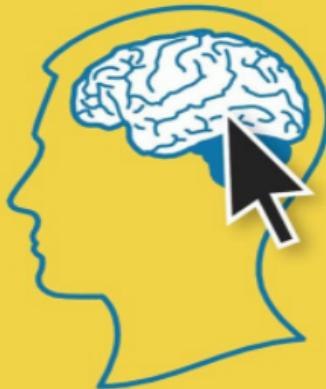


"A must-read for everyone who cares about driving customer engagement."

—ERIC RIES, author of *The Lean Startup*

HOOKED



How to Build
Habit-Forming Products

NIR EYAL
WITH RYAN HOOVER

hooked

HOW TO BUILD HABIT-
FORMING PRODUCTS

Nir Eyal
with Ryan Hoover

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contents

Title Page

Copyright

Dedication

Introduction

1: The Habit Zone

2: Trigger

3: Action

4: Variable Reward

5: Investment

6: What Are You Going to Do with
This?

7: Case Study: The Bible App

8: Habit Testing and Where to Look for Habit-Forming Opportunities

Acknowledgments

Appendix

Notes

For Julie

introduction

Seventy-nine percent of smartphone owners check their device within fifteen minutes of waking up every morning.¹ Perhaps more startling, fully one-third of Americans say they would rather give up sex than lose their cell phones.²

A 2011 university study suggested people check their phones thirty-four times per day.³ However, industry insiders believe that number is closer to an astounding 150 daily sessions.⁴

Face it: We’re hooked.

The technologies we use have turned into compulsions, if not full-fledged addictions. It’s the impulse to check a message notification. It’s the pull to visit YouTube, Facebook, or Twitter for just a few minutes, only to find yourself still tapping and scrolling an hour later. It’s the urge you likely feel throughout your day but hardly notice.

Cognitive psychologists define *habits* as “automatic behaviors triggered by situational cues”: things we do with little or no conscious thought.⁵ The products and services we use habitually alter our everyday behavior, just as their designers intended.⁶ Our actions have been engineered.

How do companies, producing little more than bits of code displayed on a screen, seemingly control users' minds? What makes some products so habit forming?

Forming habits is imperative for the survival of many products. As infinite distractions compete for our attention, companies are learning to master novel tactics to stay relevant in users' minds. Amassing millions of users is no longer good enough. Companies increasingly find that their economic value is a function of the strength of the habits they create. In order to win the loyalty of their users and create a product that's regularly used, companies must learn not only what compels users to click but

also what makes them tick.

Although some companies are just waking up to this new reality, others are already cashing in. By mastering habit-forming product design, the companies profiled in this book make their goods indispensable.

FIRST TO MIND WINS

Companies that form strong user habits enjoy several benefits to their bottom line.

These companies attach their product to *internal triggers*.

As a result, users show up without any external prompting.

Instead of relying on expensive marketing, habit-forming companies link their services to the users' daily routines and emotions.⁷ A habit is at work when users feel a tad bored and instantly open Twitter. They feel a pang of loneliness and before rational thought occurs, they are scrolling through their Facebook feeds. A question comes to mind and before searching their brains, they query Google. The first-to-mind solution wins. In chapter 1 of this book, we explore the competitive advantages of habit-forming products.

How do products create habits? The answer: They

manufacture them. While fans of the television show *Mad Men* are familiar with how the ad industry once created consumer desire during Madison Avenue's golden era, those days are long gone. A multiscreen world of ad-wary consumers has rendered Don Draper's big-budget brainwashing useless to all but the biggest brands.

Today, small start-up teams can profoundly change behavior by guiding users through a series of experiences I call *hooks*. The more often users run through these hooks, the more likely they are to form habits.

How I Got Hooked

In 2008 I was among a team of Stanford MBAs starting a company backed by some of the brightest investors in Silicon Valley. Our mission was to build a platform for placing advertising into the booming world of online social games.

Notable companies were making hundreds of millions of dollars selling virtual cows on digital farms while advertisers were spending huge sums of money to influence people to buy whatever they were peddling. I admit I didn't get it at first and found myself

standing at the water's edge wondering,
“How do they do it?”

At the intersection of these two industries dependent on mind manipulation, I embarked upon a journey to learn how products change our actions and, at times, create compulsions. How did these companies engineer user behavior? What were the moral implications of building potentially addictive products? Most important, could the same forces that made these experiences so compelling also be used to build products to improve people's lives?

Where could I find the blueprints for forming habits? To my disappointment, I found no guide. Businesses skilled in

behavior design guarded their secrets, and although I uncovered books, white papers, and blog posts tangentially related to the topic, there was no how-to manual for building habit-forming products.

I began documenting my observations of hundreds of companies to uncover patterns in user-experience designs and functionality. Although every business had its unique flavor, I sought to identify the commonalities behind the winners and understand what was missing among the losers.

I looked for insights from academia, drawing upon consumer psychology, human-computer interaction, and behavioral economics research. In 2011

I began sharing what I learned and started working as a consultant to a host of Silicon Valley companies, from small start-ups to Fortune 500 enterprises. Each client provided an opportunity to test my theories, draw new insights, and refine my thinking. I began blogging about what I learned at NirAndFar.com, and my essays were syndicated to other sites. Readers soon began writing in with their own observations and examples.

In the fall of 2012 Dr. Baba Shiv and I designed and taught a class at the Stanford Graduate School of Business on the science of influencing human behavior. The next year, I partnered with Dr. Steph Habif to teach a similar course

at the Hasso Plattner Institute of Design.

These years of distilled research and real-world experience resulted in the creation of the Hook Model: a four-phase process companies use to form habits.

Through consecutive Hook cycles, successful products reach their ultimate goal of unprompted user engagement, bringing users back repeatedly, without depending on costly advertising or aggressive messaging.

While I draw many examples from technology companies given my industry

background, hooks are everywhere—in apps, sports, movies, games, and even our jobs. Hooks can be found in virtually any experience that burrows into our minds (and often our wallets). The four steps of the Hook Model provide the framework for the chapters of this book.

The Hook Model



1. Trigger

A *trigger* is the actuator of behavior—the spark plug in the engine. Triggers come in two types: external and

internal.⁸ Habit-forming products start by alerting users with external triggers like an e-mail, a Web site link, or the app icon on a phone.

For example, suppose Barbra, a young woman in Pennsylvania, happens to see a photo in her Facebook News Feed taken by a family member from a rural part of the state. It's a lovely picture and because she is planning a trip there with her brother Johnny, the external trigger's call to action (in marketing and advertising lingo) intrigues her and she clicks. By cycling through successive hooks, users begin to form associations with internal triggers, which attach to existing behaviors and emotions.

When users start to automatically cue their next behavior, the new habit becomes part of their everyday routine. Over time, Barbra associates Facebook with her need for social connection. Chapter 2 explores external and internal triggers, answering the question of how product designers determine which triggers are most effective.

2. Action

Following the trigger comes the action: the behavior done in anticipation of a reward. The simple action of clicking on the interesting picture in her news feed takes Barbra to a Web site called Pinterest, a “social bookmarking site

with a virtual pinboard.”⁹

This phase of the Hook, as described in chapter 3, draws upon the art and science of usability design to reveal how products drive specific user actions. Companies leverage two basic pulleys of human behavior to increase the likelihood of an action occurring: the ease of performing an action and the psychological motivation to do it.¹⁰

Once Barbra completes the simple action of clicking on the photo, she is dazzled by what she sees next.

3. Variable Reward

What distinguishes the Hook Model from a plain vanilla feedback loop is the

Hook's ability to create a craving. Feedback loops are all around us, but predictable ones don't create desire. The unsurprising response of your fridge light turning on when you open the door doesn't drive you to keep opening it again and again. However, add some variability to the mix—suppose a different treat magically appears in your fridge every time you open it—and voilà, intrigue is created.

Variable rewards are one of the most powerful tools companies implement to hook users; chapter 4 explains them in further detail. Research shows that levels of the neurotransmitter dopamine surge when the brain is expecting a reward.¹¹ Introducing variability

multiplies the effect, creating a focused state, which suppresses the areas of the brain associated with judgment and reason while activating the parts associated with wanting and desire.¹² Although classic examples include slot machines and lotteries, variable rewards are prevalent in many other habit-forming products.

When Barbra lands on Pinterest, not only does she see the image she intended to find, but she is also served a multitude of other glittering objects. The images are related to what she is generally interested in—namely things to see on her upcoming trip to rural Pennsylvania—but there are other things that catch her eye as well. The exciting juxtaposition

of relevant and irrelevant, tantalizing and plain, beautiful and common, sets her brain's dopamine system aflutter with the promise of reward. Now she's spending more time on Pinterest, hunting for the next wonderful thing to find. Before she knows it, she's spent forty-five minutes scrolling.

Chapter 4 also explores why some people eventually lose their taste for certain experiences and how variability impacts their retention.

4. Investment

The last phase of the Hook Model is where the user does a bit of work. The investment phase increases the odds that

the user will make another pass through the Hook cycle in the future. The investment occurs when the user puts something into the product of service such as time, data, effort, social capital, or money.

However, the investment phase isn't about users opening up their wallets and moving on with their day. Rather, the investment implies an action that improves the service for the next go-around. Inviting friends, stating preferences, building virtual assets, and learning to use new features are all investments users make to improve their experience. These commitments can be leveraged to make the trigger more engaging, the action easier, and the

reward more exciting with every pass through the Hook cycle. Chapter 5 delves into how investments encourage users to cycle through successive hooks.

As Barbra enjoys endlessly scrolling through the Pinterest cornucopia, she builds a desire to keep the things that delight her. By collecting items, she gives the site data about her preferences. Soon she will follow, pin, repin, and make other investments, which serve to increase her ties to the site and prime her for future loops through the Hook.

A New Superpower

Habit-forming technology is already here, and it is being used to mold our lives. The fact that we have greater access to the web through our various connected devices—smartphones and tablets, televisions, game consoles, and wearable technology—gives companies far greater ability to affect our behavior.

As companies combine their increased connectivity to consumers, with the ability to collect, mine, and process customer data at faster speeds, we are faced with a future where everything becomes potentially more habit forming. As famed Silicon Valley investor Paul Graham writes, “Unless the forms of technological progress that produced these things are subject to

different laws than technological progress in general, the world will get more addictive in the next 40 years than it did in the last 40.”¹³ Chapter 6 explores this new reality and discusses the morality of manipulation.

Recently, a blog reader e-mailed me, “If it can’t be used for evil, it’s not a superpower.” He’s right. And under this definition, building habit-forming products is indeed a superpower. If used irresponsibly, bad habits can quickly degenerate into mindless, zombielike addictions.

Did you recognize Barbra and her brother Johnny from the previous example? Zombie film buffs likely did. They are characters from the classic

horror flick *Night of the Living Dead*, a story about people possessed by a mysterious force, which compels their every action.¹⁴

No doubt you've noticed the resurgence of the zombie genre over the past several years. Games like *Resident Evil*, television shows like *The Walking Dead*, and movies including *World War Z* are a testament to the creatures' growing appeal. But why are zombies suddenly so fascinating? Perhaps technology's unstoppable progress—ever more pervasive and persuasive—has grabbed us in a fearful malaise at the thought of being involuntarily controlled.

Although the fear is palpable, we are like the heroes in every zombie film

—threatened but ultimately more powerful. I have come to learn that habit-forming products can do far more good than harm. Choice architecture, a concept described by famed scholars Thaler, Sunstein, and Balz in their same-titled scholarly paper, offers techniques to influence people's decisions and affect behavioral outcomes. Ultimately, though, the practice should be “used to help nudge people to make better choices (as judged by themselves).”¹⁵ Accordingly, this book teaches innovators how to build products to help people do the things they already want to do but, for lack of a solution, don't do.

Hooked seeks to unleash the tremendous new powers innovators and

entrepreneurs have to influence the everyday lives of billions of people. I believe the trinity of access, data, and speed presents unprecedented opportunities to create positive habits.

When harnessed correctly, technology can enhance lives through healthful behaviors that improve our relationships, make us smarter, and increase productivity.

The Hook Model explains the rationale behind the design of many successful habit-forming products and services we use daily. Although not exhaustive given the vast amount of

academic literature available, the model is intended to be a practical tool (rather than a theoretical one) made for entrepreneurs and innovators who aim to use habits for good. In this book I have compiled the most relevant research, shared actionable insights, and provided a practical framework designed to increase the innovator's odds of success.

Habits connect the user's problem with a company's solution frequently enough to form a habit. My goal is to provide you with a deeper understanding of how certain products change what we do and, by extension, who we are.

HOW TO USE THIS BOOK

At the end of each section, you'll find a few bulleted takeaways. Reviewing them, jotting them down in a notebook, or sharing them on a social network is a great way to pause, reflect, and reinforce what you have read.

Building a habit-forming product yourself? If so, the “Do This Now” sections at the end of subsequent chapters will help guide your next steps.

REMEMBER & SHARE

- *Habits* are defined as “behaviors done with little or no conscious thought.”
- The convergence of access, data, and speed is making the world a more habit-forming place.
- Businesses that create customer habits gain a significant competitive advantage.
- The Hook Model describes an experience designed to connect the user’s problem to a solution frequently enough to form a habit.

- The Hook Model has four phases: *trigger*, *action*, *variable reward*, and *investment*.

1

The Habit Zone

When I run, I zone out. I don't think about what my body is doing and my mind usually wanders elsewhere. I find it relaxing and refreshing, and run about three mornings each week. Recently, I needed to take an overseas client call during my usual morning run time. "No biggie," I thought. "I can run in the evening instead." However, the time

shift created some peculiar behaviors that night.

I left the house for my run at dusk and as I was about to pass a woman taking out her trash, she made eye contact and smiled. I politely saluted her with “Good morning!” and then caught my mistake: “I mean, good evening! Sorry!” I corrected myself, realizing I was about ten hours off. She furrowed her brow and cracked a nervous smile.

Slightly embarrassed, I noted how my mind had been oblivious to the time of day. I chided myself not to do it again, but within a few minutes I passed another runner and again—as if possessed—I blurted out, “Good morning!” What was going on?

Back home, during my normal post-run shower, my mind began to wander again as it often does when I bathe. My brain's autopilot switch turned on and I proceeded with my daily routine, unaware of my actions.

It wasn't until I felt the nick of the razor cutting my face that I realized I had lathered up and started shaving. Although it is something I do every morning, shaving was painfully unnecessary in the evening. And yet I'd done it anyway, unknowingly.

The evening version of my morning run had triggered a behavioral script that instructed my body to carry out my usual run-related activities—all without mindful awareness. Such is the nature of

ingrained habits—behaviors done with little or no conscious thought—which, by some estimates, guide nearly half of our daily actions.¹

Habits are one of the ways the brain learns complex behaviors.

Neuroscientists believe habits give us the ability to focus our attention on other things by storing automatic responses in the basal ganglia, an area of the brain associated with involuntary actions.²

Habits form when the brain takes a shortcut and stops actively deliberating over what to do next.³ The brain quickly learns to codify behaviors that provide a solution to whatever situation it encounters.

For example, nail biting is a

common behavior that occurs with little or no conscious thought. Initially, the biter might start chomping on her fingernail for a reason—to remove an unsightly hangnail, for example.

However, when the behavior occurs for no conscious purpose—simply as an automatic response to a cue—the habit is in control. For many persistent nail-biters, the unconscious trigger is the unpleasant feeling of stress. The more the biter associates the act of nail chomping with the temporary relief it provides, the harder it becomes to change the conditioned response.

Like nail biting, many of our daily decisions are made simply because that was the way we have found resolution in

the past. The brain automatically deduces that if the decision was a good one yesterday, then it is a safe bet again today and the action becomes a routine.

On my run my brain had associated making eye contact with another person during my run with the standard “Good morning!” greeting; thus I automatically uttered these words no matter how inappropriately timed.

WHY HABITS ARE GOOD FOR BUSINESS

If our programmed behaviors are so influential in guiding our everyday actions, surely

harnessing the same power of habits can be a boon for industry. Indeed, for those able to shape them in an effective way, habits can be very good for the bottom line.

Habit-forming products change user behavior and create unprompted user engagement. The aim is to influence customers to use your product on their own, again and again, without relying on overt calls to action such as ads or promotions. Once a habit is formed, the user is automatically triggered to use the product during routine events such as wanting to kill time while waiting in line.

However, the framework and practices explored in this book are not “one size fits all” and do not apply to every business or industry.

Entrepreneurs should evaluate how user habits impact their particular business model and goals. While the viability of some products depends on habit-formation to thrive, that is not always the case.

For example, companies selling infrequently bought or used products or services do not require habitual users—at least, not in the sense of everyday engagement. Life insurance companies, for instance, leverage

salespeople, advertising, and word-of-mouth referrals and recommendations to prompt consumers to buy policies. Once the policy is bought, there is nothing more the customer needs to do.

In this book I refer to products in the context of businesses that require ongoing, unprompted user engagement and therefore need to build user habits. I exclude companies that compel customers to take action through other means.

Before diving into the mechanics of how habits are made, we must first understand their general importance and competitive

benefits for businesses. Habit formation is good for business in several ways.

Increasing Customer Lifetime Value

MBAs are taught that a business is worth the sum of its future profits. This benchmark is how investors calculate the fair price of a company's shares.

CEOs and their management teams are evaluated by their ability to increase the value of their stocks—and therefore care deeply about the ability of their companies to generate free cash flow. Management's job, in the eyes of shareholders, is to implement strategies

to grow future profits by increasing revenues or decreasing expenses.

Fostering consumer habits is an effective way to increase the value of a company by driving higher customer lifetime value (CLTV): the amount of money made from a customer before that person switches to a competitor, stops using the product, or dies. User habits increase how long and how frequently customers use a product, resulting in higher CLTV.

Some products have a very high CLTV. For example, credit card customers tend to stay loyal for a very long time and are worth a bundle. Hence, credit card companies are willing to spend a considerable amount

of money acquiring new customers. This explains why you receive so many promotional offers, ranging from free gifts to airline bonus miles, to entice you to add another card or upgrade your current one. Your potential CLTV justifies a credit card company's marketing investment.

Providing Pricing Flexibility

Renowned investor and Berkshire Hathaway CEO Warren Buffett once said, “You can determine the strength of a business over time by the amount of agony they go through in raising prices.”⁴ Buffett and his partner, Charlie Munger, realized that as customers form

routines around a product, they come to depend upon it and become less sensitive to price. The duo have pointed to consumer psychology as the rationale behind their famed investments in companies like See's Candies and Coca-Cola.⁵ Buffett and Munger understand that habits give companies greater flexibility to increase prices.

For example, in the free-to-play video game business, it is standard practice for game developers to delay asking users to pay money until they have played consistently and habitually. Once the compulsion to play is in place and the desire to progress in the game increases, converting users into paying customers is much easier. The real

money lies in selling virtual items, extra lives, and special powers.

As of December 2013, more than 500 million people have downloaded *Candy Crush Saga*, a game played mostly on mobile devices. The game’s “freemium” model converts some of those users into paying customers, netting the game’s maker nearly \$1 million per day.⁶

This pattern also applies to other services. For example, take Evernote, the popular note-taking and archiving software: It is free to use but the company offers upgraded features, such as offline viewing and collaboration tools, for a price—which many devoted users are happy to pay.

Evernote's CEO Phil Libin shared some revealing insights about how the company turns nonpaying users into revenue-generating ones.⁷ In 2011 Libin published a chart now known as the “smile graph.” With the percentage of sign-ups represented on the y-axis and time spent on the service on the x-axis, the chart showed that, although usage plummeted at first, it rocketed upward as people formed a habit of using the service. The resulting down-and-up curve gave the chart its emblematic smile shape (and Evernote's CEO a matching grin).

In addition, as usage increased over time, so did customers' willingness to pay. Libin noted that after the first month,

only 0.5 percent of users paid for the service; however, this rate gradually increased. By month thirty-three, 11 percent of users had started paying. At month forty-two, a remarkable 26 percent of customers were paying for something they had previously used for free.⁸

Supercharging Growth

Users who continuously find value in a product are more likely to tell their friends about it. Frequent usage creates more opportunities to encourage people to invite their friends, broadcast content, and share through word of mouth. Hooked users become brand evangelists

—megaphones for your company, bringing in new users at little or no cost.

Products with higher user engagement also have the potential to grow faster than their rivals. Case in point: Facebook leapfrogged its competitors, including MySpace and Friendster, even though it was relatively late to the social networking party. Although its competitors both had healthy growth rates and millions of users by the time Mark Zuckerberg's fledgling site launched beyond the closed doors of academia, his company came to dominate the industry.

Facebook's success was, in part, a result of what I call the *more is more* principle—more frequent usage drives

more viral growth. As David Skok, tech entrepreneur turned venture capitalist, points out, “The most important factor to increasing growth is . . . Viral Cycle Time.”⁹ Viral Cycle Time is the amount of time it takes a user to invite another user, and it can have a massive impact. “For example, after 20 days with a cycle time of two days, you will have 20,470 users,” Skok writes. “But if you halved that cycle time to one day, you would have over 20 million users! It is logical that it would be better to have more cycles occur, but it is less obvious just how much better.”

Having a greater proportion of users daily returning to a service dramatically decreases Viral Cycle Time for two

reasons: First, daily users initiate loops more often (think tagging a friend in a Facebook photo); second, more daily active users means more people to respond and react to each invitation. The cycle not only perpetuates the process—with higher and higher user engagement, it accelerates it.

Sharpening the Competitive Edge

User habits are a competitive advantage. Products that change customer routines are less susceptible to attacks from other companies.

Many entrepreneurs fall into the trap of building products that are only marginally better than existing solutions,

hoping their innovation will be good enough to woo customers away from existing products. But when it comes to shaking consumers' old habits, these naive entrepreneurs often find that better products don't always win—especially if a large number of users have already adopted a competing product.

A classic paper by John Gourville, a professor of marketing at Harvard Business School, stipulates that “many innovations fail because consumers irrationally overvalue the old while companies irrationally overvalue the new.”¹⁰

Gourville claims that for new entrants to stand a chance, they can’t just be better, they must be nine times better.

Why such a high bar? Because old habits die hard and new products or services need to offer dramatic improvements to shake users out of old routines.

Gourville writes that products that require a high degree of behavior change are doomed to fail even if the benefits of using the new product are clear and substantial.

For example, the technology I am using to write this book is inferior to existing alternatives in many ways. I'm referring to the QWERTY keyboard which was first developed in the 1870s for the now-ancient typewriter.

QWERTY was designed with commonly used characters spaced far apart. This layout prevented typists from jamming

the metal type bars of early machines.¹¹ This physical limitation is an anachronism in the digital age, yet QWERTY keyboards remain the standard despite the invention of far better layouts. Professor August Dvorak's keyboard design, for example, placed vowels in the center row, increasing typing speed and accuracy. Though patented in 1932, the Dvorak Simplified Keyboard was written off. QWERTY survives due to the high costs of changing user behavior. When first introduced to the keyboard, we use the hunt-and-peck method. After months of practice, we instinctively learn to activate all our fingers in response to our thoughts with little-to-no conscious

effort, and the words begin to flow effortlessly from mind to screen. But switching to an unfamiliar keyboard—even if more efficient—would force us to relearn how to type. Fat chance!

As we will learn in chapter 5, users also increase their dependency on habit-forming products by *storing value* in them—further reducing the likelihood of switching to an alternative. For example, every e-mail sent and received using Google’s Gmail is stored indefinitely, providing users with a lasting repository of past conversations. New followers on Twitter increase users’ clout and amplify their ability to transmit messages to their communities. Memories and experiences captured on Instagram are added to one’s

digital scrapbook. Switching to a new e-mail service, social network, or photo-sharing app becomes more difficult the more people use them. The nontransferable value created and stored inside these services discourages users from leaving.

Ultimately, user habits increase a business's return on investment. Higher customer lifetime value, greater pricing flexibility, supercharged growth, and a sharpened competitive edge together equal a more powerful bang for the company's buck.

Building the Mind

Monopoly

While user habits are a boon to companies fortunate enough to engender them, their existence inherently makes success less likely for new innovations and start-ups trying to disrupt the status quo. The fact is that successfully changing long-term user habits is exceptionally rare.

Altering behavior requires not only an understanding of how to persuade people to act—for example, the first time they land on a web page—but also necessitates getting them to repeat behaviors for long periods, ideally for the rest of their lives.

Companies that succeed in building

a habit-forming business are often associated with game-changing, wildly successful innovation. But like any discipline, habit design has rules and caveats that define and explain why some products change lives while others do not.

For one, new behaviors have a short half-life, as our minds tend to revert to our old ways of thinking and doing. Experiments show that lab animals habituated to new behaviors tend to regress to their first learned behaviors over time.¹² To borrow a term from accounting, behaviors are LIFO—“last in, first out.” In other words, the habits you’ve most recently acquired are also the ones most likely to go soonest.

This helps explain the overwhelming evidence that people rarely change their habits for long. Two-thirds of alcoholics who complete a rehabilitation program will pick up the bottle, and their old habits, within a year's time.¹³ Research shows that nearly everyone who loses weight on a diet gains back the pounds within two years.¹⁴

The enemy of forming new habits is past behaviors, and research suggests that old habits die hard. Even when we change our routines, neural pathways remain etched in our brains, ready to be reactivated when we lose focus.¹⁵ This presents an especially difficult challenge for product designers trying to create new lines or businesses based on

forming new habits.

For new behaviors to really take hold, they must occur often. In a recent study at the University College London, researchers followed participants as they attempted to form a habit of flossing their teeth.¹⁶ As one of its findings, the study concluded that the more frequently the new behavior occurred, the stronger the habit became. Like flossing, frequent engagement with a product—especially over a short period of time—increases the likelihood of forming new routines.

Google Search provides an example of a service built upon a frequent behavior that helped create users' habits. If you're skeptical that Google is habit forming (and you are a frequent Google

user), just try using Bing. In a head-to-head comparison of the efficacy of an incognito search, the products are nearly identical.¹⁷ Even if the geniuses at Google have in fact perfected a faster algorithm, the time saved is imperceptible to everyone but robots and Mr. Spock. Milliseconds matter, but they don't hook users.

So why haven't more Google users switched to Bing? Habits keep users loyal. If a user is familiar with the Google interface, switching to Bing requires cognitive effort. Although many aspects of Bing are similar to Google, even a slight change in pixel placement forces the would-be user to learn a new way of interacting with the site.

Adapting to the differences in the Bing interface is what actually slows down regular Google users and makes Bing feel inferior, not the technology itself.

Internet searches occur so frequently that Google is able to cement itself as the one and only solution in the habituated user's mind. Users no longer need to think about whether or not to use Google; they just do. Furthermore, whenever the company can identify the user through tracking technology, it improves search results based on past behaviors to deliver a more accurate and personalized experience, reinforcing the user's connection with the search engine. The more the product is used, the better the algorithm gets, and thus the more it is

used. The result is a virtuous cycle of habit-driven behavior resulting in Google's market domination.¹⁸

HABIT AS STRATEGY

Sometimes a behavior does not occur as frequently as flossing or Googling, but it still becomes a habit. For an infrequent action to become a habit, the user must perceive a high degree of utility, either from gaining pleasure or avoiding pain.

Take Amazon as an example: The e-tailer has its sights set on becoming the

world's one-stop shop. Amazon is so confident in its ability to form user habits that it sells and runs ads for directly competitive products on its site.¹⁹ Customers often see the item they are about to buy listed at a cheaper price and can click away to transact elsewhere. To some, this sounds like a formula for disaster. But to Amazon, it is a shrewd business strategy.

Not only does Amazon make money from the ads it runs from competing businesses, it also utilizes other companies' marketing dollars to form a habit in the shopper's mind. Amazon seeks to become the solution

to a frequently occurring pain point—the customer's desire to find the items they want.

By addressing shoppers' price concerns, Amazon earns loyalty even if it doesn't make the sale and comes across as trustworthy in the process. The tactic is backed by a 2003 study, which demonstrated that consumers' preference for an online retailer increases when they are offered competitive price information.²⁰ The technique has also been used by Progressive, the car insurance company, to drive over \$15 billion of annual insurance sales, up from just \$3.4 billion before the tactic

was implemented.

By allowing users to comparison shop from within the site, Amazon provides tremendous perceived utility to its customers. Although shopping on Amazon may not occur as frequently as searching on Google, the company solidifies its place as the default solution to customers' purchasing needs with each successful transaction. In fact, people are so comfortable comparison shopping on Amazon that they frequently use the company's mobile app to check prices when standing in the aisles of real stores—often making a

purchase from inside a competing retailer.²¹

In the Habit Zone

A company can begin to determine its product's habit-forming potential by plotting two factors: *frequency* (how often the behavior occurs) and *perceived utility* (how useful and rewarding the behavior is in the user's mind over alternative solutions).

Googling occurs multiple times per day, but any particular search is negligibly better than rival services like Bing. Conversely, using Amazon may be

a less frequent occurrence, but users receive great value knowing they'll find whatever they need at the one and only “everything store.”²²

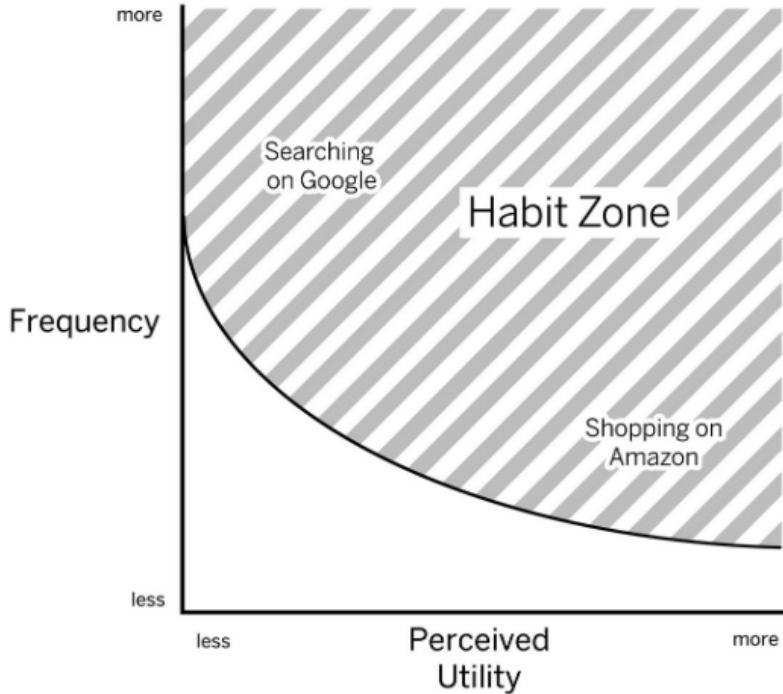


FIGURE 1

As represented in figure 1, a behavior that occurs with enough frequency and perceived utility enters the *Habit Zone*, helping to make it a default behavior. If either of these factors falls short and the behavior lies below the threshold, it is less likely that the desired behavior will become a habit.

Note that the line slopes downward but never quite reaches the perceived utility axis. Some behaviors never become habits because they do not occur frequently enough. No matter how much utility is involved, infrequent behaviors remain conscious actions and never create the automatic response that is characteristic of habits. On the other

axis, however, even a behavior that provides minimal perceived benefit can become a habit simply because it occurs frequently.

This concept is meant to be a guiding theory, and the scale of the illustration is intentionally left blank. Unfortunately for companies, research thus far has not found a universal timescale for turning all behaviors into habits. A 2010 study found that some habits can be formed in a matter of weeks while others can take more than five months.²³ The researchers also found that the complexity of the behavior and how important the habit was to the person greatly affected how quickly the routine was formed.

There are few rules when it comes to answering “How frequent is frequent enough?” and the answer is likely specific to each business and behavior. However, as the previously mentioned flossing study demonstrates, we know that higher frequency is better.

Think of the products and services you would identify as habit forming. Most of these are used daily, if not multiple times per day. Let’s explore why we use these products so frequently.

Vitamins Versus Painkillers

It's never been easier to launch a new

product or service, yet most new endeavors fail. Why? Products fail for a variety of reasons: Companies run out of funding, products enter markets too early or too late, the marketplace doesn't need what companies are offering, or founders simply give up. Just as failure has many causes, success too can be attributed to a variety of factors.

However, one aspect is common to all successful innovations—they solve problems. That may seem obvious, but understanding the kind of problem a new product solves can be a topic of much debate.

“Are you building a vitamin or painkiller?” is a common, almost clichéd question many investors ask

founders eager to cash their first venture capital check. The correct answer, from the perspective of most investors, is the latter: a painkiller. Likewise, innovators in companies big and small are constantly asked to prove their idea is important enough to merit the time and money needed to build it. Gatekeepers such as investors and managers want to invest in solving real problems or meeting immediate needs by backing painkillers.

Painkillers solve an obvious need, relieving a specific pain, and often have quantifiable markets.

Think Tylenol, the brand-name version of acetaminophen, and the product's promise of reliable relief. It's the kind of ready-made solution for which people are happy to pay.

Vitamins, by contrast, do not necessarily solve an obvious pain point. Instead they appeal to users' emotional rather than functional needs.

When we take our multivitamin each morning, we don't really know if it is actually making us healthier. In fact, recent evidence shows taking multivitamins may actually be doing more harm than good.²⁴

But we don't really care, do we? Efficacy is not why we take vitamins. Taking a vitamin is a “check it off your list” behavior we measure in terms of psychological, rather than physical, relief. We feel satisfied that we are doing something good for our bodies—even if we can't tell how much good it is actually doing us.

Unlike a painkiller, without which we cannot function, missing a few days of vitamin popping, say while on vacation, is no big deal. So perhaps managers and investors know best? Perhaps building painkillers, not vitamins, is always the right strategy.

Not so fast.

Let's consider a few of today's

hottest consumer technology companies: Facebook, Twitter, Instagram, and Pinterest. What are they selling—vitamins or painkillers? Most people would guess vitamins, thinking users aren't doing much of anything important other than perhaps seeking a quick boost of social validation. After all, think back to before you first started using these services. No one ever woke up in the middle of the night screaming, "I need something to help me update my status!"

But like so many innovations, we did not know we needed them until they became part of our everyday lives. Before making up your mind on the vitamin versus painkiller debate for some of the world's most successful tech

companies, consider this idea: A habit is when not doing an action causes a bit of pain.

It is important to clarify that the term *pain*, as it is frequently used in business school and marketing books, is somewhat hyperbolic. In reality, the experience we are talking about is more similar to an *itch*, a feeling that manifests within the mind and causes discomfort until it is satisfied. The habit-forming products we use are simply there to provide some sort of relief. Using a technology or product to scratch the itch provides faster satisfaction than ignoring it. Once we come to depend on a tool, nothing else will do.

My answer to the vitamin versus

painkiller question: Habit-forming technologies are both. These services seem at first to be offering nice-to-have vitamins, but once the habit is established, they provide an ongoing pain remedy.

Seeking pleasure and avoiding pain are two key motivators in all species. When we feel discomfort, we seek to escape the uncomfortable sensation. In the next chapter, we will explore how emotions, often negative ones, trigger users to reach for solutions. For now, the important thing to remember is that habit-forming products create associations in users' minds—and that the solution to their pain may be found in your product's use.

We'll discuss the morality of manipulation in chapter 8; however, it is worth noting that although some people use the terms interchangeably, *habits* are not the same things as *addictions*. The latter word means persistent, compulsive dependencies on a behavior or substance. Addictions, by definition, are self-destructive. Thus, it is irresponsible to make products that rely on creating and maintaining user addictions because doing so would mean intentionally harming people.

A habit, on the other hand, is a behavior that can have a positive influence on a person's life. Habits can be healthy or unhealthy, and you likely have several helpful habits you carry out

throughout your day. Did you brush your teeth today? Take a shower? Did you express gratitude by saying “Thanks”? Or in my case, use the greeting “Good morning” while on an *evening* jog? These are common behaviors done with little or no deliberation—they are habits.

Diving into the Hook Model

Ready to learn more about creating positive user habits? Read on to gain a deeper understanding of the Hook Model, a simple yet powerful way to help your customers form habits that connect their problem with your

solution.

In the next chapters we dive into each phase of the Hook Model. Along the way I will provide examples you can use in the design of your own product or service. By learning a few fundamentals of how the mind works, you will increase your odds of building the right product faster.

By progressing users through the four steps of the Hook Model—trigger, action, variable reward, and investment—hooks form habits.

REMEMBER & SHARE

- For some businesses,

forming habits is a critical component to success, but not every business requires habitual user engagement.

- When successful, forming strong user habits can have several business benefits including: higher customer lifetime value (CLTV), greater pricing flexibility, supercharged growth, and a sharper competitive edge.
- Habits cannot form outside the Habit Zone, where the behavior occurs with enough

frequency and perceived utility.

- Habit-forming products often start as nice-to-haves (vitamins) but once the habit is formed, they become must-haves (painkillers).
- Habit-forming products alleviate users' pain by relieving a pronounced itch.
- Designing habit-forming products is a form of manipulation. Product builders would benefit from a bit of introspection before attempting to hook users

to make sure they are building healthy habits, not unhealthy addictions (more to come on this topic in chapter 8).

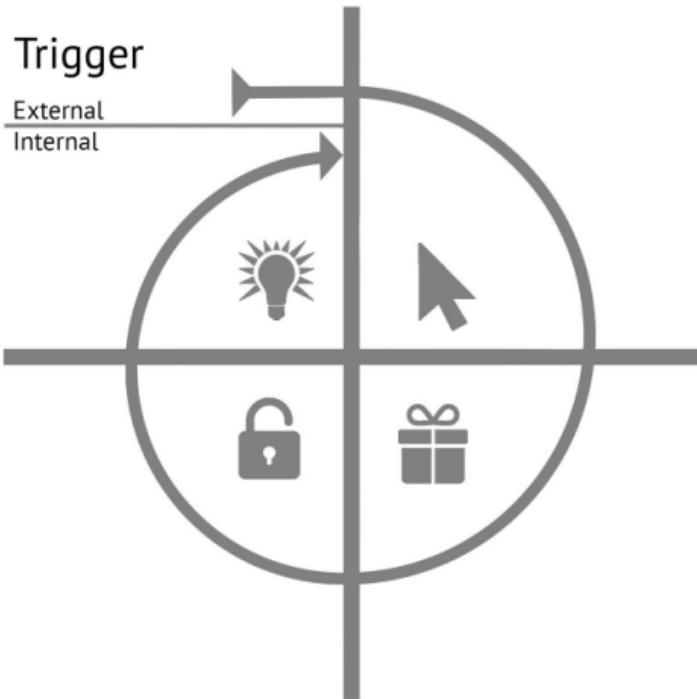
DO THIS NOW

If you are building a habit-forming product, write down the answers to these questions:

- What habits does your business model require?
- What problem are users turning to your product to solve?

- How do users currently solve that problem and why does it need a solution?
- How frequently do you expect users to engage with your product?
- What user behavior do you want to make into a habit?

Trigger



2

Trigger

Yin (not her real name) is in her mid-twenties, lives in Palo Alto, California, and attends Stanford University. She has all the composure and polish you'd expect of a student at a prestigious school, yet she succumbs to a persistent habit throughout her day. She can't help it; she is compulsively hooked on

Instagram.

The photo- and video-sharing social network, purchased by Facebook for \$1 billion in 2012, has captured the minds and attention of Yin and 150 million other users like her.¹

The company's acquisition demonstrates the increasing power of—and immense monetary value created by—habit-forming technology.

Naturally, the Instagram purchase price was driven by a host of factors, including a rumored bidding war for the company.² But at its core Instagram is an

example of an enterprising team—conversant in psychology as much as technology—that unleashed a habit-forming product on users who subsequently made it a part of their daily routines.³

Yin doesn't realize she's hooked, although she admits she regularly snaps and posts dozens of pictures per day using the app. "It's just fun," she says as she reviews her latest collection of moody snapshots filtered to look like they were taken in the late 1970s. "*I don't have a problem or anything. I just use it whenever I see something cool. I feel I need to grab it before it's gone.*"

What formed Yin's Instagram habit? How did this seemingly simple app

become such an important part of her life? As we will soon learn, habits like Yin's are formed over time, but the chain reaction that forms a habit always starts with a trigger.

HABITS ARE NOT CREATED, THEY ARE BUILT UPON

Habits are like pearls. Oysters create natural pearls by accumulating layer upon layer of a nacre called mother-of-pearl, eventually forming the smooth treasure over several years. But what causes the nacre to begin forming a pearl? The arrival

of a tiny irritant, such as a piece of grit or an unwelcome parasite, triggers the oyster's system to begin blanketing the invader with layers of shimmery coating.

Similarly, new habits need a foundation upon which to build. Triggers provide the basis for sustained behavior change.

Reflect on your own life for a moment. What woke you up this morning? What caused you to brush your teeth? What brought you to read this book?

Triggers take the form of obvious cues like the morning alarm clock but also come as more subtle, sometimes

subconscious signals that just as effectively influence our daily behavior. A trigger is the actuator of behavior—the grit in the oyster that precipitates the pearl. Whether we are cognizant of them or not, triggers move us to take action.

Triggers come in two types: *external* and *internal*.

External Triggers

Habit-forming technologies start changing behavior by first cueing users with a call to action. This sensory stimuli is delivered through any number

of things in our environment.

External triggers are embedded with information, which tells the user what to do next.

An external trigger communicates the next action the user should take. Often, the desired action is made explicitly clear. For example, what external triggers do you see in this Coca-Cola vending machine in figure 2?

Take a close look at the welcoming man in the image. He is offering you a refreshing Coke. The “Thirsty?” text below the image tells you what the man in the photo is asking and prompts the next expected action of inserting money

and selecting a beverage.



FIGURE 2

Online, an external trigger may take the form of a prominent button, such as the large “Log in to Mint” prompt in the e-mail from Mint.com in figure 3. Here again, the user is given explicit instructions about what action to take after reading the e-mail: Click on that big button.

Notice how prominent and clear the intended action is in the e-mail from Mint? The company could have included several other triggers such as prompts to check your bank balance, view credit card deals, or set financial goals. Instead, because this is an important account alert e-mail, Mint has reduced

the available actions to a single click: logging in to view and fix your account.

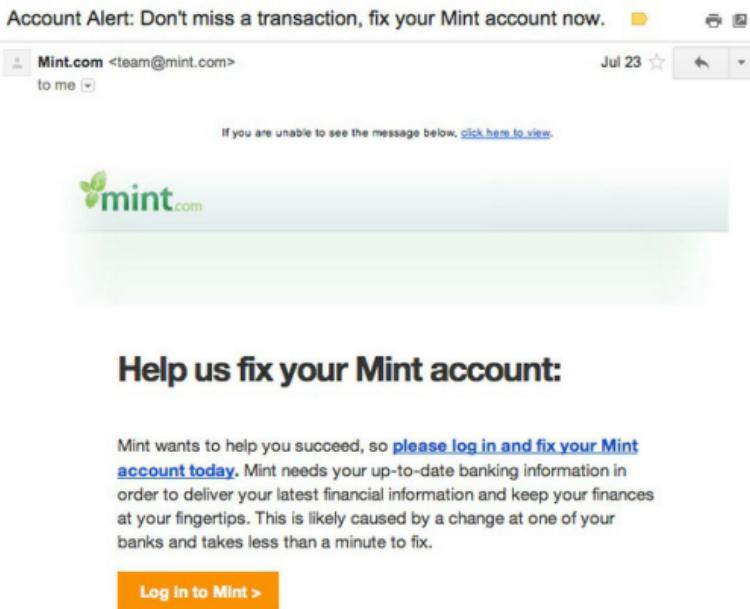


FIGURE 3

More choices require the user to evaluate multiple options. Too many

choices or irrelevant options can cause hesitation, confusion, or worse—abandonment.⁴ Reducing the thinking required to take the next action increases the likelihood of the desired behavior occurring unconsciously. We'll explore this further in the next chapter.

The Coca-Cola vending machine and Mint.com e-mail provide good examples of explicit external triggers. However, external triggers can also convey implicit information about the next desired user action. For example, we've all learned that Web site links are for clicking and app icons are for tapping. The only purpose for these common visual triggers is to prompt the user to action. As a readily accepted aspect of

interface design, these calls to action don't need to tell people how to use them; the information is embedded.

Types of External Triggers

Companies can utilize four types of external triggers to move users to complete desired actions:

1. Paid Triggers

Advertising, search engine marketing, and other paid channels are commonly used to get users' attention and prompt them to act. Paid triggers can be effective but costly ways to keep users

coming back. Habit-forming companies tend not to rely on paid triggers for very long, if at all. Imagine if Facebook or Twitter needed to buy an ad to prompt users to revisit their sites—these companies would soon go broke.

Because paying for reengagement is unsustainable for most business models, companies generally use paid triggers to acquire new users and then leverage other triggers to bring them back.

2. Earned Triggers

Earned triggers are free in that they cannot be bought directly, but they often require investment in the form of time spent on public and media relations.

Favorable press mentions, hot viral videos, and featured app store placements are all effective ways to gain attention. Companies may be lulled into thinking that related downloads or sales spikes signal long-term success, yet awareness generated by earned triggers can be short-lived.

For earned triggers to drive ongoing user acquisition, companies must keep their products in the limelight—a difficult and unpredictable task.

3. Relationship Triggers

One person telling others about a product or service can be a highly effective external trigger for action.

Whether through an electronic invitation, a Facebook “like,” or old fashioned word of mouth, product referrals from friends and family are often a key component of technology diffusion.

Relationship triggers can create the viral hyper-growth entrepreneurs and investors lust after. Sometimes relationship triggers drive growth because people love to tell one another about a wonderful offer.

For example, it is hard to top PayPal’s viral success of the late 1990s.⁵ PayPal knew that once account holders started sending other users money online they would realize the tremendous value of the service. The allure that someone just sent you money

was a huge incentive to open an account, and PayPal's growth spread because it was both viral and useful.

Unfortunately, some companies utilize viral loops and relationship triggers in unethical ways: by deploying so-called dark patterns. When designers intentionally trick users into inviting friends or blasting a message to their social networks, they may see some initial growth, but it comes at the expense of users' goodwill and trust. When people discover they've been duped, they vent their frustration and stop using the product.

Proper use of relationship triggers requires building an engaged user base that is enthusiastic about sharing the

benefits of the product with others.

4. Owned Triggers

Owned triggers consume a piece of real estate in the user's environment. They consistently show up in daily life and it is ultimately up to the user to opt in to allowing these triggers to appear.

For example, an app icon on the user's phone screen, an e-mail newsletter to which the user subscribes, or an app update notification only appears if the user wants it there. As long as the user agrees to receive a trigger, the company that sets the trigger *owns* a share of the user's attention.

Owned triggers are only set after

users sign up for an account, submit their e-mail address, install an app, opt in to newsletters, or otherwise indicate they want to continue receiving communications.

While paid, earned, and relationship triggers drive new user acquisition, owned triggers prompt repeat engagement until a habit is formed. Without owned triggers and users' tacit permission to enter their attentional space, it is difficult to cue users frequently enough to change their behavior.

• • •

Yet external triggers are only the first

step. The ultimate goal of all external triggers is to propel users into and through the Hook Model so that, after successive cycles, they do not need further prompting from external triggers. When users form habits, they are cued by a different kind of trigger: internal ones.

Internal Triggers

When a product becomes tightly coupled with a thought, an emotion, or a preexisting routine, it leverages an internal trigger. Unlike external triggers, which use sensory stimuli like a morning alarm clock or giant “Login Now” button, you can’t see, touch, or hear an

internal trigger.

Internal triggers manifest automatically in your mind. Connecting internal triggers with a product is the brass ring of consumer technology.

For Yin, the young woman with the Instagram habit, her favorite photo app manufactured a predictable response cued by an internal trigger. Through repeated conditioning, a connection was formed between Yin's need to capture images of the things around her and the app on her ever-present mobile device.

Emotions, particularly negative ones, are powerful internal triggers and

greatly influence our daily routines. Feelings of boredom, loneliness, frustration, confusion, and indecisiveness often instigate a slight pain or irritation and prompt an almost instantaneous and often mindless action to quell the negative sensation. For instance, Yin often uses Instagram when she fears a special moment will be lost forever.

The severity of the discomfort may be relatively minor—perhaps her fear is below the perceptibility of consciousness—but that's exactly the point. Our life is filled with tiny stressors and we're usually unaware of our habitual reactions to these nagging issues.

Positive emotions can also serve as internal triggers, and may even be triggered themselves by a need to satisfy something that is bothering us. After all, we use products to find solutions to problems. The desire to be entertained can be thought of as the need to satiate boredom. A need to share good news can also be thought of as an attempt to find and maintain social connections.

As product designers it is our goal to solve these problems and eliminate pain—to scratch the user's itch. Users who find a product that alleviates their pain will form strong, positive associations with the product over time. After continued use, bonds begin to form—like the layers of nacre in an oyster—

between the product and the user whose need it satisfies.

Gradually, these bonds cement into a habit as users turn to your product when experiencing certain internal triggers.

A study at the Missouri University of Science and Technology illustrates how tech solutions can provide frequent psychological relief.⁶ In 2011 a group of 216 undergraduates volunteered to have their Internet activity anonymously tracked. Over the course of the academic year, the researchers measured the frequency with which these students

used the web and what they were doing online.

At the end of the study, the researchers compared anonymous data of students who visited the university's health services to treat symptoms of depression. "We identified several features of Internet usage that correlated with depression," wrote Sriram Chellappan, one of the study's authors.⁷ "For example, participants with depressive symptoms tended to engage in very high e-mail usage . . . Other characteristic features of depressive Internet behavior included increased amounts of video watching, gaming, and chatting."

The study demonstrated that people

suffering from symptoms of depression used the Internet more. Why is that? One hypothesis is that those with depression experience negative emotions more frequently than the general population and seek relief by turning to technology to lift their mood.

Consider, perhaps, your own emotion-cued behaviors. What do you do in response to your internal triggers?

When bored, many people seek excitement and turn to dramatic news headlines. When we feel overly stressed, we seek serenity, perhaps finding relief in sites like Pinterest. When we feel lonely, destinations like Facebook and Twitter provide instant social connections.

To ameliorate the sensation of uncertainty, Google is just a click away. E-mail, perhaps the mother of all habit-forming technology, is a go-to solution for many of our daily agitations, from validating our importance (or even our existence) by checking to see if someone needs us, to providing an escape from life's more mundane moments.

Once we're hooked, using these products does not always require an explicit call to action. Instead, they rely upon our automatic responses to feelings that precipitate the desired behavior. Products that attach to these internal triggers provide users with quick relief. Once a technology has created an association in users' minds that the

product is the solution of choice, they return on their own, no longer needing prompts from external triggers.

In the case of internal triggers, the information about what to do next is encoded as a learned association in the user's memory.

The association between an internal trigger and your product, however, is not formed overnight. It can take weeks or months of frequent usage for internal triggers to latch onto cues. New habits are sparked by external triggers, but associations with internal triggers are what keeps users hooked.

As Yin said, “I just use it whenever I see something cool.” By thoughtfully moving users from external to internal triggers, Instagram designed a persistent routine in people’s lives. A need is triggered in Yin’s mind every time a moment is worth holding on to, and for her, the immediate solution is Instagram. Yin no longer requires an external stimulus to prompt her to use the app—the internal trigger happens on its own.

Building for Triggers

Products that successfully create habits soothe the user’s pain by laying claim to a particular feeling. To do so, product

designers must know their user's internal triggers—that is, the pain they seek to solve. Finding customers' internal triggers requires learning more about people than what they can tell you in a survey, though. It requires digging deeper to understand how your users feel.

The ultimate goal of a habit-forming product is to solve the user's pain by creating an association so that the user identifies the company's product or service as the source of relief.

First, the company must identify the

particular frustration or pain point in emotional terms, rather than product features. How do you, as a designer, go about uncovering the source of a user's pain? The best place to start is to learn the drivers behind successful habit-forming products—not to copy them, but to understand how they solve users' problems. Doing so will give you practice in diving deeper into the mind of the consumer and alert you to common human needs and desires.

As Evan Williams, cofounder of Blogger and Twitter said, the Internet is “a giant machine designed to give people what they want.”⁸ Williams continued, “We often think the Internet enables you to do new things . . . But

people just want to do the same things they've always done.”

These common needs are timeless and universal. Yet talking to users to reveal these wants will likely prove ineffective because they themselves don't know which emotions motivate them. People just don't think in these terms. You'll often find that people's *declared preferences*—what they say they want—are far different from their *revealed preferences*—what they actually do.

As Erika Hall, author of *Just Enough Research* writes, “When the research focuses on what people *actually do* (watch cat videos) rather than what they *wish they did* (produce

cinema-quality home movies) it actually expands possibilities.”⁹ Looking for discrepancies exposes opportunities. Why do people really send text messages? Why do they take photos? What role does watching television or sports play in their lives? Ask yourself what pain these habits solve and what the user might be feeling right before one of these actions.

What would your users want to achieve by using your solution? Where and when will they use it? What emotions influence their use and will trigger them to action?

Jack Dorsey, cofounder of Twitter and Square, shared how his companies answer these important questions: “[If]

you want to build a product that is relevant to folks, you need to put yourself in their shoes and you need to write a story from their side. So, we spend a lot of time writing what's called user narratives.”¹⁰

Dorsey goes on to describe how he tries to truly understand his user: “He is in the middle of Chicago and they go to a coffee store . . . This is the experience they’re going to have. It reads like a play. It’s really, really beautiful. If you do that story well, then all of the prioritization, all of the product, all of the design and all the coordination that you need to do with these products just falls out naturally because you can edit the story and everyone can relate to the

story from all levels of the organization, engineers to operations to support to designers to the business side of the house.”

Dorsey believes a clear description of users—their desires, emotions, the context with which they use the product—is paramount to building the right solution. In addition to Dorsey’s user narratives, tools like customer development,¹¹ usability studies, and empathy maps¹² are examples of methods for learning about potential users.

One method is to try asking the question “Why?” as many times as it takes to get to an emotion. Usually, this will happen by the fifth why. This is a

technique adapted from the Toyota Production System, described by Taiichi Ohno as the “5 Whys Method.” Ohno wrote that it was “the basis of Toyota’s scientific approach . . . by repeating ‘why?’ five times, the nature of the problem as well as its solution becomes clear.”¹³

When it comes to figuring out why people use habit-forming products, internal triggers are the root cause, and “Why?” is a question that can help drill right to the core.

For example, let’s say we’re building a fancy new technology called e-mail for the first time. The target user is a busy middle manager named Julie. We’ve built a detailed narrative of our

user, Julie, that helps us answer the following series of whys:

Why #1: Why would Julie want to use e-mail?

Answer: So she can send and receive messages.

Why #2: Why would she want to do that?

Answer: Because she wants to share and receive information quickly.

Why #3: Why does she want to do that?

Answer: To know what's going on in the lives of her coworkers, friends, and family.

Why #4: Why does she need to know that?

Answer: To know if someone needs her.

Why #5: Why would she care about that?

Answer: She fears being out of the loop.

Now we've got something! Fear is a powerful internal trigger and we can design our solution to help calm Julie's fear. Naturally, we might have come to another conclusion by starting with a different persona, varying the narrative, or coming up with different hypothetical answers along the chain of whys. Only an accurate understanding of our user's underlying needs can inform the product requirements.

Now that we have an understanding of the user's pain, we can move on to the next step of testing our product to see if it solves his problem.

Unpacking Instagram's Triggers

A large component of Instagram's success—and what brings its millions of users back nearly every day—is the company's ability to understand its users' triggers. For people like Yin, Instagram is a harbor for emotions and inspirations, a virtual memoir preserved in pixels.

Yin's habitual use of the service started with an external trigger—a recommendation from a friend and weeks of repetitious use before she became a regular user.

Every time Yin snaps a picture, she shares it with her friends on Facebook and Twitter. Consider the first time you saw an Instagram photo. Did it catch

your attention? Did it make you curious? Did it call you to action?

These photos serve as a *relationship external trigger*, raising awareness and serving as a cue for others to install and use the app. But Instagram photos shared on Facebook and Twitter were not the only external triggers driving new users. Others learned of the app from the media and bloggers, or through the featured placement Apple granted Instagram in its App Store—all *earned external triggers*.

Once installed, Instagram benefited from *owned external triggers*. The app icon on users' phone screens and push notifications about their friends' postings served to call them back.

With repeated use, Instagram formed strong associations with internal triggers, and what was once a brief distraction became an intraday routine for many users.

It is the fear of losing a special moment that instigates a pang of stress. This negative emotion is the internal trigger that brings Instagram users back to the app to alleviate this pain by capturing a photo. As users continue to use the service, new internal triggers form.

Yet Instagram is more than a camera replacement; it is a social network. The app helps users dispel boredom by connecting them with others, sharing photos, and swapping lighthearted

banter.¹⁴

Like many social networking sites, Instagram also alleviates the increasingly recognizable pain point known as *fear of missing out*, or FOMO. For Instagram, associations with internal triggers provide a foundation to form new habits.

It is now time to understand the mechanics of connecting the user's problem with your solution by utilizing the next step in the Hook Model. In the next chapter we'll find out how moving people from triggers to actions is critical in establishing new routines.

REMEMBER & SHARE

- *Triggers* cue the user to take action and are the first step in the Hook Model.
- Triggers come in two types—external and internal.
- *External triggers* tell the user what to do next by placing information within the user's environment.
- *Internal triggers* tell the user what to do next

through associations stored in the user's memory.

- Negative emotions frequently serve as internal triggers.
- To build a habit-forming product, makers need to understand which user emotions may be tied to internal triggers and know how to leverage external triggers to drive the user to action.

DO THIS NOW

Refer to the answers you came up with in

the last “Do This Now” section to complete the following exercises:

- Who is your product’s user?
- What is the user doing right before your intended habit?
- Come up with three internal triggers that could cue your user to action. Refer to the 5 Whys Method described in this chapter.
- Which internal trigger does your user experience most

frequently?

- Finish this brief narrative using the most frequent internal trigger and the habit you are designing:
“Every time the user (internal trigger), he/she (first action of intended habit).”
- Refer back to the question about what the user is doing right before the first action of the habit. What might be places and times to send an external trigger?
- How can you couple an external trigger as closely as possible to

when the user's internal trigger fires?

- Think of at least three conventional ways to trigger your user with current technology (e-mails, notifications, text messages, etc.). Then stretch yourself to come up with at least three crazy or currently impossible ideas for ways to trigger your user (wearable computers, biometric sensors, carrier pigeons, etc.). You could find that your crazy ideas spur some new approaches that may not be so nutty after

all. In a few years new technologies will create all sorts of currently unimaginable triggering opportunities.

Action



3

Action

The next step in the Hook is the *action phase*. The trigger, driven by internal or external cues, informs the user of what to do next; however, if the user does not take action, the trigger is useless. To initiate action, doing must be easier than thinking. Remember, a habit is a behavior done with little or no

conscious thought. The more effort—either physical or mental—required to perform the desired action, the less likely it is to occur.

Action Versus Inaction

If action is paramount to habit formation, how can a product designer influence users to act? Is there a formula for behavior? It turns out that there is.

While there are many theories about what drives human behaviors, Dr. B. J. Fogg, Director of the Persuasive Technology Lab at Stanford University, has developed a model that serves as a relatively simple way to understand

what drives our actions.

Fogg posits that there are three ingredients required to initiate any and all behaviors: (1) the user must have sufficient motivation; (2) the user must have the ability to complete the desired action; and (3) a trigger must be present to activate the behavior.

The Fogg Behavior Model is represented in the formula $B = MAT$, which represents that a given behavior will occur when motivation, ability, and a trigger are present at the same time and in sufficient degrees.¹ If any component

of this formula is missing or inadequate, the user will not cross the “Action Line” and the behavior will not occur.

Let’s walk through an example Fogg uses to explain his model. Imagine a time when your mobile phone rang but you didn’t answer it. Why not?

Perhaps the phone was buried in a bag and therefore difficult to reach. In this case your inability to easily answer the call inhibited the action. Your ability was limited.

Maybe you thought the caller was a telemarketer or someone else you did not want to speak to. Your lack of motivation influenced you to ignore the call.

It is possible that the call was

important and within arm's reach, but the ringer on your phone was silenced. Despite having both a strong motivation and easy access to answer the call, it was completely missed because you never heard it ring—in other words, no trigger was present.

In the previous chapter we covered triggers. Let us now dive deeper into the other two components of the Fogg Behavior Model: *motivation* and *ability*.

Motivation

While a trigger cues an action, motivation defines the level of desire to

take that action. Dr. Edward Deci, Professor of Psychology at the University of Rochester and a leading researcher on the self-determination theory, defines *motivation* as “the energy for action.”²

The nature of motivation is a widely contested topic in psychology, but Fogg argues that three Core Motivators drive our desire to act.

Fogg states that all humans are motivated to seek pleasure and avoid pain; to seek hope and avoid fear; and finally, to seek social acceptance and avoid rejection. The two sides of the three Core Motivators can be thought of as levers to increase or decrease the likelihood of someone’s taking a

particular action by increasing or decreasing that person's motivation.

Motivation Examples in Advertising

Perhaps no industry makes the elements of motivation more explicit than the advertising business. Advertisers regularly tap into people's motivations to influence their habits. By looking at ads with a critical eye, we can identify how they attempt to influence our actions.

For example, Barack Obama's 2008 presidential campaign leveraged a deeply inspiring message and image during a time of economic and political upheaval. An iconic poster designed by

artist Shepard Fairey conveyed the idea of hope—not only printing the word in bold letters along the bottom of the image, but also through Obama’s steadfast gaze as he looked confidently toward the future. (Unfortunately, because this image is at the center of a copyright battle between Fairey and the Associated Press, which claims ownership of the original photograph used in the artwork, I’ve chosen to not to include it here. If you can’t recall the image, there is a link in the endnotes).³

Another example of motivation in advertising relates to the old saying “Sex sells.” Long an advertising standard, images of buff, scantily clad (and usually female) bodies are used to hawk

everything from the latest Victoria's Secret lingerie to domain names through GoDaddy .com and fast food chains such as Carl's Jr. and Burger King (figure 4). These and countless other ads use the voyeuristic promise of pleasure to capture attention and motivate action.

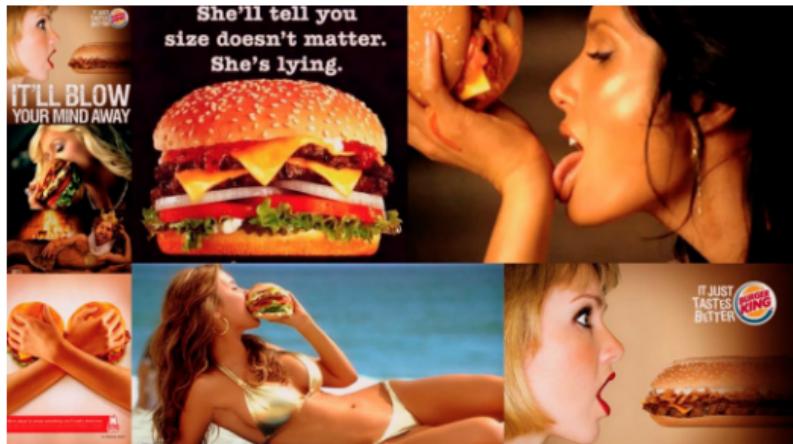


FIGURE 4

Naturally, this strategy only appeals to a particular demographic's association with sex as a salient motivator. While teenage boys—the common target for such ads—may find them inspiring, others may find them distasteful. What motivates some people will not motivate others, a fact that provides all the more reason to understand the needs of your particular target audience.



FIGURE 5

Sometimes the psychological motivator is not as obvious as those used by Obama supporters or fast food chains. The Budweiser ad in figure 5 illustrates how the beer company uses the motivator of social cohesion by displaying three pals ("buds") cheering for their national team. Although beer is

not directly related to social acceptance, the ad reinforces the association that the brand goes together with good friends and good times.

On the flip side, negative emotions such as fear can also be powerful motivators. The ad in figure 6 shows a disabled man with a shocking head scar. The ad strongly communicates the risks of not wearing a motorcycle helmet. The tagline, *I won't wear a helmet it makes me look stupid*, along with the patient's post-motorcycle accident mental age (two years old), send a chilling message.

"I WON'T WEAR A HELMET
(PHAN DINH - MENTAL AGE 2YRS)
IT MAKES ME LOOK STUPID"

EVERY YEAR OVER 12,000 PEOPLE DIE ON LOW LOADS AND 30,000 ARE SERIOUSLY INJURED. THAT MEANS THOUSANDS OF FAMILIES LEFT PICKING UP THE PIECES. FAMILIES TORTURED BY THE LOSS OF A LOVED ONE, CRIPPLED BY REDUCED INCOME OR THE SUDDEN NEED TO CARE FOR A RELATIVE WITH PERMANENT BRAIN DAMAGE. THE SAD TRUTH IS THAT MOST OF THESE CASES COULD HAVE BEEN PREVENTED BY SIMPLY WEARING A HELMET. WHEN YOU THINK ABOUT IT, THERE ARE NO EXCUSES.

WEAR A HELMET. THERE ARE NO EXCUSES.

FIGURE 6

As described in the previous chapter on triggers, understanding why the user needs your product or service is critical.

While internal triggers are the frequent, everyday itch experienced by users, the right

motivators create action by offering the promise of desirable outcomes (i.e., a satisfying scratch).

However, even with the right trigger enabled and motivation running high, product designers often find users still don't behave the way they want them to. What's missing in this equation? Usability—or rather, the ability of the user to take action easily.

Ability

In his book *Something Really New: Three Simple Steps to Creating Truly*

Innovative Products,⁴ author Denis J. Hauptly deconstructs the process of innovation into its most fundamental steps. First, Hauptly states, understand the reason people use a product or service. Next, lay out the steps the customer must take to get the job done. Finally, once the series of tasks from intention to outcome is understood, simply start removing steps until you reach the simplest possible process.

Consequently, any technology or product that significantly reduces the steps to complete a task will enjoy high adoption rates by the people it assists.

For Hauptly, easier equals better. However, can the nature of innovation be explained so succinctly? Perhaps a brief detour into the technology of the recent past will illustrate the point.

Just twenty years ago a dial-up Internet connection seemed magical. All users had to do was boot up their computers, hit a few keys on their desktop keyboards, wait for their modems to screech and scream as they established connections, and then, perhaps thirty seconds to a minute later, they were online. Checking e-mail or browsing the nascent World Wide Web was terribly slow by today's standards, but offered unprecedented convenience compared with finding information any

other way. The technology was remarkable and soon became a ritual for millions of people accessing this new marvel known as the Internet.

Few of us could stand the torture of using a 2400-baud modem anymore now that we've become accustomed to our always-on, high-speed Internet connections. E-mails are now instantaneously pushed to the devices in our pockets. Our photos, music, videos, and files—not to mention the vastness of the open web—are accessible almost anywhere, anytime, on any connected device.

In line with Hauptly's assertion, as the steps required to get something done (in this case to get online and use the

Internet) were removed or improved upon, adoption increased.

For example, consider the trend line of the relationship between the percentage of people creating content online and the increasing ease of doing so, as shown in figure 7.

Web 1.0 was categorized by a few content providers like CNET or the *New York Times* publishing to the masses, with only a tiny number of people creating what others read.

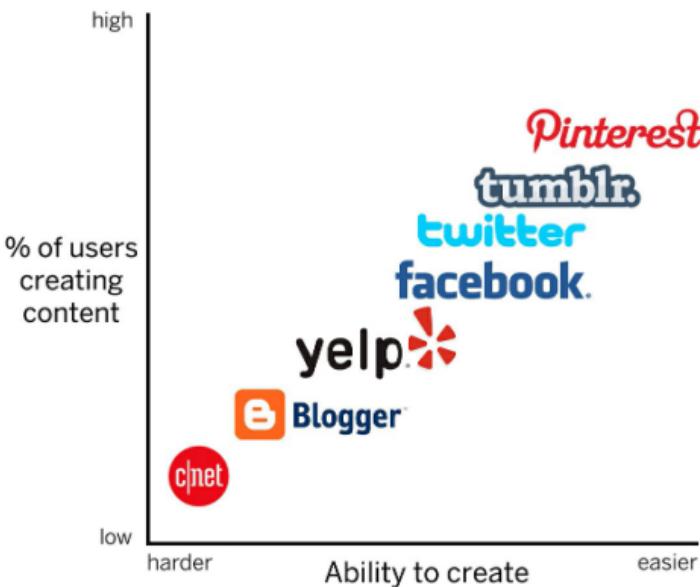


FIGURE 7

In the late 1990s blogging changed the web. Before this era, amateur writers had to purchase their own domain, fiddle with DNS settings, find a web host, and set up a content-management system to

present their writing. Suddenly, new companies such as Blogger eliminated most of these steps by allowing users to simply register an account and start posting.

Evan Williams, cofounder of Blogger and Twitter, echoes Hauptly's formula for innovation when he describes his own approach to building two massively successful companies:

“Take a human desire, preferably one that has been around for a really long time . . . Identify that desire and use modern technology to take out steps.”

Blogger made posting content online dramatically easier. The result? The percentage of users creating content online, as opposed to simply consuming it, increased.

Along came Facebook and other social media tools, refining earlier innovations such as Bulletin Board Systems (BBS) and Really Simple Syndication (RSS) feeds into tools for status update–hungry users.

Seven years after Blogger’s birth, a new company described at first as a “microblogging” service sought to bring sharing to the masses: Twitter. For many, blogging was still a difficult, time-consuming venture, but anyone could type short, casual messages. *Tweeting*

began to enter the national lexicon as Twitter gained wider adoption, climbing to 500 million registered users by 2012.⁵ Critics first discounted Twitter's 140-character message limitation as gimmicky and restrictive; little did they realize the constraint actually increased users' ability to create. A few keyboard taps and users were sharing. As of late 2013, 340 million tweets were sent every day.

More recently, companies such as Pinterest, Instagram, and Vine have elevated online content creation to a new level of simplicity. Just a quick snap of a photo or repin of an interesting image shares information across multiple social networks. The pattern of

innovation shows that making a given action easier to accomplish spurs each successive phase of the web, helping to turn the formerly niche behavior of content publishing into a mainstream habit.

As recent history of the web demonstrates, the ease or difficulty of doing a particular action affects the likelihood that a behavior will occur. To successfully simplify a product, we must remove obstacles that stand in the user's way. According to the Fogg Behavior Model, *ability is the capacity to do a particular behavior.*

ELEMENTS OF SIMPLICITY

Fogg describes six “elements of simplicity”—the factors that influence a task’s difficulty.⁶

These are:

- Time—how long it takes to complete an action.
- Money—the fiscal cost of taking an action.
- Physical effort—the amount of labor involved in taking the action.

- Brain cycles—the level of mental effort and focus required to take an action.
- Social deviance—how accepted the behavior is by others.
- Non-routine—according to Fogg, “How much the action matches or disrupts existing routines.”

To increase the likelihood that a behavior will occur, Fogg instructs designers to focus on simplicity as a function of the user’s scarcest resource at that moment. In other words: Identify what the user

is missing. What is making it difficult for the user to accomplish the desired action?

Is the user short on time? Is the behavior too expensive? Is the user exhausted after a long day of work? Is the product too difficult to understand? Is the user in a social context where the behavior could be perceived as inappropriate? Is the behavior simply so far removed from the user's normal routine that its strangeness is off-putting?

These factors will differ by person and context; therefore, designers should ask, "What is the thing that is

missing that would allow my users to proceed to the next step?" Designing with an eye toward simplifying the overall user experience reduces friction, removes obstacles, and helps push the user across Fogg's action line.

The action phase of the Hook Model incorporates Fogg's six elements of simplicity by asking designers to consider how their technology can facilitate the simplest actions in anticipation of reward. The easier an action, the more likely the user is to do it and to continue the cycle through the next phase of the Hook Model.

Below are examples of simple online interfaces used by a number of successful companies to prompt users to move quickly into the Hook's next phase.

Logging In with Facebook

Traditionally, registering for a new account with an app or Web site requires several steps. The user is prompted to enter an e-mail address, create a password, and submit other information such as a name or phone number. This burden introduces significant friction that discourages users from signing up. Mobile devices present the special

challenge of smaller screens and slower typing speeds.

However, today it is nearly impossible to browse the web or use a mobile app without encountering a Facebook Login prompt (figure 8). Many companies have eliminated several steps in the registration process by enabling users to register with their sites via their existing Facebook credentials.

While the Facebook login function is useful for time-starved people, it should be noted that for others, the tool doesn't necessarily ease registration. For example, users who are wary of how Facebook might share their personal information may not find the login button helpful because it could trigger new

anxieties (and thus, brain cycles) about the social networking giant's trustworthiness. Again, the roadblocks confronting users vary by person and context. There is no "one size fits all" solution, so designers should seek to understand an array of possible user challenges.

The image displays two overlapping windows. The background window is the Yelp sign-up page, featuring a red header with the word 'yelp' and a flower icon. Below it, a blue button says 'Sign up for Yelp' and 'Connect with great local businesses'. A 'Sign up with Facebook' button is shown, with a note: 'Don't worry, we never post without your permission.' Below this are fields for 'First Name', 'Last Name', 'Email', and 'Password'. At the bottom, a red 'Sign Up' button is visible, with a smaller link 'Already on Yelp? Log In' below it. The foreground window is a Facebook OAuth dialog box titled 'Log in with Facebook'. It shows the URL 'https://www.facebook.com/dialog/oauth?app_id=975347531...'. It features the Facebook logo and a small profile picture. A message from Yelp states: 'Yelp will receive the following info: your public profile, friend list, email address, birthday, checkins and current city and your friends' checkins.' At the bottom are 'Cancel' and 'Okay' buttons.

Sharing with the Twitter Button

Twitter helps people share articles, videos, photos, or any other content they find on the web. The company noticed that 25 percent of tweets contained a link and therefore sought to make tweeting a Web site link as easy as possible.⁷

To ease the way for link sharing, Twitter created an embeddable Tweet button for third-party sites, allowing them to offer visitors a one-click way to tweet directly from their pages (figure 9). The external trigger opens a preset message, reducing the cognitive effort of composing the tweet and saving several

steps to sharing.



FIGURE 9

Searching with Google

Google, the world's most popular search engine, was not the first to market. When it launched in the late 1990s, it competed against incumbents such as Yahoo!, Lycos, AltaVista, and Excite. How did

Google come to dominate the multibillion-dollar industry?

For starters, Google's PageRank algorithm proved to be a much more effective way to index the web. By ranking pages based on how frequently other sites linked to them, Google improved search relevancy. Compared with directory-based search tools such as Yahoo!, Google was a massive time-saver. Google also beat out other search engines that had become polluted with irrelevant content and cluttered with advertising (figure 10). From its inception, Google's clean, simple home page and search results pages were solely focused on streamlining the act of searching and getting relevant results

(figure 11).

The screenshot shows the classic Yahoo! homepage layout. At the top, there's a green horizontal bar with various links and icons. On the left, there are links for "What's New" and "Check Email". In the center, the iconic red "YAHOO!" logo is displayed. On the right, there are links for "Personalize" and "Help", along with a "My" button and a question mark icon. Below the bar, there are several promotional banners: "Yahoo! Mail free email for life", "Yahoo! Messenger" (with a checked checkbox), and "Yahoo! Auctions coins, cards, stamps". A search bar with a "Search" button and a link to "advanced search" is positioned below these banners. A navigation bar at the bottom contains links like "Shopping", "Auctions", "Yellow Pages", "People Search", "Maps", "Travel", "Classifieds", "Personals", "Games", "Chat", "Clubs", "Mail", "Calendar", "Messenger", "Companions", "My Yahoo!", "News", "Sports", "Weather", "TV", and "Stock Quotes", followed by a "more..." link.

Yahoo! Shopping - Thousands of stores. Millions of products.

Departments	Stores	Products
Apparel	Flowers	Digital cameras
Bath/Beauty	Food/Drink	Pokemon
Computers	Music	MP3 players
Electronics	Video/DVD	DVD players

Arts & Humanities
Literature, Photography...

Business & Economy
Companies, Finance, Jobs...

Computers & Internet
Internet, WWW, Software, Games...

Education
College and University, K-12...

Entertainment
Cool Links, Movies, Humor, Music...

News & Media
Full Coverage, Newspapers, TV...

Recreation & Sports
Sports, Travel, Autos, Outdoors...

Reference
Libraries, Dictionaries, Quotations...

Regional
Countries, Regions, US States...

Science
Animals, Astronomy, Engineering...

In the News

- Scores killed in Nigerian riots
- Austria's Haider resigns as party leader
- Floods trap thousands in Mozambique

[more...](#)

Marketplace

- Y! Auctions - Peanuts, Pokemon, computers
- Free 56K Internet Access
- Yahoo! Bill Pay - free 3-month trial

[more...](#)

Inside Yahoo!

- Yahoo! GeoCities - build your free home page
- Play free Fantasy Soccer
- Yahoo! Clubs - create you

[more...](#)

FIGURE 10—THE YAHOO! HOME PAGE, CIRCA 1998



FIGURE 11—THE GOOGLE HOME PAGE, CIRCA 1998

Simply put, Google reduced the amount of time and the cognitive effort required to find what the user was looking for. The company continues to relentlessly improve its search engine by finding new ways to remove whatever might be in the user's way—no matter how seemingly trivial. While its home page remains remarkably pristine, Google now offers myriad tools to make

searching easier and faster—including automatic spelling correction, predictive results based on partial queries, and search results that load even as the user is typing. Google's efforts are intended to make searching easier to keep users coming back.

Taking Photos with the Apple iPhone

Many of life's most treasured moments come and go in an instant. We try to capture these memories in photos, but if our camera is out of reach or too cumbersome to catch the shot, we lose those moments forever. Apple recognized it could help iPhone owners take more photos by making the process

easier. The company made the camera app directly launchable from the locked screen, without requiring a password. Compared with the number of steps needed to access photo apps on other smartphones, the simple flick gesture of the native iPhone camera gives it a virtual monopoly as users' go-to solution whenever they need to snap a quick pic (figure 12).

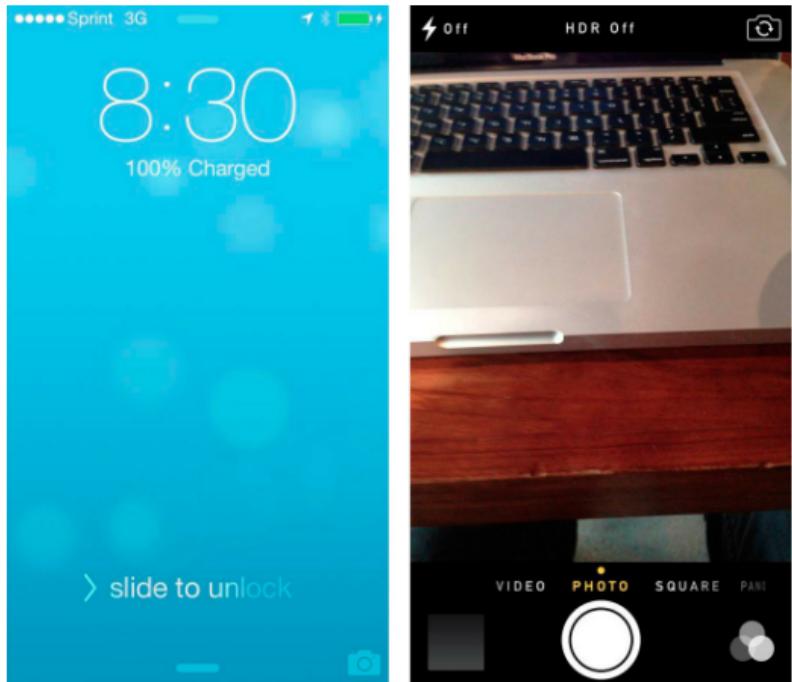


FIGURE 12

Scrolling with Pinterest

How can a Web site make browsing easier? One solution, popularized by digital pin-board site Pinterest, is the

infinite scroll. In the past getting from one web page to the next required clicking and waiting. However, on sites such as Pinterest, whenever the user nears the bottom of a page, more results automatically load. Users never have to pause as they continue scrolling through pins or posts without end (figure 13).

The examples above show how simplicity increases the intended user behaviors.

Popular

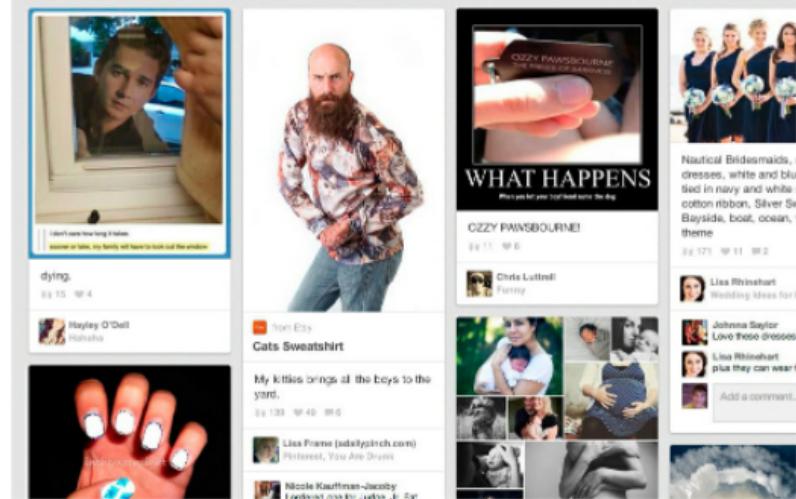


FIGURE 13

**MOTIVATION OR ABILITY:
WHICH SHOULD YOU
INCREASE FIRST?**

After uncovering the triggers that prompt user actions and deciding which actions you want to turn into habits, you can increase motivation and ability to spark the likelihood of your users taking a desired behavior. But which should you invest in first, motivation or ability? Where is your time and money better spent? The answer is always to start with ability.

Naturally, all three parts of B = MAT must be present for a singular user action to occur; without a clear trigger and sufficient motivation there will be no behavior. However, for companies building technology solutions, the

greatest return on investment generally comes from increasing a product's ease of use.

The fact is, increasing motivation is expensive and time consuming. Web site visitors tend to ignore instructional text; they are often multitasking and have little patience for explanations about why or how they should do something. Influencing behavior by reducing the effort required to perform an action is more effective than increasing someone's desire to do it. Make your product so simple that users already know how to use it, and you've got a winner.

The Evolution of Twitter's Home Page

In 2009 the Twitter home page was cluttered with text and dozens of links (figure 14). The page was confusing, especially for new users unfamiliar with the product. Twitter's value proposition of sharing what you were doing with friends and family failed to resonate with most users, who wondered, "Why would I want to broadcast my activities?" The page design demanded a high level of attention and comprehension.



FIGURE 14—THE TWITTER HOME PAGE IN 2009

The following year Twitter redesigned its home page, touting itself as a service to “share and discover what’s happening” (figure 15). Although the page became more focused on action, it was still visually onerous. Even more unfortunate, the task users were most

likely to do—search—was not what Twitter really wanted them to do. Twitter management knew from early users that those who followed other people on the service were more likely to stay engaged and form a habit. Because searching on Twitter was not helping that goal, the company decided to make another switch.



FIGURE 15—THE TWITTER HOME PAGE IN 2010

During the company's period of hyper-growth, the Twitter home page became radically simpler (figure 16). The product description is itself only 140 characters long and has evolved from the cognitively difficult request that users broadcast their information (as seen in 2009) to the less taxing "find out what's happening, right now, with the people and organizations you care about."

The big, bold image of people looking into some kind of light-emitting event, like a concert or a soccer match, metaphorically communicates the value of the service while piquing curiosity. Most strikingly,

the page has two very clear calls to action: sign in or sign up. The company made the desired action as simple as possible, knowing that getting users to experience the service would yield better results than trying to persuade them to use it while still on the home page.

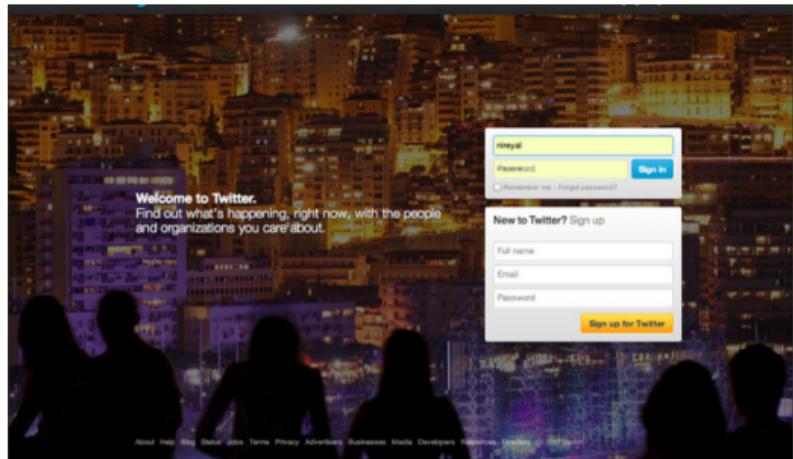


FIGURE 16—THE TWITTER HOME PAGE IN 2012

It is naturally worth noting that Twitter was in a different place in 2012 than in 2009. People came to the site having heard more about the service as its popularity grew. Twitter's home page evolution reveals how the company discovered its users' scarcest resource. In 2009 the Twitter home page attempted to boost motivation; by 2012 Twitter had discovered that no matter how much users knew about the service, driving them to open an account and start following people resulted in much higher engagement.



FIGURE 17—THE TWITTER HOME PAGE IN 2013

Recently, Twitter's home page has been modified slightly to encourage downloading of the company's mobile apps (figure 17). The simplicity of the large sign-in or sign-up triggers on the 2012 version remain, but Twitter now knows that driving users to install the app on their phones leads to the highest rates of repeat engagement.

On Heuristics and Perception

We have thus far discussed Fogg's Core Motivators and the six elements of simplicity as levers for influencing the likelihood of a particular behavior occurring. These factors echo ideals of how people react when making rational decisions. For example, every Economics 101 student learns that as prices decrease, consumers purchase more—in Fogg's terms, an example of increasing ability by decreasing price.

However, although the principle seems elementary, the law, like many other theories of human behavior, has exceptions. The field of behavioral

economics, as studied by luminaries such as Nobel Prize winner Daniel Kahneman, exposed exceptions to the rational model of human behavior. Even the notion that people always consume more if something costs less is a tendency, not an absolute.

There are many counterintuitive and surprising ways companies can boost users' motivation or increase their ability by understanding heuristics—the mental shortcuts we take to make decisions and form opinions.

It is worth mentioning four of these

brain biases in particular. Even though users are often unaware of these influences on their behavior, heuristics can predict their actions.

The Scarcity Effect

In 1975 researchers Stephen Worchel, Jerry Lee, and Akanbi Adewole wanted to know how people would value cookies in two identical glass jars.⁸ One jar held ten cookies while the other contained just two. Which cookies would people value more?

Although the cookies and jars were identical, participants valued the ones in the near-empty jar more highly.

The appearance of scarcity affected their perception of value.

There are many theories as to why this is the case. Scarcity may signal something about the product. If there are fewer of an item, the thinking goes, it might be because other people know something you don't—namely, that the cookies in the almost-empty jar are the better choice. The jar with just two cookies left in it conveys valuable albeit irrelevant information, because the cookies are in fact identical. Yet the perception of scarcity changed their perceived value.

In the second part of their

experiment, the researchers wanted to know what would happen to the perception of the value of the cookies if they suddenly became scarce or abundant. Groups of study participants were given jars with either two cookies or ten. The people in the group with ten cookies then suddenly had eight taken away. Conversely, those with only two cookies had eight new ones added to their jars. How would these changes affect the way participants valued the cookies?

Results remained consistent with the scarcity heuristic. The group left with only two cookies rated them to be more valuable, while those experiencing sudden abundance by going from two to

ten actually valued the cookies less. In fact, they valued the cookies even lower than people who had started with ten cookies to begin with. The study showed that a product can decrease in perceived value if it starts off as scarce and becomes abundant.

For an example of how perception of a limited supply can increase sales, look no further than Amazon.com. My recent search for a DVD revealed there were “only 14 left in stock” (figure 18), while a search for a book I’ve had my eye on says only three copies remain. Is the world’s largest online retailer almost sold out of nearly everything I want to buy or are they using the scarcity heuristic to influence my buying

behavior?

The Fighter (2010)

Christian Bale (Actor), Mark Wahlberg (Actor), David O. Russell (Director) | Rated: R | Format: DVD

(287 customer reviews)

List Price: \$14.98

Price: \$8.99

You Save: \$5.99 (40%)

Only 14 left in stock.

Sold by [newbury_comics](#) and [Fulfilled by Amazon](#). Gift-wrap available.

FIGURE 18—“ONLY FOURTEEN LEFT IN STOCK”?

The Framing Effect

Context also shapes perception. In a social experiment, world-class violinist Joshua Bell decided to play a free impromptu concert in a Washington, D.C., subway station.⁹ Bell regularly sells out venues such as the Kennedy

Center and Carnegie Hall for hundreds of dollars per ticket, but when placed in the context of the D.C. subway, his music fell upon deaf ears. Almost nobody knew they were walking past one of the most talented musicians in the world.

The mind takes shortcuts informed by our surroundings to make quick and sometimes erroneous judgments.

When Bell performed his concert in the subway station, few stopped to listen. But when framed in the context of a concert hall, he can charge beaucoup bucks.

The framing heuristic not only

influences our behaviors; it literally changes how our brain perceives pleasure. For example, a 2007 study attempted to measure if price had any influence on the taste of wine.¹⁰ The researchers had study participants sample wine while in a functional magnetic resonance imaging (fMRI) machine.

As the fMRI machine scanned the blood flow in the various regions of their brains, the tasters were informed of the cost of each wine sampled. The sample started with a \$5 wine and progressed to a \$90 bottle. Interestingly, as the price of the wine increased, so did the participants' enjoyment of the wine. Not only did they say they enjoyed

the wine more but their brain corroborated their feelings, showing higher spikes in the regions associated with pleasure. Little did the study participants realize that they were tasting the same wine each time. This study demonstrates how perception can form a personal reality based on how a product is framed, even when there is little relationship with objective quality.

The Anchoring Effect

Rarely can you walk into a clothing store without seeing signage for “30% off,” “buy one, get one free,” and other sales and deals. In reality these items are often marketed to maximize profits for the

business. The same store often has similar but less expensive (yet not discounted) products. I recently visited a store that offered a package of three Jockey brand undershirts at a “buy one, get one half-off” discount for \$29.50. After surveying other options I noticed a package of five Fruit of the Loom brand undershirts selling for \$34. After doing some quick math I discovered that the undershirts not on sale were actually cheaper per shirt than the discounted brand’s package.

People often anchor to one piece of information when making a decision.

I almost bought the shirts on sale assuming that the one feature differentiating the two brands—the fact that one was on sale and the other was not—was all I needed to consider.

The Endowed Progress Effect

Punch cards are often used by retailers to encourage repeat business. With each purchase customers get closer to receiving a free product or service. These cards are typically awarded empty; in effect customers start at 0 percent complete. What would happen if retailers handed customers punch cards with punches already given? Would people be more likely to take action if

they had already made some progress? An experiment sought to answer this very question.¹¹

Two groups of customers were given punch cards awarding a free car wash once the cards were fully punched. One group was given a blank punch card with eight squares; the other was given a punch card with ten squares that came with two free punches. Both groups still had to purchase eight car washes to receive a free wash; however, the second group of customers—those that were given two free punches—had a staggering 82 percent higher completion rate.

The study demonstrates the

endowed progress effect, a phenomenon that increases motivation as people believe they are nearing a goal.

Sites such as LinkedIn and Facebook utilize this heuristic to encourage people to divulge more information about themselves when completing their online profiles. On LinkedIn every user starts with some semblance of progress (figure 19). The next step is to “Improve Your Profile Strength” by supplying additional information. As users complete each step, the meter incrementally shows the user is advancing. Cleverly, LinkedIn’s completion bar jump-starts the perception of progress and does not

include a numeric scale. For the new user, a proper LinkedIn profile does not seem so far away. Yet even the “advanced” user still has additional steps she can take to inch toward the final goal.

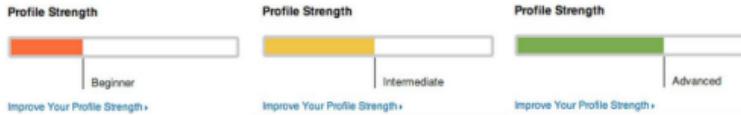


FIGURE 19

Most people remain unaware of how heuristics help us make split-second decisions multiple times per day. Psychologists believe there are hundreds of cognitive biases that influence our

behaviors; the four discussed here are just a few examples.¹² For product designers building habit-forming technology, understanding and leveraging these methods for boosting motivation and ability can prove highly impactful.

Stephen Anderson, author of *Seductive Interaction Design*, created a tool called Mental Notes to help designers build better products through heuristics.¹³ Each card in his deck of fifty contains a brief description of a cognitive bias and is intended to spark product team conversations around how they might utilize the principle. For example, team members might ask themselves how they could utilize the

endowed progress effect or the scarcity effect to increase the likelihood of a desired user behavior.

In this chapter we discovered how to take users from trigger to action. We explored how cognitive biases influence behavior and how, by designing the simplest action in anticipation of a reward, product makers can advance users to the next phase of the Hook Model.

Now that users have passed through the first two phases, it is time to give them what they came for—the reward that scratches their itch. But what is it exactly that users want? What keeps us coming back time and again to habit-forming experiences and technologies?

The answer to what we're all searching for is the topic of the next chapter.

REMEMBER & SHARE

- The second step in the Hook is *action*.
- The action is the simplest behavior in anticipation of reward.
- As described by Dr. B. J. Fogg's Behavior Model:
 - For any behavior to occur, a trigger must be present at the same

time as the user has sufficient ability and motivation to take action.

- To increase the desired behavior, ensure a clear trigger is present; next, increase ability by making the action easier to do; finally, align with the right motivator.
- Every behavior is driven by one of three Core Motivators: seeking pleasure and avoiding pain; seeking hope and avoiding fear; seeking social acceptance while

avoiding social rejection.

- Ability is influenced by the six factors of time, money, physical effort, brain cycles, social deviance, and non-routineness. Ability is dependent on users and their context at that moment.
- *Heuristics* are cognitive shortcuts we take to make quick decisions. Product designers can utilize many of the hundreds of heuristics to increase the likelihood of their desired action.

DO THIS NOW

Refer to the answers you came up with in the last “Do This Now” section to complete the following exercises:

- Walk through the path your users would take to use your product or service, beginning from the time they feel their internal trigger to the point where they receive their expected outcome. How many steps does it take before users obtain the reward they came

for? How does this process compare with the simplicity of some of the examples described in this chapter? How does it compare with competing products and services?

- Which resources are limiting your users' ability to accomplish the tasks that will become habits?
 - Time
 - Brain cycles (too confusing)
 - Money
 - Social deviance (outside the norm)

- Physical effort
- Non-routine (too new)
- Brainstorm three testable ways to make intended tasks easier to complete.
- Consider how you might apply heuristics to make habit-forming actions more likely.



Reward

4

Variable Reward

Ultimately, all businesses help users achieve an objective. As we learned in the previous chapter, reducing the steps needed to complete the intended outcome increases the likelihood of that outcome. But to keep users engaged, products need to deliver on their promises. To form the learned

associations we discussed in chapter 2, the trigger phase, users must come to depend on the product as a reliable solution to their problem—the salve for the itch they came to scratch.

The third step in the Hook Model is the *variable reward phase*, in which you reward your users by solving a problem, reinforcing their motivation for the action taken in the previous phase. To understand why rewards—and variable rewards in particular—are so powerful, we must first take a trip deep inside the brain.

Understanding Rewards

In the 1940s two researchers, James Olds and Peter Milner, accidentally discovered how a special area of the brain is the source of our cravings. The researchers implanted electrodes in the brains of lab mice that enabled the mice to give themselves tiny electric shocks to a small area of the brain, the nucleus accumbens.¹ The mice quickly became hooked on the sensation.

Olds and Milner demonstrated that the lab mice would forgo food, water, and even run across a painful electrified grid for the opportunity to continue pressing the lever that administered the shocks. A few years later, other researchers tested the human response to self-administered stimulus in the same

area of the brain. The results were just as dramatic as in the mouse trial—subjects wanted to do nothing but press the brain-stimulating button. Even when the machine was turned off, people continued pressing the button.

Researchers had to forcibly take the devices from subjects who refused to relinquish them.

Given the responses they had earlier found in lab animals, Olds and Milner concluded that they had discovered the brain's pleasure center. In fact, we now know other things that feel good also activate the same neural region. Sex, delicious food, a bargain, and even our digital devices all tap into this deep recess of the brain, providing the

impetus for many of our behaviors.

However, more recent research has shown that these two researchers' experiments were not stimulating pleasure per se. Stanford professor Brian Knutson conducted a study exploring blood flow in the brains of people wagering while inside an fMRI machine.² The test subjects played a gambling game while Knutson and his team looked at which areas of their brains became more active. The startling results showed that the nucleus accumbens was not activating when the reward (in this case a monetary payout) was received, but rather in anticipation of it.

The study revealed that what draws us to act is not the sensation we receive from the reward itself, but the need to alleviate the craving for that reward.

The stress of desire in the brain appears to compel us, just as it did in Olds's and Milner's lab mouse experiments.

UNDERSTANDING ~~VARIABILITY~~

If you've never watched a YouTube video of a baby's

first encounter with a dog, it's worth doing. Not only are these videos incredibly cute, but they help demonstrate something important about our mental wiring.

At first the expression on the baby's face seems to ask, "What is this hairy monster doing in my house? Will it hurt me? What will it do next?" The child is filled with curiosity, uncertain if this creature might cause harm. But soon the child figures out Rover is not a threat. What follows is an explosion of infectious giggles. Researchers believe laughter may in fact be a release valve when we experience the

discomfort and excitement of uncertainty, but without fear of harm.³

What we do not see in the videos is what happens over time. A few years later, what was once thrilling about Rover no longer holds the child's attention in the same way. The child has learned to predict the dog's behavior and no longer finds the pup quite as entertaining. By now, the child's mind is occupied with dump trucks, fire engines, bicycles, and new toys that stimulate the senses —until they too become predictable. Without variability we are like children in that once we figure out

what will happen next, we become less excited by the experience. The same rules that apply to puppies also apply to products. To hold our attention, products must have an ongoing degree of novelty.

Our brains have evolved over millennia to help us figure out how things work. Once we understand causal relationships, we retain that information in memory. Our habits are simply the brain's ability to quickly retrieve the appropriate behavioral response to a routine or process we have already learned. Habits help us conserve our attention for other things while we go

about the tasks we perform with little or no conscious thought.

However, when something breaks the cause-and-effect pattern we've come to expect—when we encounter something outside the norm—we suddenly become aware of it again.⁴ Novelty sparks our interest, makes us pay attention, and —like a baby encountering a friendly dog for the first time —we seem to love it.

Rewards of the Tribe, the

Hunt, and the Self

In the 1950s psychologist B. F. Skinner conducted experiments to understand how variability impacted animal behavior.⁵ First, Skinner placed pigeons inside a box rigged to deliver a food pellet to the birds every time they pressed a lever. Similar to Olds's and Milner's lab mice, the pigeons learned the cause-and-effect relationship between pressing the lever and receiving the food.

In the next part of the experiment Skinner added variability. Instead of providing a pellet every time a pigeon tapped the lever, the machine discharged food after a random number of taps.

Sometimes the lever dispensed food, other times not. Skinner revealed that the intermittent reward dramatically increased the number of times the pigeons tapped the lever. Adding variability increased the frequency of the pigeons' completing the intended action.

Skinner's pigeons tell us a great deal about what helps drive our own behaviors. More recent experiments reveal that variability increases activity in the nucleus accumbens and spikes levels of the neurotransmitter dopamine, driving our hungry search for rewards.⁶ Researchers observed increased dopamine levels in the nucleus accumbens in experiments involving monetary rewards as well as in a study

of heterosexual men viewing images of attractive women's faces.⁷

Variable rewards can be found in all sorts of products and experiences that hold our attention. They fuel our drive to check e-mail, browse the web, or bargain-shop. I propose that variable rewards come in three types: *the tribe*, *the hunt*, and *the self* (figure 20). Habit-forming products utilize one or more of these variable reward types.

Three Variable Reward Types



FIGURE 20

Rewards of the Tribe

We are a species that depends on one another. Rewards of the tribe, or social rewards, are driven by our connectedness with other people.

Our brains are adapted to seek rewards that make us feel accepted, attractive, important, and included.

Many of our institutions and industries are built around this need for social reinforcement. From civic and religious groups to spectator sports and “watercooler” television shows, the need to feel social connectedness shapes our values and drives much of how we spend our time.

It is no surprise that social media has exploded in popularity. Facebook, Twitter, Pinterest, and several other sites collectively provide over a billion people with powerful social rewards on

a variable schedule. With every post, tweet, or pin, users anticipate social validation. Rewards of the tribe keep users coming back, wanting more.

Sites that leverage tribal rewards benefit from what psychologist Albert Bandura called “social learning theory.”⁸ Bandura studied the power of modeling and ascribed special powers to our ability to learn from others. In particular Bandura determined that people who observe someone being rewarded for a particular behavior are more likely to alter their own beliefs and subsequent actions. Notably, Bandura also demonstrated that this technique works particularly well when people observe the behavior of people most like

themselves or who are slightly more experienced (and therefore, role models).⁹ This is exactly the kind of targeted demographic and interest-level segmentation that social media companies such as Facebook and industry-specific sites such as Stack Overflow selectively apply.

Here are some online examples of rewards of the tribe:

1. Facebook

Facebook provides numerous examples of variable social rewards. Logging in reveals an endless stream of content friends have shared, comments from others, and running tallies of how many

people have “liked” something. The uncertainty of what users will find each time they visit the site creates the intrigue needed to pull them back again.

While variable content gets users to keep searching for interesting tidbits in their News Feeds, a click of the “Like” button provides a variable reward for the content’s creators. “Likes” and comments offer tribal validation for those who shared the content, and provide variable rewards that motivate them to continue posting.

2. Stack Overflow

Stack Overflow is the world’s largest question-and-answer site for software

developers. As with other user-generated content sites such as Quora, Wikipedia, and YouTube, all of Stack Overflow's content is created voluntarily by people who use the site. A staggering five thousand answers to questions are generated per day by site members. Many of these responses provide detailed, highly technical and time-consuming answers. But why do so many people spend so much time doing all this work for free? What motivates them to invest the effort into what others may see as the burdensome task of writing technical documentation?

StackOverflow

Questions Tags Tour Users Ask Question

Joel Spolsky Moderator • less info

 bio website joelonsoftware.com
location New York, NY
age
visits member for 5 years, 4 months
seen Nov 25 at 21:20
stats profile views 52,052
21,228 reputation
• 14 → 61 → 80

I am:
• the co-founder and CEO of Stack Exchange
• the co-founder of Fog Creek Software
• owner of Taco, the most famous Siberian Husky on the Upper West Side.
You can find me:
• on Twitter as @joelospolsky
• on my rarely-updated blog, Joel on Software

summary answers questions tags badges favorites bounties reputation activity

recent class name

50 Badges

+ Good Answer × 15	+ Announcer × 3	+ Tag Editor	+ Citizen Patrol
+ Yearling × 5	+ Altruist	+ Enthusiast	+ Commentator
+ Great Answer × 7	+ Investor	+ Strunk & White	+ Beta
+ Caucus × 4	+ Revival × 2	+ Quorum	+ Scholar

FIGURE 21

Stack Overflow devotees write responses in anticipation of rewards of the tribe. Each time a user submits an answer, other members have the opportunity to vote the response up or down. The best responses percolate upward, accumulating points for their authors (figure 21). When they reach

certain point levels, members earn badges, which confer special status and privileges. Naturally, the process of accumulating upvotes is highly variable —no one knows how many will be received from the community when responding to a question.

Stack Overflow works because, like all of us, software engineers find satisfaction in contributing to a community they care about. The element of variability also turns a seemingly mundane task into an engaging, gamelike experience. Yet on Stack Overflow, points are not just an empty game mechanic; they confer special value by representing how much someone has contributed to his or her tribe. Users

enjoy the feeling of helping their fellow programmers and earning the respect of people whose opinions they value.

3. League of Legends

League of Legends, a popular computer game, launched in 2009 and quickly achieved tremendous success. Soon after its launch, however, the game's owners found they had a serious problem: The online video game was filled with “trolls”—people who enjoyed bullying other players while being protected by the anonymity the game provides.

League of Legends soon earned a nasty reputation for having an “unforgiving—even abusive—community.”¹⁰ A leading

industry publication wrote, “*League of Legends* has become well known for at least two things: proving the power of the free-to-play model in the West and a vicious player community.”¹¹

To combat the trolls, the game creators designed a reward system leveraging Bandura’s social learning theory, which they called Honor Points (figure 22). The system gave players the ability to award points for particularly sportsmanlike conduct worthy of recognition. These virtual kudos encouraged positive behavior and helped the best and most cooperative players to stand out in the community. The number of points earned was highly variable and could only be conferred by

other players. Honor Points soon became a coveted marker of tribe-conferred status and helped weed out trolls by signaling to others which players should be avoided.

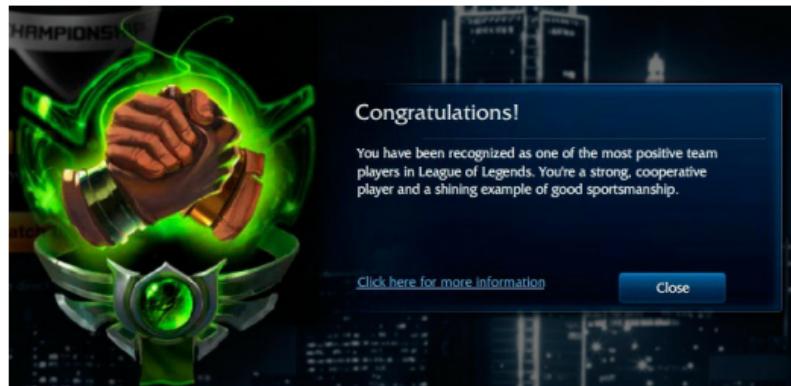


FIGURE 22

Rewards of the Hunt

For years, scientists have tried to

answer a central question of human evolution: How did early humans hunt for food? Most evolutionary biologists agree that consuming animal protein was a significant milestone that led to better nutrition and, ultimately, bigger brains; however, the tactical details of the hunt remain hazy.¹² We know our ancestors handcrafted spears and arrows for hunting, but evidence shows that these weapons were only invented five hundred thousand years ago,¹³ whereas we've been eating meat for over 2 million years.¹⁴ How, then, did we hunt during the first 75 percent of our existence?

According to Harvard evolutionary biologist Daniel Lieberman, we chased

down our dinner. Early humans killed animals using a technique known as “persistence hunting,” a practice still common among today’s few remaining pre-agrarian societies. One of these groups, the San people of South Africa, hunt for kudu (a large deerlike animal) using a technique similar to the way Lieberman believes humans hunted for the vast majority of our species’ history. The way we evolved to hunt wild game may help explain why we feel compelled to use certain products today.

In Africa the chase begins when a group of San hunters separate a large kudu bull from the herd. The animal’s heavy antlers slows him down, making him less agile than the female kudus.

Once the animal is isolated from the pack, a single San hunter begins the hunt, keeping a steady pace as the animal leaps ahead in fear. At first it appears the man will never catch up to the bounding beast. At times he struggles to keep the animal in sight through the dry brush.

Yet the hunter knows he can use the animal's weaknesses to his advantage. The powerful kudu is much faster in short sprints, but the kudu's skin is covered with fur and cannot dissipate heat like the runner's skin can. According to Lieberman, "Quadrupeds cannot pant and gallop at the same time."¹⁵ When the kudu must stop to catch his breath, the hunter begins

closing in, not to catch it but to run it to exhaustion.

After being tracked for a sweltering eight hours under the African sun, the beast is finally ready to give up, collapsing in surrender with barely a struggle. The meager hundred-pound San hunter outlasts the powerful five-hundred-pound beast with little more than his persistence and the biomechanical gifts evolution has given him. The hunter swiftly and ceremoniously kills his prize, piercing a vein in the animal's neck so that he can feed his children and his tribe.

By running on two feet and lacking the body hair typical of other primates, our species gained a massive advantage

over larger mammals. Our ability to maintain steady pursuit gave us the capacity to hunt large prehistoric game. Yet persistence hunting was not only made possible because of our bodies; changes in our brains also played a significant role.

During the chase, the runner is driven by the pursuit itself; this same mental hardwiring also provides clues into the source of our insatiable desires today. The dogged determination that keeps San hunters chasing kudu is the same mechanism that keeps us wanting and buying. Although it is a long way from bushmen to businessmen, the mental processes of the hunt remain largely the same.

The search for resources defines the next type of variable reward—the rewards of the hunt.

The need to acquire physical objects, such as food and other supplies that aid our survival, is part of our brain's operating system.

Where we once hunted for food, today we hunt for other things. In modern society, food can be bought with cash, and more recently by extension, information translates into money.

Rewards of the hunt existed long before the advent of computers. Yet today we find numerous examples of

variable rewards associated with the pursuit of resources and information that compel us with the same determination as the San hunter chasing his prey.

Here are a few examples of products that create habits by leveraging rewards of the hunt:

1. Machine Gambling

Most people know that gambling benefits the casino or broker far more than the players. As the old adage says, “The house always wins.” Yet despite this knowledge, the multibillion-dollar gambling industry continues to thrive.

Slot machines provide a classic example of variable rewards of the hunt.

Gamblers plunk \$1 billion per day into slot machines in American casinos, which is a testament to the machines' power to compel players.¹⁶ By awarding money in random intervals, games of chance entice players with the prospect of a jackpot. Naturally, winning is entirely outside the gambler's control—yet the pursuit can be intoxicating.

2. Twitter

The “feed” has become a social staple of many online products. The stream of limitless information displayed in a scrolling interface makes for a compelling reward of the hunt. The Twitter timeline, for example, is filled

with a mix of both mundane and relevant content. This variety creates an enticingly unpredictable user experience. On occasion a user might find a particularly interesting piece of news, while other times she won't. To keep hunting for more information, all that is needed is a flick of the finger or scroll of a mouse. Users scroll and scroll and scroll to search for variable rewards in the form of relevant tweets (figure 23).



Home



Jack Dorsey retweeted

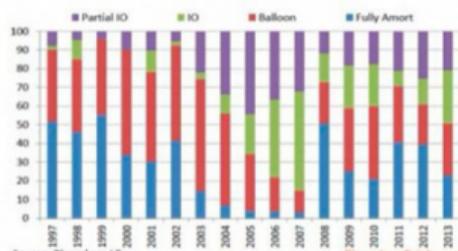
**Twitter Media** @twittermedia 3h

Today we unveil a site featuring best practices, success stories and more to help you leverage the power of Twitter: media.twitter.com

**Paul Kedrosky** @pkedrosky 3m

Risky real estate lending returning to commercial real estate -

bloomberg.com/now/2013-11-21...

**FIGURE 23**
Patrick Vlaskovits follows**Samsung Mobile US** @Sa... 10/29/13

Draw a tweet, or anything for that



Home



Connect



Discover



Me

Pinterest, a company that has grown to reach over 50 million monthly users worldwide, also employs a feed, but with a visual twist.¹⁷ The online pinboarding site is a virtual smorgasbord of objects of desire. The site is curated by its community of users who ensure that a high degree of intriguing content appears on each page.

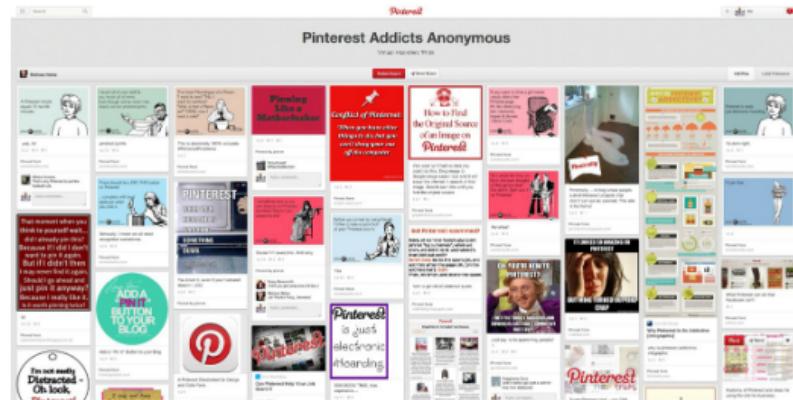


FIGURE 24

Pinterest users never know what they will find on the site. To keep them searching and scrolling, the company employs an unusual design. As the user scrolls to the bottom of the page, some images appear to be cut off. Images often appear out of view below the browser fold. However, these images offer a glimpse of what's ahead, even if just barely visible. To relieve their curiosity, all users have to do is scroll to reveal the full picture (figure 24). As more images load on the page, the endless search for variable rewards of the hunt continues.

Rewards of the Self

Finally, there are the variable rewards we seek for a more personal form of gratification. We are driven to conquer obstacles, even if just for the satisfaction of doing so. Pursuing a task to completion can influence people to continue all sorts of behaviors.¹⁸

Surprisingly, we even pursue these rewards when we don't outwardly appear to enjoy them. For example, watching someone investing countless hours into completing a tabletop puzzle can reveal frustrated face contortions and even sounds of muttered profanity. Although puzzles offer no prize other than the satisfaction of completion, for some the painstaking search for the right pieces can be a wonderfully

mesmerizing struggle.

The rewards of the self are fueled by “intrinsic motivation” as highlighted by the work of Edward Deci and Richard Ryan. Their self-determination theory espouses that people desire, among other things, to gain a sense of competency. Adding an element of mystery to this goal makes the pursuit all the more enticing.¹⁹

The experiences below offer examples of variable rewards of the self.

1. Video Games

Rewards of the self are a defining component in video games, as players seek to master the skills needed to pursue their quest. Leveling up, unlocking special powers, and other game mechanics fulfill a player's desire for competency by showing progression and completion.



FIGURE 25

For example, advancing a character through the popular online game *World of Warcraft* unlocks new abilities for the player (figure 25). The thirst to acquire advanced weaponry, visit uncharted

lands, and improve their characters' scores motivates players to invest more hours in the game.

2. E-mail

You do not have to be a hard-core video gamer to be heavily influenced by gamelike experiences. The humble e-mail system provides an example of how the search for mastery, completion, and competence moves users to habitual and sometimes mindless actions. Have you ever caught yourself checking your e-mail for no particular reason? Perhaps you unconsciously decided to open it to see what messages might be waiting for you. For many, the number of unread

messages represents a sort of goal to be completed.

Yet to feel rewarded, the user must have a sense of accomplishment. Mailbox, an e-mail application acquired by Dropbox in 2013 for a rumored \$100 million, aims to solve the frustration of fighting what feels like a losing in-box battle.²⁰ Mailbox cleverly segments e-mails into sorted folders to increase the frequency of users achieving “inbox zero”—a near-mystical state of having no unread e-mails (figure 26). Of course, some of the folder sorting is done through digital sleight-of-hand by pushing some low priority e-mails out of sight, then having them reappear at a later date. However, by giving users the

sense that they are processing their inbox more efficiently, Mailbox delivers something other e-mail clients do not—a feeling of completion and mastery.

No new mail



You're all done.



FIGURE 26

3. Codecademy

Learning to program is not easy. Software engineers take months, if not years, of diligent hard work before they have the confidence and skill to write useful code. Many people attempt to learn how to write software only to give up, frustrated at the tedious process of learning a new computer language.

Codecademy seeks to make learning to write code more fun and rewarding. The site offers step-by-step instructions for building a web app, animation, and even a browser-based game. The interactive lessons deliver immediate

feedback, in contrast to traditional methods of learning to code by writing whole programs. At Codecademy users can enter a single correct function and the code works or doesn't, providing instant feedback.

Learning a new skill is often filled with errors but Codecademy uses the difficulty to its advantage. There is a constant element of the unknown when it comes to completing the task at hand; like in a game, users receive variable rewards as they learn—sometimes they succeed, sometimes they fail. Yet as their competency level improves, users work to advance through levels, mastering the curriculum. Codecademy's symbols of progression and

instantaneous variable feedback tap into rewards of the self, turning a difficult path into an engaging challenge (figure 27).

The screenshot shows the Codecademy user profile for Jack Cooper. At the top, there's a navigation bar with tabs for 'Learn' and 'Teach'. On the right, it shows '4 points today', '1 day streak', and a 'Me' button. Below the navigation, Jack Cooper's profile picture is on the left, followed by his name 'JackCooper' and 'Jack Cooper'. His bio says 'Learning to code.' and lists 'San Francisco, CA'. There are four circular icons below the bio: two orange ones with 'HTML' and 'CSS' respectively, and two blue ones with 'PHP'.

On the right side of the profile, there's a progress bar for 'Points today' which is at 0. It also shows 'Best' and '410 total points' with '0 day streak'. Below that, it says 'Last coded 12 days ago'.

Below the profile, there's a section for 'recent badges' with four small circular icons. Under 'groups', there's a list of 19 groups with icons: Advanced JavaScript Coders, Advanced Web Developers, Aesthetics Addicts, Beginning Web Developers, Chrome Extension Beta, Codecademy Discuss, Codecademy Leaders, GeekBug, Google Apps Script, and How do I build this? There's also a link to 'View all 19+'.

The main part of the page displays seven tracks with progress bars:

- Web Fundamen...**: 37% complete, last progress 3 days ago, view track
- PHP**: 26% complete, last progress 4 months ago, view track
- Web (Original)**: 25% complete, last progress 9 months ago, view track
- Web Projects**: 33% complete, last progress 9 months ago
- JavaScript**: 18% complete, last progress 12 months ago
- Python**: 36% complete, last progress about 1 year ago

FIGURE 27

Important Considerations for Designing Reward Systems

Variable Rewards Are Not a Free Pass

In May 2007 a Web site named Mahalo.com was born. A flagship feature of the new site was a question-and-answer forum, “Mahalo Answers.” Unlike previous Q&A sites, Mahalo utilized a special incentive to get users to ask and answer questions.

First, people who submitted a question offered a bounty in the form of a virtual currency, “Mahalo Dollars.”

Next, other users contributed answers to the question; the best response received the bounty, which could be exchanged for real money. By providing a monetary reward, the Mahalo founders believed they could drive user engagement and form new online user habits.

At first Mahalo garnered significant attention and traffic. At its high point 14.1 million users worldwide visited the site monthly.²¹ But over time, users began to lose interest. Although the payout of the bounties was variable, somehow users did not find the monetary rewards enticing enough.

As Mahalo struggled to retain users, another Q&A site began to boom. Quora, launched in 2010 by two former

Facebook employees, quickly grew in popularity. Unlike Mahalo, Quora did not offer a single cent to anyone answering user questions. Why, then, have users remained highly engaged with Quora but not with Mahalo, despite its variable monetary rewards?

In Mahalo's case, executives assumed that paying users would drive repeat engagement with the site. After all, people like money, right? Unfortunately, Mahalo had an incomplete understanding of its users' drivers.

Ultimately, the company found that people did not want to use a Q&A site to make money. If the trigger was a desire for monetary rewards, users were better off spending their time earning an hourly

wage. And if the payouts were meant to take the form of a game, like a slot machine, then the rewards came far too infrequently and were too small to matter.

However, Quora demonstrated that social rewards and the variable reinforcement of recognition from peers proved to be much more frequent and salient motivators. Quora instituted an upvoting system that reports user satisfaction with answers and provides a steady stream of social feedback. Quora's social rewards have proven more attractive than Mahalo's monetary rewards.

Only by understanding what

truly matters to users can a company correctly match the right variable reward to their intended behavior.

Recently, *gamification*—defined as the use of gamelike elements in nongame environments—has been used with varying success. Points, badges, and leaderboards can prove effective, but only if they scratch the user’s itch. When there is a mismatch between the customer’s problem and the company’s assumed solution, no amount of gamification will help spur engagement. Likewise, if the user has no ongoing itch at all—say, no need to return repeatedly to a site that lacks any value beyond the

initial visit—gamification will fail because of a lack of inherent interest in the product or service offered. In other words, gamification is not a “one size fits all” solution for driving user engagement.

Variable rewards are not magic fairy dust that a product designer can sprinkle onto a product to make it instantly more attractive. Rewards must fit into the narrative of *why* the product is used and align with the user’s internal triggers and motivations.

Maintain a Sense of Autonomy

Quora found success by connecting the right reward to the intended behavior of

asking and answering questions. In August 2012, though, the company committed a very public blunder—one that illustrates another important consideration when using variable rewards.

In an effort to increase user engagement, Quora introduced a new feature, “Views,” which revealed the real identity of people visiting a particular question or answer. For users, the idea of knowing who was seeing content they added to the site proved very intriguing. Users could now know, for example, when a celebrity or prominent venture capital investor viewed something they created.

However, the feature ultimately

backfired. Quora automatically opted users in to the new feature without alerting them that their browsing history on the site would be exposed to others. In an instant, users lost their treasured anonymity when asking, answering, or simply viewing Quora questions that were personal, awkward, or intimate.²² The move sparked a user revolt and Quora reversed course a few weeks later, making the feature explicitly opt-in.²³

In this case the change felt forced and bordered on coercion. Although influencing behavior can be a part of good product design, heavy-handed efforts may have adverse consequences and risk losing users' trust.

We'll address the morality of manipulation in a later chapter—but aside from the ethical considerations, there is an important point regarding the psychological role of autonomy and how it can impact user engagement.

As part of a French study, researchers wanted to know if they could influence how much money people handed to a total stranger asking for bus fare by using just a few specially encoded words. They discovered a technique so simple and effective it doubled the amount people gave.

The turn of phrase has not only proven to increase how much bus fare people give, but has also been effective in boosting charitable donations and

participation in voluntary surveys. In fact, a recent meta-analysis of forty-two studies involving over twenty-two thousand participants concluded that these few words, placed at the end of a request, are a highly effective way to gain compliance, doubling the likelihood of people saying yes.²⁴

The magic words the researchers discovered? The phrase “But you are free to accept or refuse.”

The “but you are free” technique demonstrates how we are more likely to be persuaded to give when our ability to choose is reaffirmed. Not only was the effect observed during face-to-face interactions, but also over e-mail. Although the research did not directly

look at how products and services might use the technique, the study provides an important insight into how companies maintain or lose the user's attention.

Why does reminding people of their freedom to choose, as demonstrated in the French bus fare study, prove so effective?

The researchers believe the phrase “But you are free” disarms our instinctive rejection of being told what to do. If you have ever grumbled at your mother when she tells you to put on a coat or felt your blood pressure rise when your boss micromanages you, you have experienced what psychologists term *reactance*, the hair-trigger response to threats to your autonomy.

However, when a request is coupled with an affirmation of the right to choose, reactance is kept at bay. Yet can the principles of autonomy and reactance carry over into the way products change user behavior and drive the formation of new user habits? Here are two examples to make the case that they do—but naturally, you are free to make up your own mind.

Establishing the habit of better nutrition is a common goal for many Americans. Searching in the Apple App Store for the word *diet* returns 3,235 apps that all promise to help users shed extra pounds. The first app in the long list is MyFitnessPal, whose iOS app is rated by over 350,000 people.

A year ago when I decided to lose a few pounds, I installed the app and gave it a try. MyFitnessPal is simple enough to use. The app asked me to log what I ate and presented me with a calorie score based on my weight-loss goal.

For a few days I stuck with the program and diligently input information about everything I ate. Had I been a person who had previously logged food using pen and paper, MyFitnessPal would have been a welcome improvement.

However, I was not a calorie tracker prior to using MyFitnessPal and although using the app was novel at first, it soon became a drag. Keeping a food diary was not part of my daily routine and was

not something I came to the app wanting to do. I wanted to lose weight and the app was telling me how to do it with its strict method of tracking calories in and calories out. Unfortunately, I soon found that forgetting to enter a meal made it impossible to get back on the program—the rest of my day was a nutritional wash.

I soon began to feel obligated to confess my mealtime transgressions to my phone. MyFitnessPal became MyFitnessPain. Yes, I had chosen to install the app at first, but despite my best intentions, my motivation faded and using the app became a chore. Adopting a weird new behavior—calorie tracking, in my case—felt like something I had to

do, not something I wanted to do. My only options were to comply or quit; I chose the latter.

On the other hand Fitocracy, another health app, approaches behavior change very differently. The goal of the app is similar to its competitors—to help people establish better diet and exercise routines. However, it leverages familiar behaviors users *want* to do, instead of *have* to do.

Initially, the Fitocracy experience is similar to other health apps, encouraging new members to track their food consumption and exercise. Where Fitocracy differentiates itself is in its recognition that most users will quickly fall off the wagon, just as I had with

MyFitnessPal, unless the app taps into existing autonomous behavior.

Before my reactance alarm went off, I started receiving kudos from other members of the site after entering my very first run. Curious to know who was sending the virtual encouragement, I logged in, whereupon I immediately saw a question from “mrosplock5,” a woman looking for advice on what to do about knee pain from running. Having experienced similar trouble several years back, I left a quick reply: “Running barefoot (or with minimalist shoes) eliminated my knee pains. Strange but true!”

I have not used Fitocracy for long, but it is easy to see how someone could

get hooked. Fitocracy is first and foremost an online community. The app roped me in by closely mimicking real-world gym jabber among friends. The ritual of connecting with like-minded people existed long before Fitocracy, and the company leverages this behavior by making it easier and more rewarding to share encouragement, exchange advice, and receive praise. In fact, a recent study found social factors were the most important reasons people used the service and recommended it to others.^{[25](#)}

Social acceptance is something we all crave, and Fitocracy leverages the universal need for connection as an on-ramp to fitness, making new tools and

features available to users as they develop new habits. The choice for the Fitocracy user is therefore between the old way of doing an existing behavior and the company's tailored solution for easing the user into healthy new habits.

To be fair, MyFitnessPal also has social features intended to keep members engaged. However, as opposed to Fitocracy, the benefits of interacting with the community come much later in the user experience, if ever.

Clearly, it is too early to tell which among the multitudes of new wellness apps and products will emerge victorious, but the fact remains that the most successful consumer technologies —those that have altered the daily

behaviors of hundreds of millions of people—are the ones that nobody *makes* us use. Perhaps part of the appeal of sneaking in a few minutes on Facebook or checking scores on ESPN .com is our access to a moment of pure autonomy—an escape from being told what to do by bosses and coworkers.

Unfortunately, too many companies build their products betting users will do what they *make* them do instead of letting them do what they *want* to do. Companies fail to change user behaviors because they do not make their services enjoyable for its own sake, often asking users to learn new, unfamiliar actions instead of making old routines easier.

Companies that successfully change behaviors present users with an implicit choice between their old way of doing things and a new, more convenient way to fulfill existing needs.

By maintaining the users' freedom to choose, products can facilitate the adoption of new habits and change behavior for good.

Whether coerced into doing something we did not intend, as was the case when Quora opted in all users to its Views feature, or feeling forced to adopt a strange new calorie-counting behavior on MyFitnessPal, people often feel constrained by threats to their autonomy

and rebel. To change behavior, products must ensure the users feel in control. People must want to use the service, not feel they have to.

Beware of Finite Variability

In 2008 a television show, *Breaking Bad*, began receiving unprecedented critical and popular acclaim. The show followed the life of Walter White, a high school chemistry teacher who transforms himself into a crystal meth-cooking drug lord. As the body count on the show piled up season after season, so did its viewership.²⁶ The first episode of the final season in 2013 attracted 5.9 million viewers and by the end of the

series, *Guinness World Records* dubbed it the highest-rated TV series of all time.²⁷ Although *Breaking Bad* owes a great deal of its success to its talented cast and crew, fundamentally the program utilized a simple formula to keep people tuning in.

At the heart of every episode—and also across each season's narrative arc—is a problem the characters must resolve. For example, during an episode in the first season, Walter White must find a way to dispose of the bodies of two rival drug dealers. Challenges prevent resolution of the conflict and suspense is created as the audience waits to find out how the story line ends. In this particular episode White

discovers one of the drug dealers is still alive and is faced with the dilemma of having to kill someone he thought was already dead. Invariably, each episode's central conflict is resolved near the end of the show, at which time a new challenge arises to pique the viewer's curiosity. By design, the only way to know how Walter gets out of the mess he is in at the end of the latest episode is to watch the next episode.

The cycle of conflict, mystery, and resolution is as old as storytelling itself, and at the heart of every good tale is variability. The unknown is fascinating, and strong stories hold our attention by waiting to reveal what happens next. In a phenomenon termed *experience-taking*,

researchers have shown that people who read a story about a character actually feel what the protagonist is feeling.²⁸ As we step into the character's shoes we experience his or her motivations—including the search for rewards of the tribe, the hunt, and the self. We empathize with characters because they are driven by the same things that drive us.

Yet if the search to resolve uncertainty is such a powerful tool of engagement, why do we eventually lose interest in the things that once riveted us? Many people have experienced the intense focus of being hooked on a TV series, a great book, a new video game, or even the latest gadget. However, most

of us lose interest in a few days' or weeks' time. Why does the power of variable rewards seem to fade away?

Perhaps no company in recent memory epitomizes the mercurial nature of variable rewards quite like Zynga, makers of the hit Facebook game *FarmVille*. In 2009 *FarmVille* undeniably became part of the global zeitgeist. The game smashed records as it quickly reached 83.8 million monthly active users by leveraging the Facebook platform to acquire new players.²⁹ In 2010, as “farmers” tended their digital crops while paying real money for virtual goods and levels, the company generated more than \$36 million in revenue.³⁰

The company seemed invincible and set a course for growth by cloning its *FarmVille* success into a franchise. Zynga soon released *CityVille*, *ChefVille*, *FrontierVille*, and several more -*Ville* titles using familiar game mechanics in the hope that people would enjoy them as voraciously as they had *FarmVille*. By March 2012 Zynga's stock was flying high and the company was valued at over \$10 billion.

Yet by November of that same year, the stock was down over 80 percent. It turned out that Zynga's new games were not really new at all. The company had simply done retreads of *FarmVille*; players had lost interest and investors followed suit. What was once novel and

intriguing became rote and boring. The *Villes* had lost their variability and with it, their viability.

As the Zynga story demonstrates, an element of mystery is an important component of continued user interest. Online games like *FarmVille* suffer from what I term *finite variability*—an experience that becomes predictable after use. While *Breaking Bad* built suspense over time as the audience wondered how the series would end, eventually interest in the show waned when it finally concluded. The series enthralled viewers with each new episode, but now that it is all over, how many people who saw it once will watch it again? With the plot lines

known and the central mysteries revealed, the show just won't seem as interesting the second time around. Perhaps this series might resurrect interest with a new spin-off show in the future, but viewership for old episodes people have already seen will never peak as it did when they were new.

Experiences with finite variability become less engaging because they eventually become predictable.

Businesses with finite variability are not inferior per se; they just operate under different constraints. They must constantly churn out new content and

experiences to cater to their consumers' insatiable desire for novelty. It is no coincidence that both Hollywood and the video gaming industry operate under what is called the *studio model*, whereby a deep-pocketed company provides backing and distribution to a portfolio of movies or games, uncertain which one will become the next megahit.

This is in contrast with companies making products exhibiting *infinite variability*—experiences that maintain user interest by sustaining variability with use. For example, games played to completion offer finite variability, while those played with other people have higher degrees of infinite variability because the players themselves alter the

gameplay throughout. *World of Warcraft*, the world's most popular massively multiplayer online role-playing game, still captures the attention of more than 10 million active users eight years after its release.³¹ *FarmVille* is played mostly in solitude, but *World of Warcraft* is frequently played with teams; it is the hard-to-predict behavior of other people that keeps the game interesting.

While content consumption, like watching a TV show, is an example of finite variability, content creation is infinitely variable. Sites like Dribbble, a platform for designers and artists to showcase their work, exemplify the longer-lasting engagement that comes from infinite variability. On the site

contributors share their designs in search of feedback from other artists. As new trends and design patterns change, so do Dribbble's pages. The variety of what Dribbble users can create is limitless, and the constantly changing site always offers new surprises.

Platforms like YouTube, Facebook, Pinterest, and Twitter all leverage user-generated content to provide visitors with a never-ending stream of newness. Naturally, even sites utilizing infinite variability are not guaranteed to hold on to users forever. Eventually—to borrow from the title of Michael Lewis's 1999 book about the dot-com boom in Silicon Valley—the “new new thing” comes along and consumers migrate to it for the

reasons discussed in earlier chapters. However, products utilizing infinite variability stand a better chance of holding on to users' attention, while those with finite variability must constantly reinvent themselves just to keep pace.

Which Rewards Should You Offer?

Fundamentally, variable reward systems must satisfy users' needs while leaving them wanting to reengage. As described, the most habit-forming products and services utilize one or more of the three variable rewards types: the tribe, the

hunt, and the self. In fact, many habit-forming products offer multiple variable rewards.

E-mail, for example, utilizes all three variable reward types. What subconsciously compels us to check our e-mail? First, there is uncertainty concerning who might be sending us a message. We have a social obligation to respond to e-mails and a desire to be seen as agreeable (rewards of the tribe). We may also be curious about what information is in the e-mail: Perhaps something related to our career or business awaits us? Checking e-mail informs us of opportunities or threats to our material possessions and livelihood (rewards of the hunt). Lastly, e-mail is in

itself a task—challenging us to sort, categorize, and act to eliminate unread messages. We are motivated by the uncertain nature of our fluctuating e-mail count and feel compelled to gain control of our in-box (rewards of the self).

As B. F. Skinner discovered over fifty years ago, variable rewards are a powerful inducement to repeat actions. Understanding what moves users to return to habit-forming products gives designers an opportunity to build products that align with their interests.

However, simply giving users what they want is not enough to create a habit-forming product. The feedback loop of the first three steps of the Hook—trigger, action, and variable reward—still

misses a final critical phase. In the next chapter we will learn how getting people to invest their time, effort, or social equity in your product is a requirement for repeat use.

REMEMBER & SHARE

- *Variable reward* is the third phase of the Hook Model, and there are three types of variable rewards: the tribe, the hunt, and the self.
- *Rewards of the tribe* is the search for social rewards fueled by

connectedness with other people.

- *Rewards of the hunt* is the search for material resources and information.
- *Rewards of the self* is the search for intrinsic rewards of mastery, competence, and completion.
- When our autonomy is threatened, we feel constrained by our lack of choices and often rebel against doing a new behavior.
Psychologists refer to this as *reactance*.

Maintaining a sense of user autonomy is a requirement for repeat engagement.

- Experiences with finite variability become increasingly predictable with use and lose their appeal over time.
Experiences that maintain user interest by sustaining variability with use exhibit infinite variability.
- Variable rewards must satisfy users' needs while leaving them wanting to reengage with the product.

DO THIS NOW

Refer to the answers you came up with in the last “Do This Now” section to complete the following exercises:

- Speak with five of your customers in an open-ended interview to identify what they find enjoyable or encouraging about using your product. Are there any moments of delight or surprise? Is there anything they find particularly satisfying

about using the product?

- Review the steps your customer takes to use your product or service habitually. What outcome (reward) alleviates the user's pain? Is the reward fulfilling, yet leaves the user wanting more?
- Brainstorm three ways your product might heighten users' search for variable rewards using:

1. rewards of the tribe—
gratification from
others.
2. rewards of the hunt—

material goods,
money, or
information.

3. rewards of the self—
mastery, completion,
competency, or
consistency.

