To Howard and Patricia
For in truth habit is a violent and treacherous schoolmistress. She establishes in us, little by little, stealthily, the foothold of her authority; but having by this mild and humble beginning settled and planted it with the help of time, she soon uncovers to us a furious and tyrannical face against which we no longer have the liberty of even raising our eyes.

Montaigne
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MAKING HABITS,
BREAKING HABITS
Part I

Anatomy of a Habit
This book started with an apparently simple question that seemed to have a simple answer: How long does it take to form a new habit? Say you want to go to the gym regularly, eat more veg, learn a new language, make new friends, practise a musical instrument, or achieve anything that requires regular application of effort over time. How long should it take before it becomes a part of your routine rather than something you have to force yourself to do?

I looked for an answer the same way most people do nowadays: I asked Google. The search suggested the answer was clear-cut. Most top results made reference to a magic figure of 21 days. These websites maintained that ‘research’ (and the scare-quotes are fully justified) had found that if
you repeated a behaviour every day for 21 days, then you would have established a brand-new habit. There wasn’t much discussion of what type of behaviour it was, or the circumstances you had to repeat it in, just this figure of 21 days. Exercise, smoking, writing a diary, or turning cartwheels; you name it, 21 days is the answer. In addition, many authors recommend that it’s crucial to maintain a chain of 21 days without breaking it. But where does this number come from? Since I’m a psychologist with research training, I’m used to seeing references that would support a bold statement like this. There were none.

My search turned to the library. There, I discovered a variety of stories going around about the source of the number. Easily my favourite concerns a plastic surgeon, Maxwell Maltz MD. Dr Maltz published a book in 1960 called Psycho-Cybernetics in which he noted that amputees took, on average, 21 days to adjust to the loss of a limb, and he argued that people take 21 days to adjust to any major life change! He also wrote that he saw the same pattern in those whose faces he had operated on. He found that it took about 21 days for their self-esteem either to rise to meet their newly created beauty or stay at its old level.

The figure of 21 days has exercised an enormous power over self-help authors ever since. Bookshops are filled with titles like Millionaire Habits in 21 Days, 21 Days to a Thrifty Lifestyle, 21 Days to Eating Better, and finally, the most optimistic of all: 21-Day Challenge: Change Almost Anything in 21 Days (at least it acknowledges that it might be a challenge!). Occasionally, the 21-day period is deemed
a little too optimistic and we are given an extra week to transform ourselves. These more generous titles include *The 28-Day Vitality Plan* and *Diet Rehab: 28 Days to Finally Stop Craving the Foods that Make You Fat*.

Whether 21 or 28 days, it’s clear that what we eat, how we spend money, or indeed anything else we do, has little in common with losing a leg or having plastic surgery. To take Dr Maltz’s observations of his patients and generalize them to almost all human behaviour is optimistic at best. It’s even more optimistic when you consider the variety amongst habits. Driving to work, avoiding the cracks in the pavement, thinking about sport, walking the dog, eating a salad, booking a flight to China; they could all be habits, and yet they involve such different areas of our lives. But, to be fair, Maltz didn’t invent the 21-day time frame; there are all sorts of stories explaining its origins, most of them standing on science-free ground.

Thanks to recent research, though, we now have some idea of how long common habits really take to form. In a study carried out at University College London, 96 participants were asked to choose an everyday behaviour that they wanted to turn into a habit. They all chose something they didn’t already do that could be repeated every day. Many were health-related: people chose things like ‘eating a piece of fruit with lunch’ and ‘running for 15 minutes after dinner’. On each of the 84 days of the study, they logged into a website and reported whether or not they’d carried out the behaviour, as well as how automatic the behaviour had felt. As we’ll soon see, acting without thinking, or ‘automaticity’,
is a central component of a habit.

So, here’s the big question: how long did it take to form a habit? The simple answer is that, on average, across the participants who provided enough data, it took 66 days until a habit was formed. And, contrary to what’s commonly believed, missing a day or two didn’t much affect habit formation. The complicated answer is more interesting, though (otherwise this would be a short book). As you might imagine, there was considerable variation in how long habits took to form depending on what people tried to do. People who resolved to drink a glass of water after breakfast were up to maximum automaticity after about 20 days, while those trying to eat a piece of fruit with lunch took at least twice as long to turn it into a habit. The exercise habit proved most tricky with ‘50 sit-ups after morning coffee’, still not a habit after 84 days for one participant. ‘Walking for 10 minutes after breakfast’, though, was turned into a habit after 50 days for another participant.

The graph shows that this study found a curved relationship between repeating a habit and automaticity. This means that the earlier repetitions produced the greatest gains towards establishing a habit. As time went on these gains were smaller. It’s like trying to run up a hill that starts out steep and gradually levels off. At the start you’re making great progress upwards, but the closer you get to the peak, the smaller the gains in altitude with each step. For a minority of participants, though, the new habits did not come naturally. Indeed, overall the researchers were surprised by how slowly habits seemed to form. Although the study only cov-
On average, habit formation took 66 days. Drinking a glass of water reached maximum automaticity after 20 days; for 50 sit-ups, it took longer than the 84 days of the study.

The researchers, by extrapolating the curves, estimated that some habits could have taken around 254 days to form – the better part of a year!

What this research suggests is that taking 21 days to form a habit is probably right, as long as all you want to do is drink a glass of water after breakfast. Anything harder is likely to take longer to become a quite strong habit, and, in the case of some activities, much longer. Dr Maltz and his cheerleaders weren’t even close, and all those books promising habit change in only a few weeks are grossly optimistic. Of course, this study opens up a whole new set of questions. The participants were only trying to adopt new habits; what
about our existing habits? How much better might they have done using tried-and-tested psychological techniques? And this study doesn’t really tell us what a habit feels like, how we experience it, or where it tends to happen.

What do we actually do all day long? Some busy days slip by in a flash and we remember little. Whether at work or idling around at home, it would be fascinating to know exactly how our time is spent and which parts of it are habitual. Unfortunately, there’s a very good reason why we tend to be awful at recalling habitual behaviour, which is to do with its automaticity. So psychologists use diary studies, which give a much more accurate picture of what people are up to than we can get from memory. In one study led by habit researcher Wendy Wood, 70 undergraduates at Texas A&M University were given a watch alarm. Every hour while they were awake, it reminded them to write down what they were doing, thinking, and feeling, right at that very moment. The idea was not just to build up a list of activities, but to see the context in which they occurred. Across two separate studies, the researchers found that somewhere between one-third and half the time people were engaged in behaviours which were rated as habitual. This suggests that as much as half the time we’re awake, we’re performing a habit of one kind or another. Even this high figure may well be underestimated, since it’s based only on young people whose habits haven’t had much of a chance to become ingrained.
So, what were participants in Wood’s research up to? Since they were students, the largest category was studying. This included attending lessons, reading, and going to the library, which made up 32% of the diary entries. Amongst these activities, about one-third were classified as habitual. The next category was entertainment, which participants were engaged in for 14% of the time. This included things like watching TV, using the Internet, and listening to music. This time, the percentage of habitual activities went up to 54%. Next on the list were social interactions, which made up 10% of the entries and 47% of which were classified as habitual behaviours. The category in which the behaviours were least habitual was cleaning, down at only 21%, while the category which was most habitual was going to sleep and waking up at 81% (at least they weren’t hiding their lazy, slovenly ways!).

More important than precisely what they were doing (especially for those of us who aren’t students), are the characteristics of habits. What does it feel like? What’s going on in our minds? What emerged from this study, as it has from others, are three main characteristics of a habit. The first is that we’re only vaguely aware of performing them, like when you drive to work and don’t notice the traffic lights. You know that some part of your mind was attending to them, along with other road-users and the speed limit, but often you can’t specifically remember doing so. In Wood’s study, participants reported exactly this vagueness about their habitual behaviour. While they were relaxing, watching TV, or brushing their teeth, they reported thinking
about what they were doing only 40% of the time. It’s one of the major benefits of a habit: it allows us to zone out and think about something else, like planning a weekend trip. Habits allow the conscious part of our minds to go a-wandering while our unconscious gets on with those tedious repetitious behaviours. Habits help protect us from ‘decision fatigue’: the fact that the mere act of making decisions depletes our mental energy. Whatever can be done automatically frees up our processing power for other thoughts.

A habit doesn’t just fly under the radar cognitively; it also does so emotionally. And this is the second characteristic that emerged: the act of performing a habit is curiously emotionless. The reason is that habits, through their repetition, lose their emotional flavour. Like anything in life, as we become habituated our emotional response lessens. The emotion researcher Nico Frijda classifies this as one of the laws of emotion, and it applies to both pleasure and pain. Activities we once considered painful, like getting up early to go to work, become less so with repetition. On the other hand, activities which excite or give us pleasure initially, like sex, beer, or listening to Beethoven’s Seventh, soon become mundane. Of course, we fight against the leaking away of pleasure, sometimes with success, by seeking variety. This is why some people feel they have to keep pushing the boundaries of experience just to get the same high.

None of this means we don’t feel emotion while performing a habit, it’s just that the feelings we experience usually have less to do with the habit and more to do with where our minds have wandered off to. Wood’s research found this
Birth of a habit

exact pattern in participants’ reports of their emotional experience. Compared with non-habitual behaviours, when people were performing habits their emotions tended not to change. In addition, the emotions that people did experience were less likely to be related to what they were doing than when their activities were non-habitual. The fact that habitual behaviour doesn’t stir up strong emotions is one of its advantages. Participants in this study felt more in control and less stressed while performing habits than they did enacting non-habitual behaviours. The moment participants switched to non-habitual behaviours, their stress level increased.

The third important characteristic of a habit is so obvious that often we don’t notice it. Perhaps this is partly a result of the automatic nature of habits. Take some typical daily routines: You get up in the morning, go to the bathroom, and have a shower…Later you’re in the car when you turn on your favourite radio station…Then, at the coffee shop, you order a blueberry muffin…The connection is context. We tend to do the same things in the same circumstances. Indeed, it’s partly this correspondence between the situation and behaviour that causes habits to form in the first place.

The idea that we create associations between our environment and certain behaviours was memorably demonstrated by the Russian physiologist Ivan Pavlov. In Pavlov’s most famous research, carried out on dogs, he created an association between being fed and the sound of a bell ringing. Then, after a while, he tried ringing the bell without feeding
the dog. He noticed that the dog began to salivate anyway. The toilet, car, and coffee shop are like Pavlov’s bell, unconsciously reminding us of long-standing patterns of behaviour, which we then enact again, in exactly the same way as before. This is backed up by research on humans that shows that people tend to perform the same actions in the same contexts. In the diary study described above, most of the behaviours, like socializing, washing, and reading, were carried out in the same place.

It becomes clear just how much context is important for habit whenever you move house or get a new job. Once in a new home, it’s suddenly difficult to do the simplest of jobs. Making a sandwich becomes an ordeal as you have to think consciously about where the knives and plates are. It’s not just simple tasks that become more difficult; it’s all your usual routines. From getting up in the morning to going to bed at night, so many tasks feel like they’re being done for the first time. You may even find yourself trying to carry out your old habits in your new home, to no avail: because everything has moved, suddenly those ingrained ways of behaving fail you. The same goes for new jobs. Where once you glided around the workplace on autopilot from one task to the next, in the new job you feel like a fish out of water.

Psychologists have seen how important context is during research on how people cope with changes to their environment. In one study, students’ habits were tracked as they transferred to a new university. They were asked how often they watched TV, read the paper, and exercised both
before the move and afterwards. They were also asked about the context in which these habitual behaviours were performed. How did they perceive the context, where were they physically, and who was with them at the time? The answers to these questions built a picture of whether the context had really changed with the move from one location to another. For example, it’s possible that although a physical location changes, the overall context doesn’t. Like hotel rooms, one hall of residence can look much like another; so it might not feel that things have changed much.

What the participants reported as they moved from one university to another was that context was important in habit change. They found that if they wanted to cut down their TV and increase their exercise, it was easier to do so after the move. This is because new surroundings don’t have all the familiar cues to our old habits. Without these cues, our autopilot doesn’t run so smoothly and our conscious mind keeps asking us what to do. That’s why moving house is like going on holiday: without your established routines, you have to keep consciously thinking about what you’re going to do now. The same thing happened to these students. Instead of automatically watching TV or reading the newspaper, they were more likely to think, ‘What did I plan to do today?’ and ‘What do I actually want to do now?’ As a consequence, a world of possibility opens up.

The rather bland word ‘context’ can also include other people. Whether we notice it or not, we are heavily influenced by those around us. The researchers in this study found that participants’ behaviour was disrupted by any
changes in the behaviour of those around them. For example, students reported that they changed their newspaper reading habits if those around them changed theirs. It isn’t necessarily the case that we copy other people, just that they tend to cause some change in us. This ties in with the finding that people who live alone report more of their daily behaviours as being habitual than those who live with others. Other people, then, disrupt our routines, sometimes for better, sometimes for worse.

Now we’ve seen how habits are born, what they feel like, and how much of our daily lives they take up. Three characteristics have emerged: firstly, we perform habits automatically without much conscious deliberation. Secondly, habitual behaviours provoke little emotional response by themselves. Thirdly, habits are strongly rooted in the situations in which they occur. We also know that they can vary considerably in how long they take to form. But how much control do we have over our habits? If we want to make a change, how easy will it be?
We like to think that our habits follow our intentions. If I want to form a habit, I should be able to. Say I decide to switch from white to wholewheat bread. I buy it from the supermarket a few weeks in a row; I like it so I keep getting it. With each repetition, the habit gets a little stronger, and after a few months I’m picking it up off the shelf without even thinking about it. I intended to eat more healthily, and now I am. Just the same sort of process, with our intentions flowing into our habits, goes on in all sorts of areas of life: learning to ride a bike, dance, or cook. Individual physical actions are built up over time into chains of behaviour we perform automatically.

Mental habits can be built up in just the same way, again
with intentions flowing into habitual ways of thinking. You might decide you’re being too harsh on a friend, say, by always thinking they are selfish. You make a mental note to spot a more benevolent trend in their behaviour. You notice when they buy you a drink and listen to your problems. Small things, but steps in the right direction. Sure enough, you start to think of them as less selfish. Unconsciously, the habitual ways in which you think about your friend have changed.

Our mental habits can change in this way because our minds are so good at spotting patterns; indeed, it’s one of the mind’s chief functions. Our ability to spot patterns at low levels and build them up into a habit, based on our conscious intentions, enables us to reach much more complex goals. Here’s an example from a classic psychology study. Participants sat in front of a computer for almost an hour, pressing one of four buttons corresponding to where a cross appeared on the screen.\(^1\) Naturally, it was very boring, but the designers of the experiment had a little trick up their sleeve. Unknown to the participants, there was a pattern in where the crosses appeared. Despite it being consciously undetectable, the participants began to respond faster as the study went on – they were learning the pattern. When interviewed afterwards, though, none had noticed anything: they had learnt it without realizing. This is a study about unconscious learning, but it demonstrates how mental habits can grow out of patterns. Here, an unconscious learning process was evolving in the service of a higher-level intention: to do well on the test and please the experiment’s designers.
Habit versus intention

When you learn to serve in tennis or reverse a car into a tight space, it’s the physical equivalent of this unconscious mental learning process. Lots of small unconscious actions are built up to achieve one big conscious goal: taking a serve or parking a car. In the mental realm, mathematics is an early example of this building-up process. At school, we learn a series of operations we can perform on numbers to reach a goal: say, working out the average height of our schoolfriends. Although learning these basic operations (addition and division) can be excruciating for young minds, they soon become second nature. Later on, we can perform them almost without conscious thought, which enables us to complete much more complex calculations. Once again, the habit of particular mental or physical operations helps us achieve a whole series of higher-order goals.

We all have an intuitive sense that our habits are built up purely in the service of our goals (remember that bad habits are also goal-oriented, although the goal may not be a good one, like getting drunk to forget one’s problems). Indeed, the stronger people’s habits, the more they believe that those habits are goal-oriented.²

Our intuitive sense that intentions lead straight into habits is far from just a lay understanding. Many influential psychologists have expressed exactly the same idea. Generations of first-year undergraduate psychologists are taught that intentions are a major key to predicting behaviour. They learn theories with grand-sounding names like the ‘model of interpersonal behaviour’³, the ‘theory of planned behaviour’⁴, and the ‘theory of reasoned action’⁵, which all
suggest that when we form an intention, it leads us to act in line with that intention. These are influential ideas across different sub-disciplines of psychology and they underpin much research.

Now these theories are being challenged because, like our intuitive understanding, they don’t tell the full story. We may like to think our intentions flow directly into our habits, but often they don’t. It’s an idea we resist because it strikes at our sense of having free will. We like to think that things happen for a reason, and that one of those reasons is because we decided it would happen, or at the very least, that someone else decided it would happen. Yet habits don’t flow solely from our intentions, and there are studies that demonstrate this.

Worse for our sense of agency, it’s possible for intention and habit to be completely reversed. Sometimes we unconsciously infer our intentions from our habits. How the habit started in the first place could be a complete accident, but we can then work out our intentions from our behaviour, as long as there’s no strong reason for that behaviour. Say I take a walk around the park every afternoon and each time I follow a particular route which takes me past a duck pond. When asked why I take this route, I might reply that I like to watch people feeding the ducks. In reality, I just walked that way the first time, completely at random, and saw no reason not to do the same the next day. Now, after the habit is established, I try to come up with a reason, and the ducks spring to mind. I end up inferring intention from what was essentially just chance.
Habit versus intention

We know people regularly do this sort of backwards thinking, and really believe it. One of the most famous examples in psychological research is cognitive dissonance. This is the idea that people don’t like to hold two inconsistent ideas to be true at the same time. Studies conducted more than half a century ago find that when people are induced into behaviour that is inconsistent with their beliefs, they simply change their beliefs to match.6 It’s like when someone ends up spending too much on a new car. Instead of feeling bad about the clash between their original plan and what they’ve actually done, they prefer to convince themselves that the car is worth the extra money. This is a result of our natural desire to maintain consistency between our thoughts and actions. We all want to be right, and one thing we should all be able to be right about is ourselves. Backwards thinking allows us to do just that.

But surely we would know if we were doing this kind of backwards thinking? Unfortunately, though, we have little access to these sorts of unconscious processes. It turns out that in experiment after experiment, psychologists can change minds without participants realizing. In one study on attitudes, people clearly changed their mind on an issue after being bombarded with reasons to do so.7 Despite this, they claimed the arguments had had no effect on them; indeed, they thought their new attitudes were what they had always thought. It seems politicians aren’t alone in blanking out their U-turns. Like it or not, we’re all capable of it.
MAKING HABITS, BREAKING HABITS

What we’ve explored so far are two extremes: when we create habits intentionally for a particular purpose, and when we infer intentions from our behaviour. In real life, though, both of these processes happen at the same time, and habit is a combination of our intentions and our past behaviour. So here’s the crucial question: what kind of combination? Can the intention to start eating healthily or get a new job really overcome the habit of eating junk food and going to the same office every day?

We already know quite a lot about this question because psychologists are very keen to change people’s behaviour, hopefully for the better. Studies on donating blood, exercising, recycling, and voting have all examined whether it’s possible to change people’s habits. One of these tested if participants could predict their own consumption of fast food, how much they watched TV news, and how often they took the bus over a week. Each person was asked how much they intended to carry out each of those three behaviours over the coming week. Then, they were asked how often they had performed each behaviour in the past. These are the measures of intention and habit. Over the next 7 days, participants noted down how often they went into a fast-food restaurant, watched TV news, and took the bus.

The results showed that when established habits were weak, intentions tended to predict behaviour. So, if you don’t watch TV news that much, your intention for the coming week, whether it’s to watch more, less, or the same, is likely to be accurate. Good news for our sense of self-control. Here comes the bad news. As habits get stronger,
our intentions predict our behaviour less and less. So, when you’re in the habit of visiting fast-food restaurants, for example, it doesn’t matter much whether you intend to cut down or not, chances are that your habit will continue.

It gets worse, though. Participants were also asked how confident they were in predicting their behaviour over the coming 7 days. An unusual result emerged. Those with the strongest habits, who were the least successful in predicting their behaviour over the coming week, were the most confident in their predictions. The finding is striking because it hints at one of the dark sides of habits. When we perform an action repeatedly, its familiarity seems to bleed back into our judgements about that behaviour. We end up feeling we have more control over precisely the behaviours that, in reality, we have the least control over. It’s another example of our thought processes working in the opposite way to our intuitive expectations.

Considering how powerful habits are in the face of conscious intentions, it is vital to know what a strong habit is compared with a weak habit. For example, is buying a pair of shoes once a month a habit? What about reading the newspaper every day, or attending a community meeting twice a year? How often before we find it increasingly difficult to stop ourselves or, put the other way round, no longer have to force ourselves? Psychologists have looked at this in a review of 60 different research reports on habitual behaviour. They classified habits into two categories. In the
first category they put things like exercising, coffee-drink-
ing, and using a seat belt; the kinds of things that you might
do at least once a week. In the second category they put the
types of things we might only do a few times a year. They
included things like donating blood or getting a flu jab, but
could just as easily include going to the dentist or getting a
haircut. The other important thing they took into account
was the context in which each repeated action took place.
Context is a vital component of habitual behaviour because
we tend to perform the same actions in response to partic-

Across all the studies, intentions emerged as the stron-
gest predictor of future behaviour. Overall, people were
doing what they intended. Yet when habits were divided up
into either those performed about weekly or those per-
formed approximately yearly, a big difference emerged.
Once again, when behaviours were performed weekly, es-

This suggests that the difference between a strong and a
weak habit is somewhere in the region of whether it is per-
formed weekly or only a few times a year. This means strong
habits could encompass an enormous amount of our behav-
Habit versus intention

If you think about the things you might do on a weekly basis in the same context – say, visiting a restaurant or watching a film – it feels as if these decisions are highly intentional. But the research would suggest these types of behaviours are close in nature to daily actions such as wearing a seat belt, catching up on the news, or checking your email. We have less intentional, conscious control over these types of behaviours than we would like to think.

For years, psychologists have tried changing people’s bad habits by targeting their intentions. Hundreds of studies have attempted to help people adopt a low-fat diet, do more exercise, wear a bicycle helmet, use a condom, take a college course, quit smoking, put on sunscreen, and many, many more laudable causes. When the results are added up together, they don’t look too clever. One review of 47 of the most rigorous of these studies produced sobering reading. On the positive side, psychologists are very successful at getting people to change their goals and intentions. After various psychological techniques have been used on them, people in these studies definitely want and intend to change. Unfortunately, the problem comes with breaking down existing habits. Although people intend to change, when habits are strong, actual behaviour change is relatively low.

Despite all this talk of how weak intentions are in the face of habits, it’s worth emphasizing that much of the time even our strong habits do follow our intentions. We are mostly doing what we intend to do, even though it’s happening automatically. When washing our face each day, getting
making habits, breaking habits

an espresso on the way to work, or cleaning our glasses, it’s because at some point in the past we consciously decided (or someone decided for us) that these things were worthwhile activities, so we kept repeating them until they were automatic. This probably goes for many habits: although we perform them without bringing the intention to consciousness, the habits still line up with our original intentions. Even better, our automatic, unconscious habits can keep us safe even when our conscious mind is distracted. We look both ways before crossing the road despite reminiscing about a rather depressing holiday we took in Brazil, and we put oven gloves on before reaching into the oven despite being preoccupied about whether the Brussels sprouts are overcooked. In both cases, our goal of keeping ourselves alive and unburnt is served by our automatic, unconscious habits. It’s only for the minority of bad habits that we want to change that things become tricky.

There’s no doubt that there are plenty of occasions when we can successfully make or break our habits. Still, what we find from the research on habits and intention is that our conscious decisions aren’t as strong as we’d like to think. In some ways, this is a comforting thought. It means that all those times we tried to change our behaviour and failed because old habits intervened, there was a good reason: the sheer power of strong habits. Studies show that it’s normal for strong habits to override our conscious intentions. Combine that with how long habits take to form, and it’s no wonder we find our everyday behaviours difficult to change.
Habit versus intention

So why do our habits not submit to our intentions? To answer that question, we have to take a trip into the deep, dark, mysterious world of the unconscious, where the secrets of how our habits operate are buried.