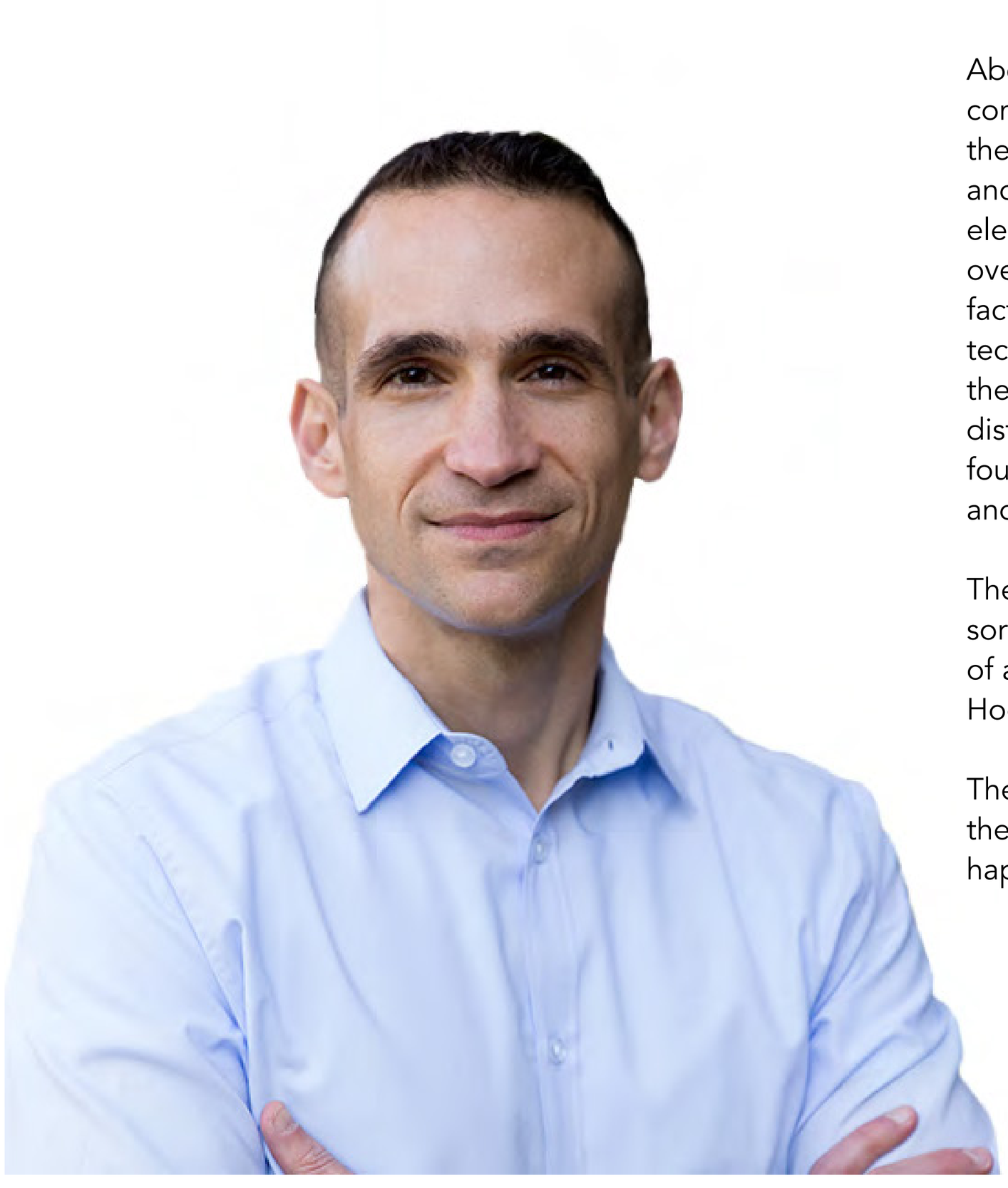
HABIT-FORMING PRODUCTS CASE STUDIES

This collection of examples and case studies from Nir Eyal shows you how companies have successfully designed habit-forming products.

NirandFar.com



About six years ago, I started NirandFar.com to help companies better understand and use behavioral design in their product development. Behavioral design is the art and science of changing human behavior, and it's a vital element to creating products that keep users engaged over the long term. Behavioral design is so important, in fact, that I developed a model to help businesses build technology products which create beneficial behaviors in their users. My model is called The Hooked Model, and it distills the elements of a habit-forming technology into four fundamental steps: a trigger, action, variable reward, and investment.

The Hooked Model is found across many industries in all sorts of products. For this ebook, I've compiled a collection of articles on how companies have successfully used the Hooked Model to build habit-forming products

These companies may not have realized they were using the principles I describe, but whether by design or by happenstance, the effect is the same.

NIR EYAL

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HOOKING USERS ONE SNAPCHAT AT A TIME

CHAPTER SUMMARY:

It's no secret Snapchat has become one of the most popular messaging apps in the world. But how does the app, built around the idea of sharing photo and video messages which disappear after 24 hours, convince users time and time again it's the platform they want to use when communicating with friends, family, and followers? **Ryan Hoover** provides five reasons why Snapchat manages to keep users coming back for more.

When Snapchat first launched, critics discounted the photo-messaging app as a fad – a toy for sexting and selfies. Their judgements were reasonable. It's impossible to predict the success of a product on day one, let alone its ability to change user behavior. But hindsight is beginning to prove critics wrong.
Snapchat boasts **5 million daily active users** sending 200 million photos and videos daily. That's an average of 40 snaps a day per user! But why are users so engaged to Snapchat? After all, what real need is Snapchat solving anyway?

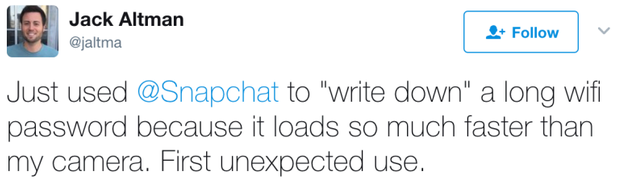
Snapchat popularized a new form of expression, using photos and videos as a communication medium. For many, Snapchat is a daily routine – the go-to app for interacting with friends in a playful way. This habit is not a happy mistake but a conscious effort driven by Snapchat through several subtle design choices.

As Nir Eyal describes, habit-forming products must have two things – high perceived utility and frequency of use. In Snapchat's case, as with most communication services, each individual message isn't particularly valuable in isolation. But through frequent use, Snapchatters enter the "Habit Zone", instinctually turning to Snapchat to solve their desire to communicate and feel connected with others. This key insight has enabled Snapchat to craft an experience tailored for high engagement.

Here are five ways Snapchat drives habitual engagement with their product:

FRICTION-FREE CREATION

This tweet about Snapchat recently caught my eye:



As Jack mentions, this is far from Snapchat's intended use case but exemplifies the speed and ease-of-use of the service. After launching Snapchat, the camera is immediately activated, encouraging instant photo-capturing. Traditional photo-sharing apps like Instagram open a feed to consume media, requiring an additional tap to create. This may appear like a minor inconvenience, but in reality, even the slightest friction can have a large impact. By reducing this process to a single tap, Snapchat enables users to capture fleeting moments faster and with less effort. And to capture a video, simply hold down on the screen to begin recording. No need for additional taps on Snapchat to toggle between photo and video modes.

LOWERED INHIBITIONS

On Snapchat, nothing is permanent. Photos and videos vanish immediately after consumption. Some argue it's a gimmick but in reality, this ephemerality lowers our inhibitions to share. When we are less self-conscious, we are less hesitant to act. We care less about creating the "perfect" photo or message, knowing it will disappear in an instant.

In comparison, the permanence of email or text messaging establishes an entirely different context. The artifacts of these conversations live on forever and we acknowledge the possibility that they could be forwarded or leaked to unwelcome eyes. This establishes reservations, censoring what we share and encouraging more thoughtful and ultimately, less frequent communications.

ONE-TO-ONE COMMUNICATION AT SCALE

Group messaging and social network "feeds" are channels for one-to-many communication. These messages are implicit broadcasts, not directed to specific individuals unless mentioned. In turn, consumers of the message have no obligation to respond and in some cases, may be hesitant to reply in a public forum.

After crafting a message, Snapchat users must select who to send it to. They are given the option to send to one or many individuals yet recipients are unable to discern whether a message was explicitly sent to them or several people. And this is the genius of Snapchat. It

enables a single message to have a broad reach while maintaining the intimacy of one-to-one communications, leading to a higher volume of messages sent and increased response rates as users feel more socially obligated to return the favor.

READ-RECEIPTS

We've all received an unwanted text message, email, or voicemail and ignored it. We pretend we didn't see it or delay our response. When senders ask, "Did you get my message?" we make up an excuse. But on Snapchat, there's no pretending. Each snap includes a read-receipt, informing senders their message was viewed.

This subtle indicator has significant impact on the dynamics of these interactions, creating a social obligation for recipients to reply in a timely manner. This leads to higher response rates and more expedient replies, increasing usage.

Response rates are critical to the success of Snapchat. Without it, users won't stick around for long. Our craving for feedback and reciprocation is one of the strongest drivers of social products. To illustrate the effect of response rates, I'll use a very simple example: Let's pretend there are two messaging apps, App A and App B. App A's average response rate – the percentage of messages sent that users reply to – is 80%. App B's response rate is 20%. For every 1,000,000 new messages sent, another 800,000 are generated in App A and only 200,000 in App B. In turn, these additional messages have a compounding effect as the original sender replies (assuming response rates remain constant). After 9 interactions, App A generates an additional 3,463,129 messages from the initial one million sent, 13x more than App B's 250,000 messages.

But response rates are just one piece of the equation.
Cycle time, the amount of time elapsed between each message, also has a significant influence on engagement[3]. If it takes an average of 4 hours for users to respond to each message, App A will send its 4,463,129th message after 36 hours. However, if the app's cycle time is reduced to 1 hour, the same number of messages will be sent within 9 hours, intensifying engagement.

FEEDING CURIOSITY

The human brain feeds off of **variability**. When things become mundane and predictable, we become disinterested. Consider your own reading habits. After finishing a book, are you motivated to read it again? Once the mystery is gone, so is our interest. But humans are unpredictable and its this variability that makes social products engaging and long-lasting.

Snapchat communications are highly variable. Each message is composed of various forms of self-expression, captured and created at that moment in time. When notified of a new message, one might question, "I wonder what it is. A photo, a message, a doodle, a video? Where is my friend? What are they doing? Is this a message just for me?"

These questions fuel our curiosity as we hold our finger on the screen to view, knowing the snap will disappear forever in an instant. Ephemerality encourages us to treasure these moments, capturing our attention and transforming ugly photos into novel interactions. This variability keeps things interesting, increasing our motivation to remain engaged to uncover the mystery.

TL;DR

As people continue to use Snapchat several times per day, behaviors emerge that perpetuate engagement and retention. Soon, they are hooked and unlike the ephemeral communications it produces, engagement persists as users turn to Snapchat again and again. Snapchat succeeds because it encourages frequent use by:

- Making it easy and quick to create photos or videos
- Reducing inhibitions with temporary communications
- Creating a social obligation for users to reply to explicit, one-to-one communications
- Increasing response rates and timeliness of replies using read-receipts
- Motivating consumption through novel, highly variable interactions

REFRESH: THE APP A SECRET AGENT WOULD LOVE

CHAPTER SUMMARY:

These days, apps can be made for just about any industry or any reason, but if they're created without the fundamental steps of trigger, action, variable reward, and investment, they're unlikely to retain user interest and engagement over the long term. Fortunately, Bhavin Shah and Paul Tyma understood the importance of the Hooked Model when they co-founded and created the dossier-inspired app Refresh. Here's how they turned Refresh into a must-use app for its users.

A few minutes before his helicopter touched down in a covert military base just outside of Kabul, Afghanistan, Tommy Thompson reached for his secret weapon. He was about to meet with top Afghan officials and he needed to ensure he hit his mark. But Thompson's mission to the war-torn region in 2004 did not involve delivering guns and bombs. As the U.S. Secretary of Health and Human Services, the diplomat was there to win hearts and minds.

To accomplish his directive, assigned to him by the President of the United States, Thompson relied upon information delivered at exactly the right time and place. Minutes before each meeting with dignitaries, he was handed a top-secret intelligence briefing.

The CIA-prepared binder contained the most vital, and at times trivial, information on who the Secretary was going to meet. A quick glance provided the context for the meeting, notes from previous encounters, and often times contained personal information.

"Speaking to Secretary Thompson after he read his briefing gave you the feeling you were the most important person in the world," said Bhavin Shah, who traveled with Thompson to Afghanistan. "You understood that he cared about you enough to mention the things that were on your mind."

Thanks to his dossier, Thompson was never without a piece of information, which when used in the right context, served to ease the conversation. His meetings were never awkward, he was never dull, and somehow, it always appeared the Secretary was, in Shah's words, "conversationally refreshed."

Thompson's personal soft skills, often turned into hard results. According to Shah, "You would suddenly see stern generals and skeptical officials relax when Thompson dropped important detail to show he cared about the individual."

Years after traveling with the Secretary, the memory of the power of good conversation and those all-important briefings stuck with Shah. In 2012, Shah along with co-founder Paul Tyma, decided to see if they could build a technology inspired by Thompson's official briefings.

"I wanted my own dossiers," Shah said. "I interact with so many people during my day, and I often find it hard to remember everything. I had trouble keeping everything straight." But whether it was actually possible to build a technology good enough to do the job, was still an open question.

I first met Shah during the early days of his new company nearly a year and a half ago. A venture capital friend made the introduction and over burgers in Palo Alto, I understood why he had connected us.

Shah needed to deliver relevant information the way Thompson's dossiers did. But with no g-man handing over carefully drafted binders, the concept would need to leverage new technologies and create new user behaviors. To succeed, the app had to become a habit.

We sketched out a few ideas using a framework I developed called the Hook Model. The Hook distills the elements of a habit-forming technology into four fundamental steps: a trigger, action, variable reward, and investment and is found in all sorts of products, which keep users coming back.

Shortly after our meeting, the Refresh team built a bare-bones version to test the validity of their idea. The v.1 used SMS text messages to send early users snippets of information gathered from the open web about the person they were about to meet.

A message like, "Don't forget to ask Michael about his recent trip to Vancouver," could be sent based on a quick scan of my calendar and Facebook account. 15 minutes before a meeting, this kind of information proved to be a great conversation starter.

In the early days, Shah used the so-called "man behind the curtain" technique to gauge user response. Testing the idea with a small handful of investors and friends, Shah hired a woman named Colleen to send out talking points manually over SMS.

Shah believed that if users responded well to the messages Colleen was sending, it would be worth building a technology to automate the process. Shah's first test was to figure out his users' triggers. He needed to understand what problem he was solving for his users by providing them with pertinent information before a meeting.

After several months of testing and tweaking, Shah decided he was ready to build the real thing. His handful of users had verified the first three phases of his product's hook. The trigger was the fear of forgetting to mention important information during a meeting. The action would be to open the app, and the variable reward would be the new information the user would find as well as the positive

feedback from the conversation itself. Shah also believed the user felt another trigger directly after the meeting, when they feared forgetting important information.

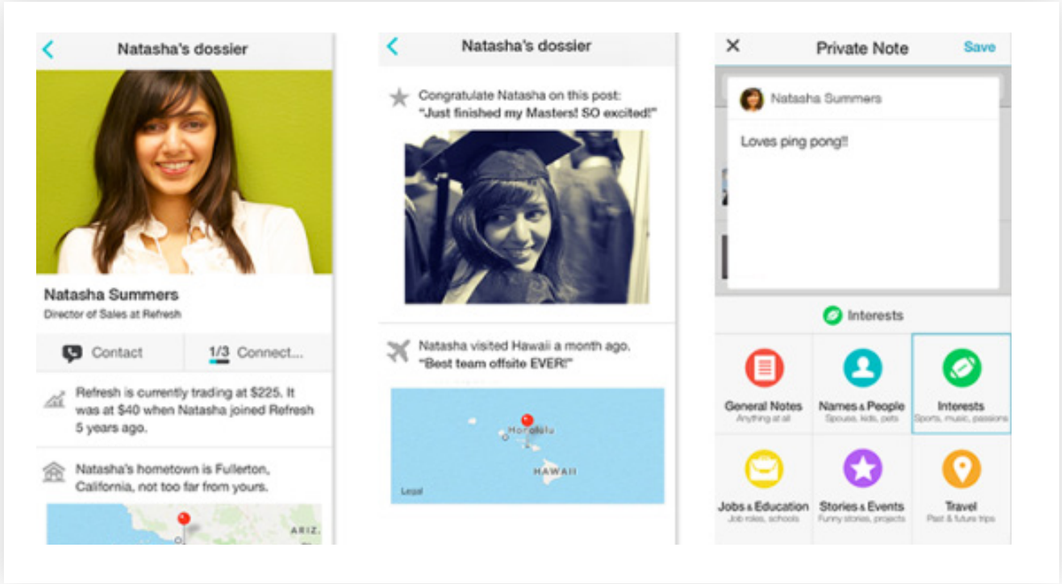
However, Shah's concept for a habit-forming technology was still missing a critical component, the investment phase. Whenever users put data into a service, they invest in it and increase the likelihood of returning, a phenomenon I call "stored value".

I strongly advised that while pulling publically available information from social networks about who the user was about to meet was a good first step, the user needed to add new facts to sustain the habit.

Users had to input the kind of information only they knew. In order to refresh the user's memory before their next meeting, they needed to add private notes. Informational nuggets like a person's favorite sports team or a home improvement project they might be working on, could only be collected by the user. But could an app help make these memory joggers useful?

Shah's team went from the SMS version to an early app prototype, which attempted to close the loop. By connecting the app to my calendar, I would receive a notification promptly after my meetings to ask, "What would you like to remember about your meeting?"

Unfortunately, results from the prompt were lackluster. Asking users to input notes with an open-ended question worked for some, but didn't engage those who were less motivated.



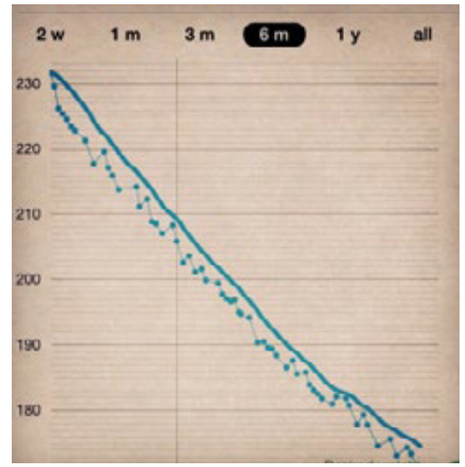
That's when the team came up with a novel solution. Instead of using the old vague prompt, they decided to test structured categories. Names of family members could be put into the "names and people" category, while notes on a big upcoming vacations could be entered under "big events." The seemingly simple change made a massive impact. The new prompt increased the number of notes entered by users 3X over the old method. Shah's app was finally becoming a user habit.

With their hook in place, Shah's team decided to expand the reach of their new app, which recently made its debut in the Apple App Store. Inspired by Tommy Thompson's endearing conversations, the new app is called Refresh.

CAN ONLINE APPS CHANGE REAL-LIFE BEHAVIOR?

CHAPTER SUMMARY:

Many mobile apps claim they can change the way users behave, break their bad habits, and encourage them to be better versions of themselves. But is this truly possible when each individual is different from the next? Max Ogles examines the reasons why apps work for some users and not others, and what tech companies must do if they want to not only hook users to their apps, but also drive change in their lives.



Weight gain happens pound by pound, over many years, and that's how Dave Haynes found himself sixty pounds away from a healthy BMI. In his career, Dave was immersed in the startup world; he helped start **Soundcloud**, which allows anyone to share and produce music and has over 10 million users. So when he ultimately resolved to reverse this disturbing weight trend, he naturally looked to technology for the solution; he downloaded the popular fitness apps and bought an Internet-connected Withings scale. But could these online apps help him achieve real-life behavior change?

For Dave, the answer was "Yes." In just six months he returned to a healthy weight. And when I asked if the apps helped, he didn't hesitate. "I couldn't have done it without them," he told me. "I wouldn't say any one app was the most important, but together they absolutely made it possible to achieve my goal."

Dave's success was a personal cocktail of technology to fit his personality, and it worked. But the variety of apps and the even greater variety of personalities that exist in the world make it questionable whether a single behavior tech product can work for everyone.

Most technology products are looking to change behavior in some form or another. With the help of psychology, many online companies

are leveraging the **feedback loops** within their products to form strong, addictive user habits. Whether a company is focused on user engagement, growth, or monetization, the ultimate goal is to get people to take action. From push notification triggers to highly enticing variable news feeds, dozens of design strategies have cultivated tech habits that we rely on; there's a reason that **60% of Facebook users** are active on the site daily.

But when you're trying to change behavior, getting users to engage within the app or web platform isn't enough. That's because no matter how many times a user logs in to WeightWatchers online or opens the Nike+ app, the products are really only successful if users take action in real life. For behavior change apps to be successful, users have to go to the gym, eat a healthy salad, or say "no" to ice cream–not just scroll mindlessly through cat memes.

THE SCIENCE OF CAPTOLOGY

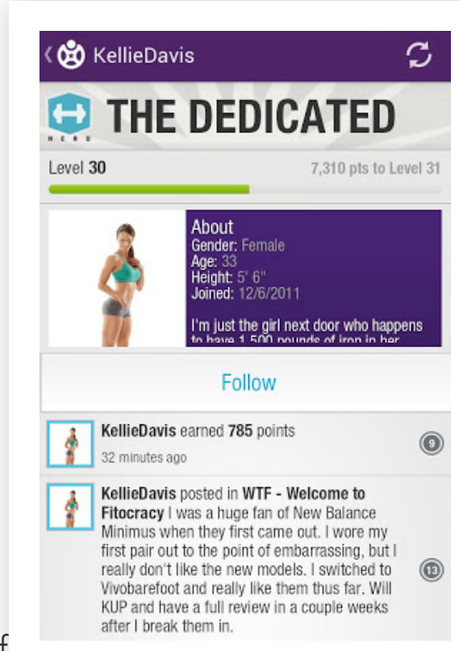
One of the most popular behavior change models used by behavior tech companies is that of Stanford professor BJ Fogg, a pioneer in the area of persuasive technology. Fogg even coined the term **"captology"**–Computers As Persuasive Technology. The gist of **Fogg's model** is that for any behavior to occur, three components must be present: motivation, ability, and a trigger.

For example, if you're trying to get yourself to go to the gym, that might mean having the desire to exercise (motivation), having the time and resources to get to the gym (ability), and setting a calendar event to remind yourself to go (trigger). The best health and fitness apps incorporate some or all of these components in the user experiences that they offer. And that's just to get yourself to the gym one time! In order to make a significant lifestyle change, like losing a lot of weight or quitting smoking, motivation, ability, and triggers must be consistently optimized for the new behavior.

Of the three components, triggers are probably the easiest to implement using technology. Emails, text messages, and push notifications can be sent to us on our smartphones at any time and in any location to poke us towards good behavior. The real question is how well apps can offer the motivation and ability that people need to achieve their goals.

REAL MOTIVATION

Dozens (likely hundreds) of apps are designed to motivate users. **Fitocracy** uses gamification to help users earn rewards, accept challenges, and advance to a new level. **CarrotFit** entertains users by berating them into shape with humorous insults. With the **Lift** app, an entire community of like-minded individuals is there to offer "props" any time you're successful with a habit. And that's just to name a few of the apps and types of motivation that are out there.



One of the most unique "motivating" technologies is Stickk.com, which relies on the economic principle of **loss aversion** to create motivation. Loss aversion, oversimplified, is the idea that people are more motivated by the prospect of losing something (e.g. money) than they are by the prospect of a reward. Most people who sign up for Stickk choose a goal, like "I want to quit smoking" and then commit to a consequence if they don't achieve their goal: donating money to an organization that they despise, like a political party.

Though I've signed up for Stickk.com, I've never had the guts to put it to the test, so I went searching for someone who had. Plus, I wanted to know how powerful the effects of loss aversion really were, so I went on the hunt for someone with a real addiction. I searched through some public profiles on Stickk.com and that's how I found Jeremy Stevenson, a student at the University of Adelaide in Australia. Jeremy wasn't addicted to meth or heroin but instead a 21st century drug fueled by technology itself: pornography.

"There were a lot of things I didn't like about [pornography]," he told me. "I felt guilty after I looked it up and I found myself looking up dirtier and dirtier shit. Also, it changed my expectations of sex and also what women looked like naked, so I was disappointed when I started having my first sexual experiences."

Over the course of about 8 months, Jeremy set commitments with Stickk to avoid pornography altogether. And did it work? "I had a 100% success rate with Stickk, it worked remarkably," he said. "It's difficult to explain why, perhaps the notion of my money being donated to some horrendous cause like the American Republican Party, perhaps the knowledge of how disappointed I would be if I failed. …It was the pinnacle of commitment and I really hate failing at a commitment that I value."

FOR SIMPLICITY'S SAKE

For Jeremy, Stickk definitely supplied the motivation necessary to change. And with the variety of technologies available, it seems that most people are likely to find at least one that offers the type of motivation that will truly help them. The only remaining ingredient in BJ Fogg's recipe for behavior change is ability.

One way to think about ability is to think in terms of simplicity. Is the app simple enough? And, more importantly, is the action, such as "going for a run" or "saying no to dessert" simple enough? As **Fogg says**, "Simplicity differs by person and by context," meaning that all the tiny details of our environment matter significantly, and lead to his conclusion: "Simplicity lies outside the product."

This is where the true effectiveness of behavior change apps comes seems debatable. Even the best apps–with simple and intuitive UI, engaging content, and research-based methodology–are helpless when it's time to actually go for a run.

Limitations on our time, money, and the level of effort we're willing to exert all affect simplicity. And, to complicate things further, these limitations are constantly changing. It may be relatively simple to spend 30 minutes at the gym on a Saturday, if you have fewer weekend appointments on your calendar. But by Monday, when your calendar

is packed and you only have intermittent free time, going to the gym becomes significantly more difficult. If innovative apps can find ways to make the real-life behavior challenges easier, these apps will succeed.

For example, think about the time it takes to track calories. There are plenty of apps available to do this, but anyone who's counted calories knows that logging fresh food meals (which are generally the healthiest) is a painstaking process. So much so that for many people the challenge isn't eating healthy food, it's preparing it. After losing 100 pounds, former Apple employee Michael Grothaus gained back the weight for that very reason. The problem frustrated him so much that he built a solution called SITU–a **smart-scale and calorie counting app** combo that simplifies the process of tracking fresh foods. Though it's too early to tell, SITU seems to fill the void between online app and real-world simplicity by making a cumbersome task fairly quick and efficient. As technology improves, I suspect that more apps will find ways to buoy users with ability by simplifying physical tasks

THE FUTURE OF TECH CHANGE

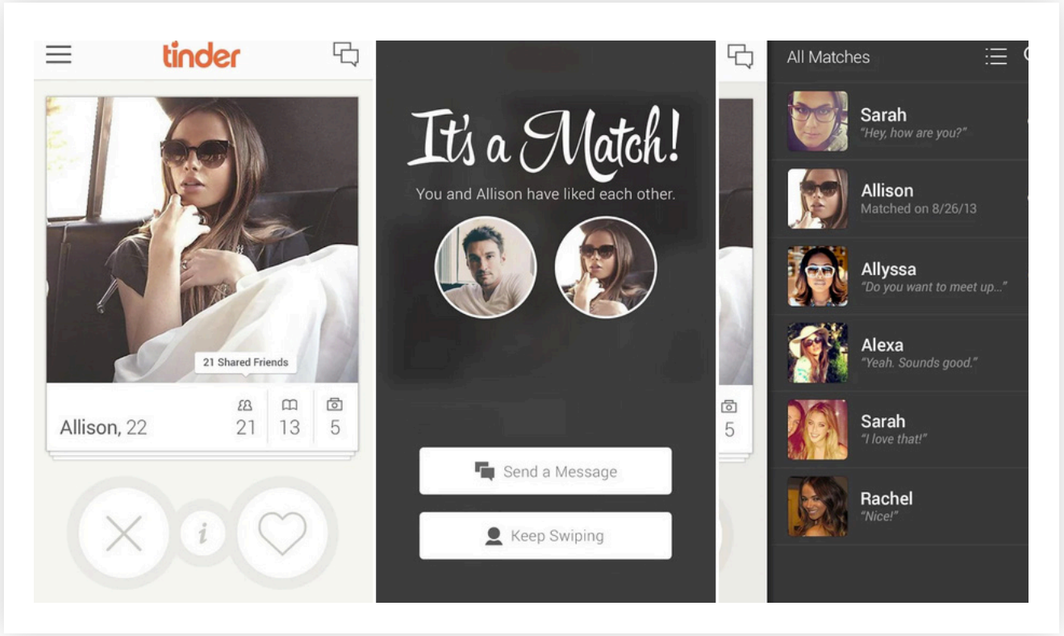
If you visit the website of just about any behavior change app, you'll see testimonial after testimonial from users lavishly extolling the app that finally made the difference–for them. There's still no pill, no app that solves everyone's bad habits, and with the complexity of human psychology will likely never be one. In the meantime, the weight loss apps, fitness games, and wearables should offer something unique for just about everyone. And the apps that remove as much friction as possible, while still inspiring users, are the most likely to succeed.

*Thanks to **Dave Haynes**, Jeremy Stevenson, and **Michael Grothaus** for the stories they shared for this essay.*

FROM LAID TO PAID: HOW TINDER SET FIRE TO ONLINE DATING

CHAPTER SUMMARY:

The Hooked Model makes sense for many different types of industries; for example, it just seems to fit in well with health and fitness, as well as social apps as noted above in chapter one. But how does the Hooked model make dating-related apps a must-have for singles? In this chapter, Ryan Hoover takes a look at Tinder, one of the most popular dating apps to date, and dives into what makes it so popular and engaging.



Tinder, a hot new entrant in the world of online dating, is capturing the attention of millions of single hopefuls. The premise of Tinder is simple. After launching the Tinder mobile app and logging in with Facebook, users browse profiles of other men or women. Each potential match is presented as a card. Swipe left if you're disinterested and right if someone catches your fancy. Once both parties express interest, a match is made and a private chat connects the two potential lovebirds.

The Tinder app has become a fixture in the U.S. App Store as one of the top 25 social networking applications, generating **1.5 million daily matches** as more than 50 percent of its users login multiple times per day. This isn't luck. It's smart design based in part, on game mechanics and an understanding of user psychology.

Here are four ways Tinder engages its calloused-fingered users:

STUPID SIMPLE

Tinder demands very little of the brain. Tinder reduces **cognitive overhead** into a binary decision: swipe left (not interested) or swipe right (interested). Traditional dating sites provide several ways to express interest. OkCupid users can rate others 1-5 stars, send a message, or start a chat. More options provide greater freedom of expression, but also introduce more mental effort. "Is she a 3 or 4 star catch? Should I message her? If so, what should I say?" These are questions guys and gals ask themselves before taking action. Increasingly, technology consumers multitask, fiddling with their "second-screen" while watching TV and chatting with friends. In turn, this decreases how often users engage with products that demand their full attention. By requiring less mental energy, Tinder users are more apt to use the service throughout the day.

Tinder also requires less physical effort than traditional, web-based dating sites. Users of the latter must process a wealth of information, evaluating several calls-to-action. And once a decision is made, they must exercise hand-eye coordination to move the mouse and click a link on the large display. This may appear trivial, especially to the digital native, but every bit of effort influences our likelihood of using and remaining engaged with the service. By making it easy to take action, Tinder encourages users to continue swiping.

INFINITE SWIPE

Tinder's swiping mechanic is not dissimilar from the ever-present **infinite scroll**, popularized by Pinterest. What makes it so addictive? Both interactions – scrolling and swiping – require less effort than tapping or clicking a button and present visual queues to spike curiosity, furthering engagement. Each user profile is presented as a card amongst a seemingly infinite number of users. This metaphor manifests not only in its presentation but also the way in which it influences users to keep playing. The deck of cards is disorderly as the edges of hidden cards poke outside the stack, teasing the next profile. This instigates tension as users feel compelled to resolve their curiosity and continue swiping.

It's not unusual for Tinder users to swipe through more than 100 profiles in a single session. Each swipe delivers immediate gratification, resolving the mystery of who will appear next. After all, the next one just might be the one. Users swipe right in attempts to satiate their appetite for social validation and discover if the object of their affection shares the same yearning. After each swipe, the next profile is fluidly revealed before the decision is cast.

SPREADING BETS AND DOING WORK

Traditional dating sites require no further investment of the user to find a match once a profile is created. Tinder, on the other hand, makes its **users work**, impressing feelings productivity and accomplishment with each swipe. The only way to connect with someone is to use the service

– both singles need to express interest before a match is made. Each swipe to the right creates a match opportunity, immediately or in the future. Like a playboy who dates several women at once, spreading his bets, Tinder users increase their chances of getting lucky the more they use the service. This drives users to continue swiping, hoping their investment pays off.

DOUBLE OPT-IN DATING

I met my (now ex) girlfriend on OkCupid. Prior to meeting her, I received very few messages from other women (they were probably too intimidated). Curiously, I asked her how many guys messaged her on the service. "I received over a dozen messages every day in the first few weeks," she said. "I continue to get at least a few every day. I barely even look at them now."

Her experience is very common. Men send a **majority of messages** to prospective dates online, creating a heavily lopsided market. This mismatch leads to burnout as women feel overwhelmed with interest from (often questionable) suitors and men feel disheartened from the lack of response.

Tinder solves this by making the connection double opt-in, requiring both men and women to express interest. This gives women the authority to decide who can send them a message and more control of their dating experience. Additionally, it avoids signaling feelings of rejection. When one sends a message with no response, they reasonably assume rejection. The more often this occurs, the less motivated the lonely man will be to continue sending messages and using the Tinder service.

In reality, Tinder is less a dating site and more of a game. The reward of finding a hot match isn't what continues to drive engagement. It's the anticipation of the reward that encourages users to keep swiping, scratching their curiosity to reveal what's next.

Compare that to Match, eHarmony, and the rest, and which do you think would be more fun to play?

BIBLE APP: GETTING 100 MILLION DOWN-LOADS IS MORE PSYCHOLOGY THAN MIRACLES

CHAPTER SUMMARY:

There are thousands of religion apps in the Apple App Store. However, a rare few actually keep users around long enough to take any action beyond a quick reading session. Bobby Gruenewald, CEO of YouVersion, managed to hook the users of his aptly-named app Bible. In this essay, (of which an edited version was originally published in *The Atlantic*), I interviewed Gruenewald about the psychology behind Bible's development and how its habit-forming properties drives its users to invest more time in their faith each day.

It's not often an app has the power to keep someone out of a strip club. But according to Bobby Gruenewald, CEO of YouVersion, that's exactly what his Bible app did. Gruenewald says a user of his app walked into a business of ill repute when suddenly, out of the heavens, he received a notification on his phone. "God's trying to tell me something!," Gruenewald recalled the user saying, "I just walked into a strip club — and man — the Bible just texted me!"

YouVersion recently announced its Bible app hit a monumental milestone — placing it among a rare strata of technology companies. The app, simply called "Bible," is now on more than **100 million devices** and growing. Gruenewald says a new install occurs every 1.3 seconds.

On average, some 66,000 people have the Bible app open during any given second, but that number climbs much higher at times. Every Sunday, Gruenewald says, preachers around the world tell devotees, "to take out your Bibles or YouVersion app. And, we see a huge spike."

The Bible app was funded and built by LifeChurch.tv of Edmond, Oklahoma. Though Silicon Valley digerati rarely heed lessons from churches in red states, in this case, Gruenewald and his team have something to preach about. The market for religious apps is fiercely competitive; searching for "bible" in the Apple App Store returns 5,185 results. But among all the choices,

YouVersion's Bible app seems to be the chosen one, ranking at the top of the list and boasting over 641,000 reviews.
How did YouVersion come to dominate the digital word of God? It turns out there is much more behind the Bible app's success than missionary zeal. The company is a case study in how technology can change behavior when it utilizes the principles of consumer psychology coupled with the latest in big data analytics.

According to industry insiders, the YouVersion Bible could be worth a bundle. **Jules Maltz**, General Partner at **Institutional Venture Partners**, told me, "As a rule of thumb, a company this size could be worth $200 million and up."

Maltz should know. His firm recently announced an investment in another pre-revenue app, Snapchat, at an **$800 million valuation**. Maltz justifies the price by pointing to the per user **valuations** of other tech **companies** like Facebook, Instagram, and Twitter, who each commanded astronomical sums well before turning a profit. Maltz was quick to add, "Of course, this assumes the company can monetize through standard advertising."

Placing ads in the Bible app would rain manna from heaven and the church which originally funded the Bible app would suddenly become, shall we say, very blessed. However, Gruenewald says he has no intention of ever turning a profit from the Bible app.

Despite multiple buyout offers and monetization opportunities, the Bible app remains strictly a money-losing venture. Lifechurch.tv has invested over $20 million in the Bible app but, according to Gruenewald, "The goal is to reach and engage as many people as possible with scripture. That's all." So far, Gruenewald is meeting his goal.

IN THE BEGINNING

Gruenewald is a quick-thinking, fast-talking man. During our conversation, he pulled up statistics in real-time, stopping himself mid-sentence whenever relevant data flashes on his screen and grabs his attention. As Gruenewald preaches on about mobile app development best-practices, I need to occasionally interrupt him to ask clarifying questions. My words stumble over his enthusiasm as he bears witness to what he's learned building his Bible app. He spouts user retention figures with the same gusto I'd imagine he might proclaim scripture.

"Unlike other companies when we started, we were not building a Bible reader for seminary students. YouVersion was designed to be used by everyone, every day." Gruenewald attributes much of the Bible app's success to a relentless focus on creating habitual Bible readers.

Gruenewald is well-prepared for our interview and, thanks to an email his publicist sent me prior to our call, so am I. In the email, the Bible app's success is broken down into the language of habit formation more commonly seen in psychology textbooks. The "cues", "behaviors" and "rewards" of communing with the Lord are bullet-pointed and ready for our discussion.

"Bible study guides are nothing new," Gruenewald says. "People have been using them with pen and paper long before we came along." But as I

soon find-out, the Bible app is much more than a mobile study guide. In fact, the first version of YouVersion was not mobile at all. "We originally started as a desktop website, but that really didn't engage people in the Bible. It wasn't until we tried a mobile version that we noticed a difference in people, including ourselves, turning to the Bible more because it was on a device they always had with them."

Indeed, people started taking the Bible with them everywhere. Recently, the company revealed users read scripture in the most unsanctified places — **18% of readers report** using the Bible app in the bathroom. While the 100 million install mark is an impressive milestone, perhaps the more startling fact is that users can't put the Bible app down long enough to take a holy shit.

HOW TO FORM A GOD HABIT

Gruenewald acknowledges the Bible app enjoyed the good fortune of being among the first of its kind at the genesis of the App Store in 2008. To take part, Gruenewald quickly converted his web site into a mobile app optimized for reading. His Bible app caught the rising tide, but soon a wave of competition followed. If his Bible app was to reign supreme, Gruenewald needed to get users hooked quickly.

That's when Gruenewald says he implemented a plan — actually, many plans. A signature of the Bible app is its selection of over 400 reading plans — a devotional iTunes of sorts, catering to an audience with diverse tastes, troubles and tongues.

Given my **personal interest** and **research into habit-forming technology**, I decided to start a Bible reading plan of my own. I searched the available themes for an area of my life I needed help with. A plan titled, "Addictions," seemed appropriate.
Reading plans provide structure to the difficult task of reading the Bible for those who have yet to form the routine. "Certain sections of the Bible can be difficult for people to get through," Gruenewald admits. "By offering reading plans with different small sections of the Bible each day, it helps keep [readers] from giving up."

The Bible app chunks and sequences the text by separating it into bite-size pieces. By parsing readings into communion wafer-sized portions, the Bible app focuses the reader's brain on the small task at hand, while avoiding the intimidation of reading the entire book.

HOLY TRIGGERS

5 years of testing and tinkering have helped Gruenewald's team discover what works best. Today, the Bible app's reading plans are tuned to immaculate perfection and Gruenewald has learned that frequency-of-use is paramount. "We've always focused on daily reading. Our entire structure for plans focuses on daily engagement."

To get users to open the Bible app every day, Gruenewald makes sure he sends effective cues — like the notification sent to the sinner in the strip club. But Gruenewald admits he stumbled upon the power of using good triggers. "At first we were very worried about sending people notifications. We didn't want to bother them too much."

To test how much of a cross users were willing to bear, Gruenewald decided to run an experiment. "For Christmas, we sent people a message from the app. Just a 'Merry Christmas' in various languages." The team was prepared to hear from disgruntled users annoyed by the message. "We were afraid people would uninstall the app," Gruenewald says. "But just the opposite happened. People took pictures of the notification on their phones and started sharing them on Instagram, Twitter, and Facebook. They felt God was reaching out to them." Today, Gruenewald says, triggers play an important role in every reading plan.

On my own plan, I receive a daily notification on my phone, which reads, "Don't forget to read your Addictions reading plan." Ironically, the addiction I'm trying to cure is my dependency to digital gadgetry, but what the hell, I'll fall off the wagon just this once.

In case I somehow avoid the first message, a red badge over a tiny Holy Bible icon cues me again. If I forget to start the first day of the plan, I'd receive a message suggesting perhaps I should try a different, less challenging plan. I also have the option of receiving verse through email and if I slip-up and miss a few days, another email would serve as a reminder.

The Bible app also comes with a virtual congregation of sorts. Members of the site tend to send encouraging words to one another, delivering even more triggers. According to the company's publicist, "Community emails can serve as a nudge to open the app." Triggers are everywhere in the Bible app and Gruenewald says they are a key part of the Bible apps' ability to keep users engaged.

To some, all these messages might become a nuisance. But remember, this is the Bible, and uninstalling the Bible app or turning off notifications would basically be flipping the Lord the bird.

GLORY BE IN THE DATA

Gruenewald's team has sifted through behavioral data collected from millions of readers to better understand what users want from the Bible app. "We just have so much data flowing through our system," Gruenewald said. "We were generating so much of it that apparently we showed up on Google's radar and they contacted us to take a closer look." Gruenewald reports his company recently completed work with Google engineers to help, "with storing and analyzing data so they could solve [these problems] for others as well."

The data revealed some important insights on what drives user retention. High on Gruenewald's list of learnings was the importance of "ease of use," which came-up throughout our conversation.

In-line with the work of psychologists dating back to Gestalt psychologist **Kurt Lewin**, to modern-day researchers like **BJ Fogg**, the Bible app uses the principle that by making an intended behavior easier to do, people do it more often.

The Bible app is designed to make absorbing the Word as frictionless as possible. For example, to make the Bible app habit easier to adopt, a user who prefers to not read at all, he can simply tap a small icon, which plays a professionally produced audio track, read with all the dramatic bravado of **Charlton Heston** himself.

Gruenewald says his data also revealed that changing the order of the Bible, placing the more interesting sections up-front and saving the boring bits for later, increased completion rates. Furthermore, daily reading plans are kept to a simple inspirational thought and a few short verses for newcomers. The idea is to get neophytes into the ritual for a few minutes each day until the routine becomes a facet of their everyday lives.

REWARDS FROM THE LORD

Gruenewald says the personal connection people have with scripture taps into deep emotions that, "we need to use responsibly." Readers who form a habit of using the Bible app turn to it not only when they see a notification on their phone, but also whenever they feel low and need a way to lift their spirits.

"We believe that the Bible is a way God speaks to us," Gruenewald says. "When people see a verse, they see wisdom or truth they can apply to their lives or a situation they're going through," Skeptics might call this **subjective validation**, psychologists could call it the **Forer effect**, but to the faithful, it amounts to personally communicating with God.

Upon opening the Bible app, I find a specially selected verse waiting for me on the topic of "Addictions". With just two taps I'm reading 1 Thessalonians 5:11 – encouragement for the "children of the day," imploring them with the words, "let us be sober." It's easy to see how these comforting words could serve as a sort of prize wrapped inside the Bible app, helping readers feel better and lifting their mood.

Gruenewald says there is also an element of mystery and variability associated with using the Bible app. "One woman would stay-up until just past midnight to know what verse she had received for her next day," Gruenewald says. The unknown, which verse will be chosen for the reader and how it relates to their personal struggle, becomes an important driver of the reading habit.

As for my own reward, after finishing my verse, I received confirmation from a satisfying "Day Complete!" screen. A check mark appeared near the scripture I had read and another one was placed on my reading plan calendar. Skipping a day would mean breaking the chain of checked days, employing what psychologists call the "**endowed progress effect**" — a tactic also used by video game designers to encourage progression.

SHARING THE WORD

As habit-forming as the Bible app's reading plans can be, they are not for everyone. In fact, Gruenewald reports most users never register for an account with YouVersion. Millions choose to not follow any plan, opting instead to use the app as a substitute for their paper Bibles.

But to Gruenewald, using the Bible app in this way suits him fine. Just because a reader never registers, does not mean Gruenewald has not found a way to help them grow the Bible app. In fact, social media is abuzz with the 200,000 pieces of content shared from the app every 24 hours.

To help the Bible app spread, a new verse greets the reader on the first page. Below it, a large blue button reads, "Share Verse of the Day," whereby clicking the button blasts scripture to Facebook or Twitter.

Just why people share scripture they've just read is not widely studied. However, one reason may be the reward of portraying oneself in a positive light, also known as the **humblebrag**. A recent **Harvard meta-analysis** titled, "Disclosing information about the self is intrinsically rewarding" found the act, "engages neural and cognitive mechanisms associated with reward." In fact, sharing feels so good that one study found, "individuals were willing to forgo money to disclose about the self."

There are many opportunities to share verse from within the Bible app, but one of Gruenewald's most effective distributions channels occurs not online but in-row — that is, in the pews church-goers sit-in every week.

"People tell each other about the app because they use it surrounded by people who ask about it." Gruenewald says the Bible app always sees a spike in new downloads on Sundays when people are most likely to share it through word of mouth.

However, nothing consummates the reign of Gruenewald's Bible app quite like the way preachers in some congregations have come to depend upon it. YouVersion lets religious leaders input their sermons into the Bible app to allow their assemblies to follow along in real-time — book, verse, and passage — all without flipping a page. Once the head of the church is hooked, the flock is sure to follow.

FOR ALL ETERNITY

But using the Bible app at church not only has the benefit of driving growth, it builds commitment. Every time users highlight a verse, add a comment, bookmark, or share from the Bible app, they **invest in it**. Behavioral economists Dan Ariely and Michael Norton have shown the effect small amounts of work have on the way people value various products. Known as the "**IKEA effect**," studies have shown that things we put labor into, become worth more to us.

It is reasonable to think that the more readers put into the Bible app in the form of small investments, the more it becomes a repository of their history of worship. Like a worn dog-eared book, full of scribbled insights and wisdom, the Bible app becomes a treasured asset not easily discarded.

The more readers use the Bible app, the more valuable it becomes to them. Switching to a different digital Bible — God forbid — becomes less likely with each new revelation a user types into the Bible app, further securing YouVersion's dominion.

Gruenewald claims he is not in competition with anyone, but he does on occasion rattle off the App Store categories where he holds a high ranking. His place at the top of the charts appears secure now that the Bible has crossed its 100 millionth install.

But Gruenewald plans to continue sifting through the terabytes of data to search for new ways to increase the reach of his Bible app and make the Bible even more habit-forming. To its tens of millions of regular users, Gruenewald's Bible app is a Godsend.

PINTEREST'S OBVIOUS SECRET

CHAPTER SUMMARY:

Pinterest is one of the most popular social media sites to date. The site is obviously onto something in terms of forming user habits, but few know its obvious secret: its adamant focus on reducing users' cognitive load. Pinterest brilliantly aligns its user experience with its business objectives of getting users to consume, create, and share content. Here's my take on how Pinterest has become so successful over the years.

Last week, I sat down for drinks with a few friends. "Have you heard of this Pinterest website?" said Jonathan, "My wife is totally addicted." "Yes! Molly is hooked too," said Ben, "She even has her grandmother into it, who, by the way, still can't figure out Facebook." "What's **Pinterest**?" said Colin, the unmarried engineer.

My friends, the very definition of tech-savvy, couldn't understand the astounding success of Pinterest. For one, the idea of capturing photos on a virtual wall is nothing new. The Facebook newsfeed is 5 years old and searching for pretty pictures on Google Images is ancient.

And yet, the Pinterest juggernaut is growing **faster than Facebook** when it was this size. Investors recently plowed in **$27 million** only five months after the company raised its previous round of financing. But even those who believe Pinterest is onto something big may not really understand why.

Pinterest has what I call an "obvious secret", the kind of insight that creates breakaway **non-consensus** companies. An obvious secret is when a startup has discovered a deep insight about its users, which is not obvious to the outside world, but is the key to the business's success. However, to those who do not know this insight, the company appears to be little more than a novelty.

SIMPLICITY, THE OBVIOUS SECRET

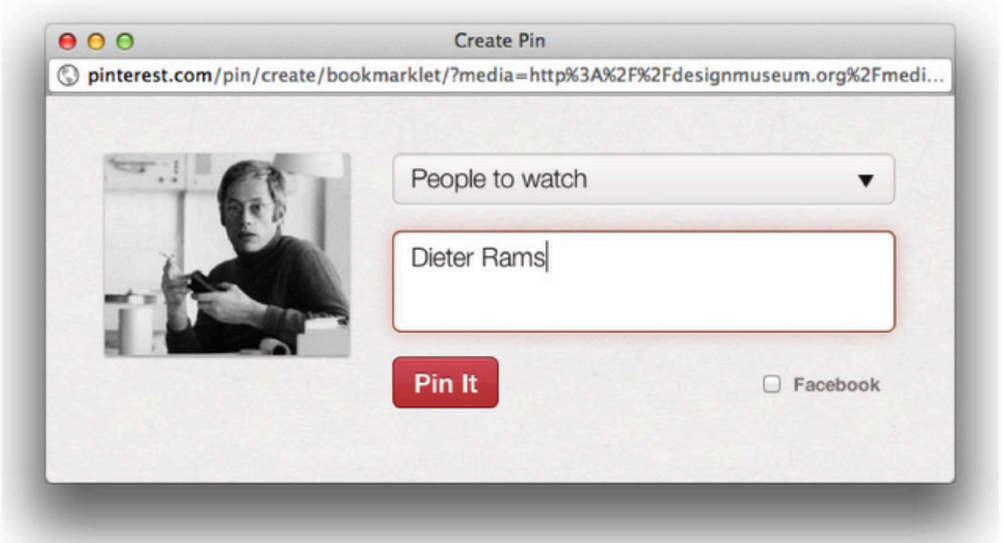
Pinterest wants its users to do three things: consume, create, and share content. The more users consume, create and share, the faster Pinterest reaches its business objectives and dominates its market. To accomplish this, Pinterest has mastered the art of minimizing cognitive load, in other words, reducing the mental effort required to do what the site wants users to do. Reducing cognitive load is what good design is all about. Making something simple makes it easy to understand, easy to use, and ultimately increases the desired behaviors. Here's how Pinterest accomplishes its business goals through simplicity:

A PIN IS WORTH A THOUSAND POSTS

By nature, images are much easier for our brains to process than text. Thus, a site, which characterizes and organizes content through pictures, is inherently easier to understand and use than text-based service. Even Twitter's 140 characters require more brain cycles than the quick-browsing of visual information on Pinterest. Consuming information through images is easier, which means users consume more of it than ever before.

CURATION IS CREATION

For a company of its size, Pinterest's users are creating content at an unprecedented pace. Unlike on Facebook and Twitter, where users have to actually think of new content to post, Pinterest is not about what is happening right now. Users are not prompted to think about "what are you doing?" In fact, they are not prompted to think at all, they are prompted to feel. The value of Pinterest is in capturing and collecting inspiring scraps of the web. The site taps into our primal hardwiring to hunt and gather.



We want to keep things that make us feel good and we like knowing they are kept somewhere safe; like a treasured shoebox full of life's memorabilia. Through its browser bookmarklet, "re-pin" button, and ability to invite contributors, users collect items onto "boards" they've labeled based on their interests. Common boards include recipes, kids and fashion.

But in the process of collecting and categorizing, Pinterest users are in fact creating content. Though they have done little more than clicked on an image to identify it as interesting, their collective pinning creates tremendous value for the community. In an age when web content is infinite, curation from people whose taste you admire and interests you share, is extremely valuable.

SHARE AND SHARE A “LIKE”

Because each user is motivated to find things that interest them, content curation is an invariable by-product. But in the process, the sharing and collection of information occurs in a powerful new way with broad implications and new opportunities.

In the process of collecting items of interest, users share their tastes and preferences in a much richer way than competitors such as the Facebook “Like” button can hold a thumb to. This is because users never have to think to “Like” anything, once again reducing their cognitive load through simplification. The behavior of pinning, intentionally simplified and de-cluttered by its designers, only enables users to do one thing, save their content.

As a result, the Pinterest graph will be much richer than what Facebook or Twitter can hope to rival. The volume and richness of user data collected through pinning is unparalleled. While I might “Like” Babies’R’Us on Facebook or follow their Twitter stream, hoping to get a coupon, only Pinterest knows I’ve been keeping an eye out for a mid-priced stroller appropriate for an 18-month-old boy.

Pinterest’s obvious secret is its ability to serve our innate desire to capture and collect, while making consuming, creating and sharing easier than ever before. In the process, Pinterest is on the precipice of having the richest consumer data set ever assembled and may someday be able to predict what consumers want well before they know themselves.

HOW AMAZON'S ALEXA HOOKS YOU

*Nir's Note: This guest post is by **Darren Austin**, Partner Director of Product Management at Microsoft*

Last year we added a new member to our household. I must admit that upon first meeting her, our initial impression was that she was a little creepy. Today though, we can't imagine life without her.

We've never seen her face, but we talk to her throughout the day, every day. She helps us keep track of our to dos and shopping list, reads us the news and weather, and can sing nearly any song we'd like to hear. In fact, we have become so accustomed to her presence that we invited her to join us in nearly every room in the house. She listens to us when we say goodnight and is there first thing in the morning to wake us up.

Her name is Alexa and she is the voice of the Amazon Echo. If our experience is any indicator, there's a good chance Alexa (or a technology like her) will soon be a presence in most households. How did Alexa become such an integral part of our lives? And how did the technology profoundly change our daily habits?
It turns out that Alexa shares a common trait with other habit-forming technologies like Facebook, Slack, and the iPhone -- the Amazon Echo has a great Hook.

Hooks, according to Nir Eyal, author of Hooked: **How to Build Habit-Forming Products**, are "experiences designed to connect the user's problem with the company's product with enough frequency to form a habit." In his bestselling book, Eyal describes the four steps of the **Hooked Model** and provides case studies for how the stickiest technologies use hooks to keep users coming back. In this essay, I'll use the Hooked Model to help explain how voice assistants, like Amazon's Alexa, keep us hooked.

The Hooked Model (NirAndFar.com)

TRIGGER

Every Hook starts with a trigger. **Triggers** prompt us to action and tell us what to do next. In the case of Facebook or your iPhone, a trigger might be a notification or status update. These type of triggers are called "external triggers," Eyal says, since the information for what action to take next is contained within the trigger itself.

However, Eyal says external triggers alone are not enough to build a habit-forming product. To get people to use a device without prompting, users must trigger themselves. "Internal triggers," according to Eyal, involve making mental associations with the product. The most common internal triggers, he says, are negative emotions. For example, we use Facebook when we're lonely or spend time watching YouTube videos when we're bored -- these products become our go-to relief from negative feelings.

In the case of Alexa, my wife and I have associated the internal trigger of uncertainty with the satisfying relief the Echo provides. "Alexa, what's the weather like today?" "Alexa, what's happening in the news?" "Alexa, what's the capital of Burkina Faso?" (It's Ouagadougou in case you are curious.)

Interestingly, the more we got in the habit of asking Alexa to relieve the itch of uncertainty, the more we began to associate the device with other internal triggers. For example, we hate the feeling we might forget to put something we need on our shopping list. The fear of forgetting is an internal trigger prompting us to tell Alexa to add an item to our list whenever we run out of something around the house.

ACTION

The next step of the Hooked Model is the "action phase." "Actions are the simplest behavior done in anticipation of relief," Eyal says. With the simple action of asking, Alexa relieves the negative emotions of uncertainty and the fear of forgetting.

According to Eyal, "the simpler you can make the action, the more likely it is to occur." This insight is a key secret of the success of voice interfaces like Alexa. For certain tasks, speaking a command is dramatically easier than tapping a screen.

For example, consider the number of steps required to add an item to our family's to do list through an iPhone versus the Echo.

To do app on iPhone:

1. Locate phone (this may involve many more steps depending on how forgetful I am that day)
2. Unlock phone
3. Locate and open our to do app
4. Navigate to the appropriate to do list (I have many to do lists)
5. Tap "Add a to do"
6. Type the name of task
7. Tap "Done" to save the to do
8. Put away phone

Amazon Echo:

1. Be anywhere near an Alexa-enabled device (in our home, that's just about everywhere except the front yard)
2. Speak the words, "Alexa, add _____ to our To Do list"
3. Relish the feeling you are living in the future

When you consider the frequency with which we edit our to do and shopping lists and the ease of this action, you can imagine how quickly a new habit might form around this behavior. In fact, **an April 2017 study from GfK** showed nearly half of Amazon Echo and Google Home users report using their devices "regularly" or "all of the time."

In addition to helping form a habit, regular use increases the chance of making a purchase on Amazon. A 2016 **Experian study** found that 45.3% of Echo users reported having used the device at least once to add an item to their shopping list while 32.1% reported completing a transaction through the device.

REWARD

The next step of the Hooked Model is the Reward phase. It's here, Eyal says, that users get what they came for: relief from the psychological "itch" of the internal trigger.

When Alexa confirms that Tabasco sauce was added to my shopping list, I can rest assured that my favorite condiment will soon be on its way and I don't have to worry about remembering to write it down later.But the voice interface built into products like the Amazon Echo utilizes another psychological hack to keep me coming back. In his book, Eyal describes the power of "**variable rewards**." Originally studied by B.F.

Skinner, the phenomenon explains why slot machines are so engaging and why we love scrolling through our Facebook news feeds. We love surprises and the hunt for something rewarding and different keeps us engaged.

Alexa is full of surprises. For one, the device is a tool for delivering content -- which is itself variable like the news, games, or audio books. But Alexa also has a personality of her own. Her occasional clever responses keep us wanting to hear what she'll say next. For example, telling Alexa the famous line from Star Wars, "I am your father," yields the robotic voice reply, "No. That's not true. That's impossible." This is followed by much nerd celebration and light sabre rattling.

Counterintuitively, the fact that Alexa isn't always able to reply correctly is, in a way, a form of variable reward. Sometimes I find myself asking

Alexa things just to hear what she'll say. Alexa **messing up** from time to time is part of the fun. Of course, over time, the mess-ups become predictable and no longer variable and therefore, no longer fun. Thus, Amazon will have to continually improve what Alexa can do to keep users engaged.

Voice recognition challenges

INVESTMENT

Finally, the Hook is complete, according the Eyal, when the user puts something into the product to improve it with use. In the case of products like Facebook or YouTube, an **investment** might be the things you like, watch, or comment on. Investments can be passively collected, as in the case of usage data. Or investments can be something you actively did to improve the service such as upload a piece of content or customize the experience somehow.

In the case of the Amazon Echo, the service gets better when you enter data such as your home address. Knowing your home address enables Alexa to provide a more accurate weather forecast or request an Uber to pick you up at your house. Location data also enables Alexa to customize restaurant recommendations for you and tell you about local events. Enabling new skills -- Alexa's version of apps -- is also a form of investment. As of June 2017, **developers have created over 12,000 skills for Alexa**. Each new skill makes the device better.

Alexa is also collecting investment from each user in a more passive form. According to **the company**, "The more you talk to Alexa, the more it adapts to your speech patterns, vocabulary, and personal preferences." Alexa gets smarter with use and will soon be able to differentiate who is talking and cater replies to each individual user needs.

Through hundreds of interactions and tiny **user investments**, Alexa begins to customize itself to each individual's preferences. In the future, the device could learn you like to listen to your local news update in the morning while making breakfast and ask if you'd like to place a refill order of Nespresso pods after a certain number of days since your last Amazon order. It could also proactively load the next "**external trigger**" by asking you if you'd like to know the day's sports scores when it hears you come home from work.

HOOKED TO VOICE

Putting all of this together, the Alexa Hook looks something like this:

Amazon Alexa's Hook (adapted from Hooked Model by Nir Eyal - NirAndFar.com)

Of course, what makes Alexa so habit-forming isn't exclusive to the Amazon Echo. In fact, the potential to change our daily routines through a voice interface clearly has massive potential, which explains why **Microsoft**, **Apple**, and **Google** are all racing to catch-up. It's not often that a new technology can so quickly change our daily habits but I'm confident we're just seeing the beginning of what this new interface can do.