial sector.

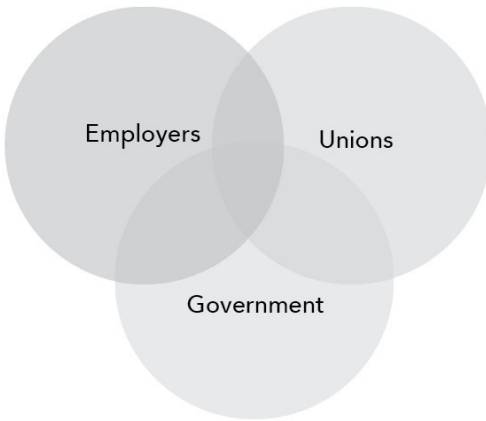
“When I retrace my steps,” observes Patrick, “it always boils down to advancing the interests and welfare of the workers. Employment and employability seem to crop up day in and day out. We need to bring investment into Singapore—to create good jobs and good-paying jobs. But we also need jobs that cater to our workforce, because our workforce’s profile is changing rapidly.” *a culture*

Singapore is a career bellwether for what is happening in much of the developed world. Emphasis on education has led to a workforce weighted toward professionals, managers, and executives. As general demographics have skewed older, so, too, has the labor force. Looming continuously is the specter of job obsolescence. Hard-won techniques, technologies, and even relationship skills can gradually lose their value. People must master new software, different equipment, novel management methods, and even different ways of interacting with others. Traditionally, careers have been stepping-stones where you lingered at each step. Modern careers, however, are more like conveyor belts. You have to keep moving and learning no matter what stage you’re at.

Patrick’s concern for his constituents shines through as he explains, “We need to redesign our jobs, and we need to ‘upskill’ people to ~~take on these~~ new jobs. Everyone has to play a role in this—the worker, the employer, the government, and, in the greater scheme of things, society itself.” *→ pitch pull*

What binds matters together in Singapore is “tripartism”—a meeting of minds among government, unions, and business employers. “This is key and unique to Singapore,” Patrick explains. “Tripartism is not new—it’s been in existence for a long time under the international labor organization framework. But I think Singapore has its own unique blend of tripartism. In fact just this morning before I came here, I was having breakfast with our tripartite partners, as we do every Wednesday. We were discussing the same issues you and I are talking about right now. We’re one of the few countries that does this—that has employers, government, and unions conversing in the same room. *→* We have one major shared goal, which is to grow the economic cake, rather than try to divide it. We all realize we should not be coming at matters with the sense of who gets the bigger slice or the bigger crumb.”

Everyone plays a role in this, Patrick notes. By joining together and speaking dispassionately in one room, issues are examined from a variety of



Singapore has an unusual “tripartite” approach where government, unions, and business employers work together to enhance the workforce. Frequent meetings between the disparate groups help them to build personal relationships and find common ground.

perspectives. What does the individual worker need to do? What kind of responsibility does a company have to redesign jobs, automate, innovate, and be more productive? How can the government enable workers to realize their potential? And how can society itself support the shift in terms of social and political models? Singapore well knows that solutions to these questions are vital if it is to stay relevant in the face of an aging, white collar-oriented workforce.

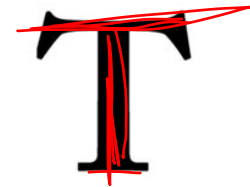
Patrick Tay’s secret is that he has simple, yet elegant, solutions.

“T” Versus “π” Approaches to Career Building

Traditionally, careers have been stepping-stones where you lingered at each step. Modern careers, however, are more like conveyor belts. You have to keep moving and learning no matter what stage you’re at.



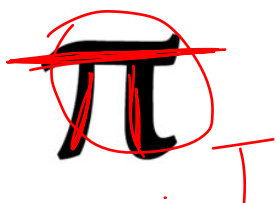
Traditionally, career development has been thought of as having a T-shaped trajectory. A person trains to acquire one in-depth area of expertise, be it accounting, mechanical engineering, or twentieth-century British literature. This deep expertise was then balanced by a variety of other, lesser “horizontal” skills—computer abilities, people skills, a hobby in woodworking. Patrick, however, began lobbying several years ago for what he calls a



Traditionally, career development in Singapore, as elsewhere, has been thought of as a “T” shaped trajectory, with one “deep” area of expertise, and many lesser

π -shaped approach to career building—two areas of deep knowledge, balanced by a modicum of knowledge and ability in other areas.

areas of knowledge and interest.



Patrick Tay has championed a “ π ” shaped approach to career building—two areas of deep knowledge, balanced by a modicum of knowledge and ability in other areas. Also known as “second-skilling,” this approach to careers builds in resiliency and flexibility in the face of society’s rapid growth and change.

In the new economy, it was clear to Patrick that you should not just have one area of expertise. Even if you went through the trouble to acquire *two* tiny fields of expertise among the millions of areas of expertise available to humans, that’s still twice as big as what it had been. Two areas would give far more options and flexibility.

Patrick realized that, in a modern economy, “second-skilling” is necessary for career resiliency—it gives you options and flexibility. Naturally, if you already have an intense, difficult-to-acquire deep skill such as being a medical doctor, you can’t easily just pop over and pick up another equally difficult-to-acquire second skill—say, becoming a lawyer. But no matter what your first skill, you protect yourself by having some second skill—deeper than just a dabbling in another area. That second skill can either complement the first or give an alternative path if your personal situation changes. Implicit in Patrick’s approach is that we can all learn more than we might think.

skill
economy

People often make the mistake of thinking that First World economies such as Singapore’s enable the luxury of career change. But this is a misleading perception. Singapore’s economy, much like many First World economies, has gone through many peaks and troughs, even in Patrick’s lifetime. There was an economic crisis in 1998, then another in 2003 due to the severe acute respiratory syndrome (SARS) epidemic, which cut travel in Asia to skeletal levels. Another hit with the 2008 subprime mortgage crisis.

“With job obsolescence, one deep skill might not be relevant in two or three years’ time—things are changing so rapidly,” Patrick notes. “There have been retrenchments, downsizings, restructuring, and offshoring. In this new, modern economy, you cannot have just one deep skill. It’s good to future-ready yourself with two deep skills.”

π

“For example, people can work in a bank and have an in-depth understanding of a particular niche type of work, or type of software and

how to use it. But if that particular financial product or kind of work becomes obsolete or goes offshore, then you'll be out."

I ask whether two skills are something that every worker can have. Could, say, a bank worker have a second skill?

A bank worker *needs* two skills, Patrick explains. In the volatile banking industry, for example, a bank executive ^{fallback} can be the first one to get the ax if she doesn't meet her sales targets. A backup skill can be vital. But ^{let go} developing that second skill can be surprisingly straightforward—sometimes there are incipient skills just waiting to be developed.

For example, there is a particular niche that Patrick calls "relationship banking." This type of banker doesn't just have banking skills, they have relationship skills. And skills at relationships are valuable in other areas: counseling and social work. People in these fields are in high demand in Singapore due to its aging population and other social challenges. If a relationship banker can second-skill him- or herself in, for example, counseling—he or she can hop into the high-demand social service sector. If there's a financial crisis, in other words, there's a fallback.

Singapore funds programs to support second-skilling in both young and old. In fact, those who are forty and above can get enhanced funding when they undergo certification in counseling programs—even if these counseling-related certifications are not relevant to their work. That is, unlike employer-supported programs that offer funding only to train employees in skills relevant to their jobs, the government also funds individual-initiated programs that may not be directly related to their current occupation. The entire country is moving toward individual choice and selection in adult continuing education.

I remember being in the midst of hiring a bunch of people at a company I worked for and being presented with an article that said there often wasn't that much difference between someone who'd been working the same job six months versus six years. Second-skilling needn't be as difficult as many people think. Skill development curves are typically logarithmic, not linear. This means that while developing deep expertise may take a long time, you can often rapidly accelerate to the point of diminishing returns in a fairly short period of time. And this is often good enough to get a toehold in a new area. Personally I find I enjoy acquiring many skills because of the thrill of the initial rush of progress.

Thanks in part to Patrick's lobbying, Singapore is practical in how it approaches funding. Through the SkillsFuture program, every Singaporean who's above twenty-five years old receives five hundred Singapore dollars in a virtual credit account. This money is then used to offset training expenses in anything they might want, not just what their company wishes. "You might think five hundred dollars is not a large amount," says Patrick. "However, many programs are already funded 80 to 90 percent. So the five hundred dollars can be used to pay for the unfunded portions, which, previously, we had to fork out from our own pockets."

Why support second-skilling from an individual's, rather than an employer's, interests? This encourages the employee to build on their skills: to up-skill, re-skill, multi-skill, and second-skill—and to give employers the funding to incentivize this process.

→ **Key Mindshift** **Second-Skilling**

Second-skilling is a good idea in today's swiftly changing career environment. A second skill can allow you to be more nimble if the unexpected arises in your day job.

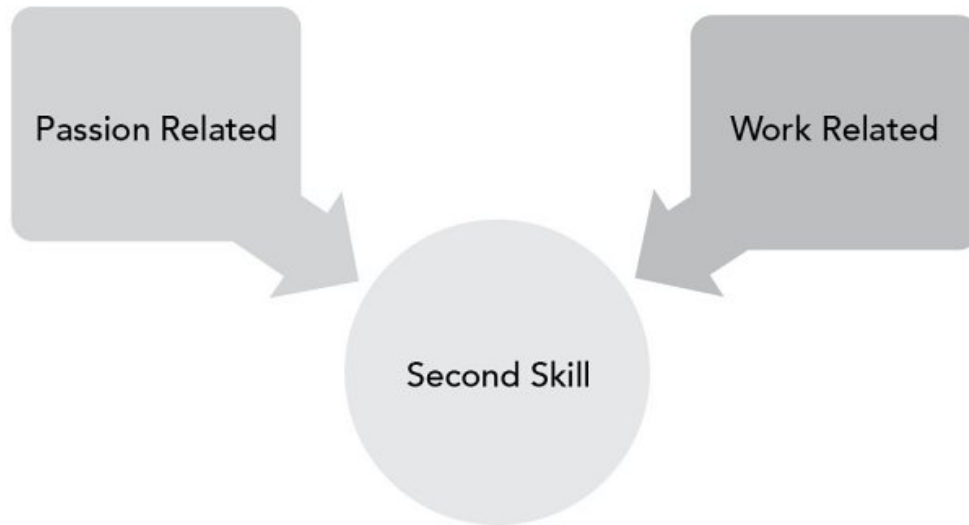
Practicality, Passion— or the Allure of Money?

Patrick explains that second-skilling has two dimensions. The first is the work dimension. Here, your second skills can allow you to move *into* or *across* or *up*, either for career advancement or because you've lost your job. Your second skill may also arise because of your passion or interest.

An IT friend of Patrick's, for example, has a great love of visual design and graphics. Although he does backroom technical IT support in his regular job, he went for training in 3-D design and graphic design. So now,

although he's still in IT, he does lucrative media and design freelance work on the side.

“So you have the work angle, and the passion angle,” Patrick explains. Of course, if you can marry the two, that's ideal.



A second skill can grow from work-related needs, or from passion. An optimal second skill can arise from both.

For the work angle, it can be best to look at job trends and forecasts to see where hiring will be occurring. In Singapore, growth areas for the next five to ten years include advanced manufacturing, health care, and aerospace. (More straightforward manufacturing in Singapore is being offshored to China and other parts of the world where it can be done cheaply.) The aging population is causing an increase in the demand for health-care services, and the country is trying to build an aerospace hub.

What about a typical mechanical engineer? I ask. How would he or she second-skill?

“Because the engineering mind is logical and process-oriented, an engineer might second-skill in any of those high-demand areas,” Patrick says. “So if you are an engineer with an expertise in tunneling and underground mining, you might actually be able, with a little second-skill training, to improve supply chain quality in health care.”

Of course, the time when second-skilling becomes important is often also the time when you're starting a family. How can people handle second-skilling when time is tight? Patrick gave me two examples of friends of his who'd done this. Both had a passion for photography.

writing, reading, English, videomaker, podcaster...

English
teaching



blogger



Work-related

- coding?
- psychology
- meditation
- sketchnoting
- ...



passion-related

- coffee
- outdoor
- travel
- parenting
- photography
- ...



second skills for teachers



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Examples

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Maps

Flights

All filters

Tools

Safe

About 959,000,000 results (0.48 seconds)

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Management



Time management



Critical thinking



Teamwork



Conflict resolution



Emotional intelligence



4 more

Feedback

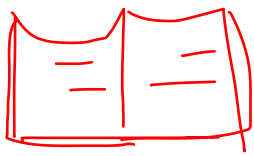


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Anti-fragility

How do we benefit from the uncertainty of a world we don't understand, one dominated by "fat tails"? The answer to this was provided by Nassim Taleb in a book curiously titled *Antifragile*.

Here is the core of the idea. We can think about three categories of objects: Ones that are *harmed* by volatility and unpredictability, ones that are *neutral* to volatility and unpredictability, and finally, ones that *benefit* from it. The latter category is antifragile—like a package that wants to be mishandled. Up to a point, certain things benefit from volatility, and that's how we want to be. Why? Because the world is fundamentally unpredictable and volatile, and large events—panics, crashes, wars, bubbles, and so on—tend to have a disproportionate impact on outcomes.

There are two ways to handle such a world: try to predict, or try to prepare. Prediction is tempting. For all of human history, seers and soothsayers have turned a comfortable trade. The problem is that nearly all studies of "expert" predictions in such complex real-world realms as the stock market, geopolitics, and global finance have proven again and again that, for the rare and impactful events in our world, predicting is impossible! It's more efficient to prepare.

What are some ways we can prepare—arm ourselves with antifragility—so we can benefit from the volatility of the world?

The first one is what Wall Street traders would call "upside optionality", that is, seeking out situations that we expect have good odds of offering us opportunities. Take the example of attending a cocktail party where a lot of people you might like to know are in attendance. While nothing is *guaranteed* to happen—you may not meet those people, and if you do, it may not go well—you give

yourself the benefit of serendipity and randomness. The worst thing that can happen is...nothing. One thing you know for sure is that you'll never meet them sitting at home. By going to the party, you improve your odds of encountering opportunity.

The second thing we can do is to learn how to fail properly. Failing properly has two major components. First, never take a risk that will do you in completely. (Never get taken out of the game completely.) Second, develop the personal resilience to *learn* from your failures and start again. With these two rules, you can only fail temporarily.

No one likes to fail. It hurts. But failure carries with it one huge antifragile gift: learning. Those who are not afraid to fail (properly) have a huge advantage over the rest. What they learn makes them less vulnerable to the volatility of the world. They benefit from it, in true antifragile fashion.

Let's say you'd like to start a successful business, but you have no business experience. Do you attend business school or start a business that might fail? Business school has its benefits, but business itself—the rough, jagged real-world experience of it—teaches through rapid feedback loops of success and failure. In other words, trial and error carries the precious commodity of information.

The *Antifragile* mindset is a unique one. Whenever possible, try to create scenarios where randomness and uncertainty are your friends, not your enemies.

—

Taleb, Nassim.

Antifragile. New York: Random House, 2012.

Patrick's police officer friend included his family in his hobby. He took beautiful photographs and videos of his children in action and received encouraging feedback when he posted on Facebook. Although he'd served on the police force for fifteen years, he decided to leave his career and start a freelance business in photography.

An IT friend also started taking pictures for fun and left the computer sector after working in it for some seven years. Like the policeman, he has become a professional photographer, shooting events, weddings, still-lives, and nature. He now organizes trips around the world for people to take photographs.

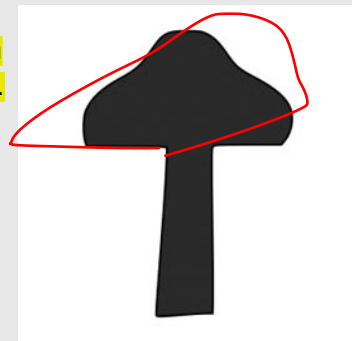
"What they were doing as a hobby became a passion that transformed their careers," says Patrick. "It's the same even in my own life." Patrick used to conduct workshops about employment law, labor legislation, and industrial relations in some of the undergraduate programs in local universities purely for fun. He's also a certified swimming instructor and Tae Kwon Do instructor.

I venture to Patrick that he doesn't take a π -shaped approach to his career—it's more comb-shaped. But I get what Patrick is saying—that, especially if time and money are tight, you should try to build your second skill out of what you are already familiar with. You often have more talent and ability within you than you think. Second-skilling isn't necessarily about a job—it's also about respecting your multifaceted ability to be good at different things.

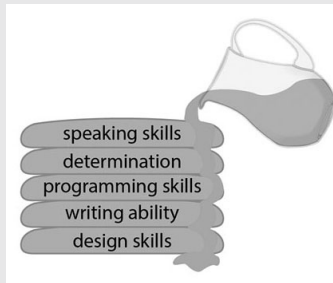
Mushrooms, Stacks, and More

Geometric approaches to thinking about careers can be useful. Another possibility, beyond T and π , is a mushroom approach—with a big fat stem as well as a broad umbrella.

U.S. sales entrepreneur Rodney Grim, for example, keeps his focus on his broad profession in selling electronics, but also keeps competency in many related aspects of the business, jumping from one area to another as he sees opportunities. Rodney has been a marine technician, then a land mobile phone technician, then he worked in land mobile sales and then for a manufacturer. Now, however, in running his own company, he has clients in many



different industries, and his “secondary” programming skills often come in handy.



Scott Adams of Dilbert fame describes the “talent stack” approach to understanding career success. It’s easy to forget that there is much more to a successful career than expertise in one specific area.

This is akin to the “talent stack” approach outlined by humorist Scott Adams of Dilbert fame.⁵ It isn’t that Adams is a virtuoso of many talents. It’s that he has a combination of many often mediocre abilities that combine to create a formidable

talent stack. As he himself describes it, Adams is a second-rate artist with reasonable writing, business, marketing, and social media skills. Put all these middling skills together, however, and it becomes more clear as to why Adams might be successful as a cartoonist.

Many individuals focus on acquiring a specific skill—say, a certain programming language—but forget that other skills, such as being able to speak humorously and effectively, can add formidable value to their talent stack.

There are other shapes beyond the “T” and “π”

approaches that can be used to help envision careers. A “mushroom” approach means having broad competencies, all supported by a broad stem of expertise.

L
ET
SM

Though Patrick understands and appreciates the value of earning a nice living, one of his pet peeves is people who sniff out their career choice based simply on the highest possible pay. “People often see the banking and finance industry as a sexy profession because they see these people driving big cars—Ferraris, Lamborghinis—and living jet-setting lifestyles.” He notes that the banking industry is air-conditioned—a big deal in sultry Singapore—and you get to golf and wine and dine.

However, it turns out that this sector is not as rosy as many think. “I would say maybe one in one thousand make it to drive a Lamborghini and a Ferrari,” Patrick says. People are expected to meet weekly, monthly, and quarterly key performance indicators, and “the exit is always there. It’s a harsh environment.”

“Half of the people who graduate from the National University of Singapore in engineering don’t eventually become engineers,” Patrick observes. “Because their training makes big data management and managing data analytics easier, engineers can get a cushy job in the banking and finance industry. They have a swanky office with a high starting salary, much higher than if they were to become an engineer. A lifestyle of the rich and famous, so to speak. But it’s never as cushy as they think.”

The problem here—as so often is the case in a number of careers—is that rosy expectations often run head-on into harsh reality. On the other hand, by simple definition, not everyone in a field can be in the top 2 percent. And not everyone needs to be at the top to find that field fulfilling.

Preventing Early Career Misfires

When you're twenty-two, can you really decide the entire course of the rest of your life? Careers sometimes go off track simply because people have to make their career choices at an early age. It's easy to think delaying the choice of career until a person is older will solve the problems. But instead, such delays can result in a host of other problems, particularly when a career requires lengthy training.

For this reason, Singapore is addressing the issue of career choice and is bringing in career counseling early on—as early as possible. This way, students can be much more informed about the realities and requirements of the areas they are dreaming about. Singapore's approach includes “learning journeys,” internships and vocational attachments that begin at a very young age. Youth group programs such as nEbO introduce younger people in upper secondary school and higher levels to specific companies and sectors. Patrick explains that this helps people “avoid a rude awakening in a challenging sector,” minimizing the expectation gap between school and career.

However, no matter how career-related learning is approached, there are always trade-offs. For example, sixteen-year-olds are mighty young to be locked into one career pathway. Still, without knowledge of what a given career is really like, they are even more likely to be dissatisfied when they emerge from college.

Understanding this, I asked myself: Is it better to keep students open to broad career paths as long as possible in their schooling? Or do you encourage them to lock into certain areas that—early on—seem to be more suitable to them?

To answer these questions, I took a trip down the block to the halls of government in Singapore.

A Big-Picture Perspective

Dr. Soon Joo Gog is the chief research officer and a group director at SkillsFuture Singapore, a statutory board under the Ministry of Education. She is a slender, focused dynamo of a woman who has thought deeply about how learning can and should take place—not only from an individual perspective, but through governmental policies that support prosperity. Gog (pronounced *Gokh*, rhyming with the Scottish word *Loch*) has worked hard to foster a desire for lifelong learning in Singapore's varied peoples.

The three-million-strong Singaporean workforce is too big for Gog and her team to reach in its entirety. Instead, the team works in conjunction with employers, trade associations and chambers, trade unions, and education and training providers such as universities and vocational institutions to build capacity for change through learning.



Dr. Gog's petite stature and youthful looks belie her prodigious intellect. As chief research officer and a group director for SkillsFuture Singapore Agency, she spearheads Singapore's continuing efforts to build a learning ecosystem where people are able to empower themselves. Gaining an appreciation of lifelong learning is part of this process. Behind Dr. Gog is the new Singapore LifeLong Learning Institute, with different floors providing training for areas as dissimilar as retail, early childhood, and information, communication, and technology. Singapore pours enormous resources into facilitating adult learning and career resilience.

“This capacity for change is critical,” Gog notes, “because change is the only constant we will be seeing in the future—from technology to economy to social and political structures. Change is accelerating, and we need to build the capacity for change to continue to be relevant.”

Careers define our identity in life. But just following your passion isn’t enough. Aspirations must be matched with opportunity.

—Soon Joo Gog

Matching Aspirations with Opportunity

“Careers define our identity in life,” observes Dr. Gog. At the same time, she understands that the traditional approach of just following your passion about what career you want to pursue isn’t enough. “Aspirations,” she notes, “must be matched with opportunity.”

Some of Gog’s work with her education and training partners is about providing career signposts—information that allows people to connect with employers and make transitions from where they are to where they want to go. To this end, the SkillsFuture Agency and Workforce Singapore Agency have been instrumental in building a guidance system for individuals and employers to discover labor information and access a jobs bank, skills profiles, and course directories. The system will cater to people at all stages of their careers to support them in finding opportunities for learning and for new potential jobs. Using government-initiated institutions like e2i (the Employment and Employability Institute) and programs like CaliberLink, people can connect with full-time employability coaches. These coaches do career counseling when people lose jobs or are looking to move up to or across to new jobs. The Jobs Bank allows employers to search for the most suitable candidates.

A pot of tea cools untouched before us as Dr. Gog and I reflect on our own careers, both of which emerged from a sort of accidental opportunism—who we happened to meet and what we happened to read from the

limited books and magazines available to us back when we were making career decisions. The Internet has changed all that.

Gog marveled at how much more information there is for current job seekers. If you love music, you can much more easily see what it's like to be a composer, a performer, or a high-quality sound technician. Not so much is left to chance—we can learn from the experiences of others with the click of a mouse.

In Dr. Gog's estimation, some 80 percent of people can self-navigate their way through the educational system and into their careers. But people who reach career inflection points where they're fired or laid off are sometimes devastated—they feel all doors are closed. Part of the problem, Gog observes, is their own mind-set: "People often think they can only do whatever they did in the past. But if people are given insight into the many opportunities they can explore, they aren't as likely to feel so helpless and angry."

Singapore's approach to career capital and resilience might be likened, as Dr. Gog's colleague May May Ng later points out, not to a safety net, but to a springboard. "Safety nets may sometimes be helpful, but they can also serve as traps. The approach we take is more like a trampoline. People may have to bounce down as they gather and prepare themselves, but ultimately, using their own strength, they can bounce high."

Because Singapore is a small country, the government attempts to keep the focus on high-growth industries. Pharmaceutical research and development is important, as are such fields as logistics, freight, information, communication, and technology. Other areas include network security and software coding, tourism, health care, social services, and education.

Safety nets may sometimes be helpful, but they can also serve as traps. The approach we take is more like a trampoline.

—May May Ng,
manager at the SkillsFuture Singapore Agency

Statistically, changing jobs in Singapore seems easy — after all, the unemployment rate hovers around 2.0 percent. But this can be misleading. In low-wage positions such as those in retail, busing tables, and so forth, where the skill requirement is minimal, changing jobs is straightforward. But the more expertise a position requires, the trickier job change gets. In certain sectors, such as engineering, employers are looking for relevant job experience. This limits who can apply.

The Singaporean approach is not just about having a vibrant economy — it's about having and creating good jobs. Gog observes: “A good job is not just about pay. It's about autonomy to make decisions to improve work and accessibility to upgrading skills. It is about professional identity.”

Gog has a sense of excitement about what's ahead for Singaporeans. She reflects on the economist Joseph Schumpeter and how the workforce development system can encourage people to benefit from the “creative destruction” of the economy. “Our job at the agency is to help the whole system to evolve. It's not just about vocational educational systems or about a university. It's about creating and nourishing a skills ecosystem where people can empower themselves.”

“Career capital” plays a role in all this. Cal Newport, a Georgetown University computer science professor and the author of *So Good They Can't Ignore You: Why Skills Trump Passion in the Quest for Work You Love*, has observed that “Career capital are the skills you have that are both rare and valuable and that can be used as leverage in defining your career.”⁶

But Gog takes this further, explaining, “Sometimes you can't say you're learning for either work or leisure, because you never know when it will come in handy. Like Steve Jobs with his training in calligraphy and typography — he never knew this would be part of the unique feature of Apple, where the fonts are always so beautiful.”

→ Key Mindshift

Significant Change Is Possible

It's easy to fall into a rut of thinking that you can only do what you've done in the past. But enormous change and growth is possible if you open your mind to the potential.

Self-Empowerment in a Cradle of Equal Opportunity

Critical to Singapore's approach is the empowerment of individuals to ensure that everyone has an equal opportunity to be successful. This sounds idealistic, but as a small country, Singapore is able to efficiently coordinate key stakeholders, from schools to parents to communities to employers to industries.

Dr. Gog smiles as she reflects on her son's recent project for school, and then points out: "People sometimes make the mistake of thinking that Singaporean children's high performance on the PISA examination is reflective of simple rote learning. But the PISA is actually a test of problem-solving skills—it's no rote drill. In Singapore, children don't just learn facts and subject matter. They are exposed to what might be called 'deep thinking skills' at virtually every step of their education. Literature, for example, is about analytical skills—analyzing context and situation. Kids are asked to figure out what a story is trying to explain to us at a deeper level. At a foundational level, math is about problem solving. The kids are asked how logical thinking is used, how we inquire. Literature, math, science—it's never just about the subject. It's also about what the subject teaches about interacting with life at a deep level."

Gog explains that a learning system must be looked at more broadly than as just a school system. It needs to include family and community. Learning takes place in the context of an entire country and culture, and every country has its own social economic pact—how it defines parental involvement.

Skills are of strategic importance for Singapore. This means institutions do not decide alone which skillsets, curricula, and teaching methods are suitable to drive and support business growth. The Singapore education system isn't treated as static, but is rather continually refreshed. Colleges and universities often partner with businesses to identify emerging skillsets so that students and graduates always obtain the latest and most useful and important skills. This is not to say that the arts and humanities are neglected in Singapore. Indeed, the multilingual heritage woven into the fabric of the country guarantees an appreciation for multiple perspectives—an

appreciation that more ethnically homogeneous countries can often only dream of for their students.

In Singapore, education at lower levels is free, and at the university level, it's 75 percent subsidized, with lots of scholarships. But financial support is only part of the picture. Parental support for education is generally strong—and Gog feels this is key. There is also a built-in societal expectation for people to work hard.

Gog reflects on other systems: “In the U.S., it's quite different, because there, states and cities have a lot of say in the education. There are no standard practices. Some cities are extremely successful—some aren't. It's hard to transform a failing school because you need to transform the entire community.”

Singapore systematizes ways to support the small percentage of students who encounter major challenges in school, such as a serious illness or the death of their parents or a learning disability. NorthLight School, for example, takes in the students from various schools around Singapore who have failed the “primary school leaving exam” more than twice. NorthLight teachers embrace creative learning methods that build the confidence and passion of the students. In one such classroom example, teachers ask their students to flip the card in front of them from green to red if they don't understand. Positive tones and positive reinforcement also help include parents. NorthLight also has a work-study program with job coaches who help ease some learning-disabled students through vocational studies and into the workplace.

“Education is never just about school. It's about how to build up the ecosystem,” notes Dr. Gog. “We're trying to ensure everybody has a pathway up.”

➔ **Key Mindshift**

Fostering a Learning Lifestyle

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A learning lifestyle is something that can be nurtured and grown in communities, nations, and cultures.

Learning at Large

This idea of inclusiveness as a key aspect of learning isn't just lip service. SkillsFuture works intensively with partners and the community to show how lifelong learning can be a part of their lives. The weekend after my visit with Dr. Gog, there was a lifelong learning festival, created to nurture a mind-set that people can learn for leisure and for work—anytime, anywhere.

As in many countries, Singapore's education system is not perfect. Anecdotally, some Singaporeans point toward their educational system as being part of the reason they are often not as creative as Westerners. Other Singaporeans quietly observe that they are good at taking exams and memorizing and solving problems but not so good at “thinking outside the box” and finding new solutions.⁷

It is possible that Singapore's educational systems, like other test-intensive systems around the world, may stifle creativity, perhaps because they don't give their most creative students the extra skills they need to overcome certain learning handicaps that sometimes accompany creative thinking.

What is unquestionable is that Singapore is taking active steps to address critical issues, such as an overemphasis on high-stakes testing to determine a person's life and career. Recently, Singapore announced the new Committee on Future Economy, helmed by Singapore's best and brightest. It is geared toward leading Singapore through a future that is “VUCA”—volatile, uncertain, complex, and ambiguous.⁸

“Singapore is always a work in progress,” Dr. Gog explains. “We never think of ourselves as having arrived. Once we know we are always a work in progress, we will try to do the next best thing, again and again.

“Singapore,” Dr. Gog concludes, “is a learning nation.”

★ Now You Try!

Broaden Your Learning Toolkit

Singapore has a unique approach to encourage continuous learning and second-skilling. How might you apply some of these insights to maintain an attitude of continuous learning? Do you already have a second skill? If not, in what area might you choose to develop a second skill? What might you do to broaden your learning toolkit? Under the title “Skill Broadening,” put your thoughts into writing.