5

Choice Architecture

Design is not just what it looks like and feels like. Design is how it works.

—Steve Jobs

Early in Thaler's career, he was teaching a class to business school students who would sometimes leave early to go for job interviews (or maybe a nap) and would try to sneak out of the room as unobtrusively as possible. Unfortunately for them, the only way out of the room was through a large double door in the front, in full view of the entire class (though not directly in Thaler's line of sight). The doors were equipped with large, handsome wood handles—vertically mounted cylindrical pulls about three feet in length. When the students came to these doors, they were faced with two competing instincts. One instinct says that to leave a room you push the door. The other instinct says that when faced with large wooden handles that are obviously designed to be grabbed, you pull. It turns out that the latter instinct trumps the former, and every student leaving the room began by pulling on the handle. (There is a reason such handles are called pulls.) Alas, the door opened outward.

At one point in the term, Thaler pointed this out to the class, as an embarrassed student was pulling on the door handle while trying to escape the classroom. Thereafter, whenever a student got up to leave, the rest of the class would eagerly wait to see if the student would push or pull. Amazingly, most still pulled! Their Automatic Systems triumphed; the signal emitted by that big wooden handle simply could not be screened out.

(And when Thaler would leave that room he would, on occasion, sheepishly find himself pulling too.)

Those doors are bad architecture because they violate a simple psychological principle with a fancy name: *stimulus response compatibility*. The idea is that you want the signal you receive (the stimulus) to be consistent with the desired action. When there are inconsistencies, performance suffers and people blunder.

Consider, for example, the havoc that would be created by placing a large red octagonal sign along the road that read GO. The difficulties induced by such incompatibility are easy to show experimentally. One of the most famous such demonstrations is the Stroop test.[1] In the modern version of this experiment, people see words flashed on a computer screen and then are given a very simple task. They press the right button if they see a word that is displayed in red, and press the left button if they see a word displayed in green. People find the task easy and can learn to do it quickly and with great accuracy. That is, until they are thrown a curveball, in the form of the word *green* displayed in red, or the word *red* displayed in green. For these incompatible signals, response time slows and error rates increase.

A key reason is that the Automatic System reads the word faster than the color-naming branch of the Reflective System can decide the color of the text. See the word *green* in red text and the nonthinking Automatic System rushes to press the left button, which is, of course, the wrong one. You can try this for yourself. Just use a bunch of colored crayons to write a list of color names, making sure that most of the names are not the same as the color they are written in. (Better yet, get a nearby kid to do this for you.) Then name the color names as fast as you can (that is, read the words and ignore the color). Easy, isn't it? Now, as fast as you can, say the color that each word is written in, and ignore the word itself. Harder, isn't it? In tasks like this, Automatic Systems often win over Reflective ones. (Know the old expression "You can't fight city hall"? Within the human mind, the Automatic System is city hall.)

Although we have never seen a green stop sign, doors such as the ones previously described are frustratingly commonplace, and they violate the same principle. Flat plates shout "push me" and big handles yell "pull me,"

so architects should not expect people to push things that are meant to be grabbed! This is a failure of design to accommodate basic principles of human nature. Life is full of products that suffer from such defects. Isn't it obvious that the largest buttons on a television remote control should be the power, channel, and volume controls? Yet how many remotes do we see that have the volume control the same size as the input control button (which, if pressed accidentally, can cause the picture to disappear, sometimes until a teenager can be found to fix things)?

The world does not have to be full of door handles that scream "pull" but need to be pushed. Instead, it is possible to incorporate human factors into design, as Don Norman's wonderful book, *The Design of Everyday Things*, illustrates. In fact, the idea of the book is illustrated by its brilliant cover, which has the image of a teapot with its handle and the spout on the same side. Pause and think about it.

Another of Norman's examples of bad design may now be sitting in your kitchen: a basic four-burner stove (Figure 5.1). Most such stoves have the burners in a symmetric arrangement, as in the stove pictured at the top, with the controls arranged in a linear fashion below. In this setup, it is easy to get confused about which knob controls the front burner and which controls the back, and many pots and pans have been burned as a result. The other two designs we have illustrated are only two of many better possibilities. The spirit of this chapter is that good design is often no more expensive than bad design. In fact, a simple plate that is labeled "push" has to be less expensive than an elaborate bronze or wooden pull.

The same principles of good design and functional architecture apply in the world of choices as well. Our primary mantra is a simple one: if you want to encourage some action or activity, Make It Easy. This insight falls into the category of what the great psychologist Kurt Lewin called "channel factors," a term he used for small influences that could either facilitate or inhibit certain behaviors.[2] Think about the channel as similar to the path a river takes after the spring snow melts. The path can be determined by seemingly tiny changes in the landscape. For people, Lewin argued that similarly tiny factors can create surprisingly strong inhibitors to behavior that people want to take. Often we can do more to facilitate good behavior

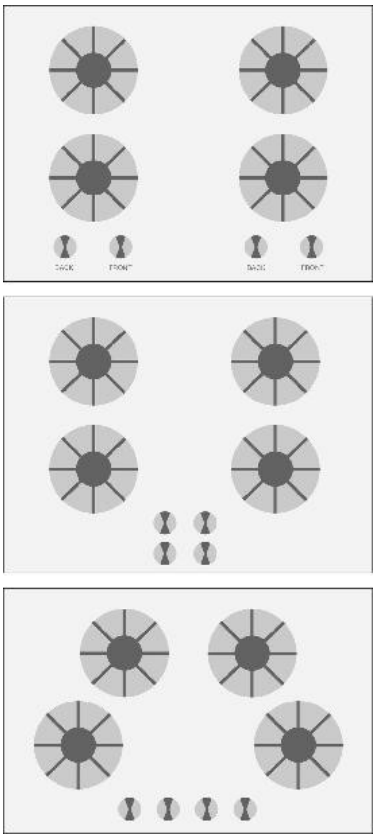

Figure 5.1. Three designs of four-burner stovetops

by removing some small obstacle than by trying to shove people in a certain direction.

An early illustration of Lewin's idea was produced by Howard Leventhal, Robert Singer, and Susan Jones on the campus of Yale University.[3] The subjects were Yale seniors who were given some persuasive education about the risks of tetanus and the importance of going to the health center to receive an inoculation. Most of the students were convinced by the lecture and said that they planned to go get the shot, but these good intentions did not lead to much action. Only 3 percent actually went and got the shot.

Other subjects were given the same lecture but were also given a copy of a campus map with the location of the health center circled. They were then asked to look at their weekly schedules, make a plan for when they would go and get the shot, and look at the map and decide what route they would take. With these nudges, 28 percent of the students managed to show up and get their tetanus shot. Notice that this manipulation was very subtle. The students were all seniors and surely knew where the health center was located (Yale is not a huge campus), and they were not given an actual appointment. Still, nine times as many students got shots, illustrating the potential power of channel factors. This is the same principle that was used in the get-out-the-vote study mentioned earlier.

So, if you remember just one thing from this book, let it be this. If you want to encourage people to do something, *Make It Easy*. If you're so inclined, hum it to the tune of the old Eagles song: "Take It Easy."

Defaults: Padding the Path of Least Resistance

For reasons we have discussed, many people will take whatever option requires the least effort, or the path of least resistance. Recall the discussion of inertia, status quo bias, and the "yeah, whatever" heuristic. All these forces imply that if, for a given choice, there is a default option—an option that will prevail if the chooser does nothing—then we can usually expect a large number of people to end up with that option, whether or not it is good for them. And as we have also stressed, these behavioral tendencies toward doing nothing will be reinforced if the default option comes with some implicit or explicit suggestion that it represents the normal or the recommended course of action.

Defaults are ubiquitous and powerful. They are also unavoidable in the sense that for any node of a choice architecture system, there must be an associated rule that determines what happens to the decision maker if she does nothing. Usually the answer is that if I do nothing, nothing changes; whatever is happening continues to happen. But not always. Some dangerous machines, such as chain saws and lawn mowers, are designed with "dead man switches," so once you are no longer gripping the machine, it stops. When you leave your computer alone for a while when taking a call, nothing is likely to happen until you have talked long enough to trigger the computer to lock itself and display the screen saver. Of course, you can choose how long it takes before your screen saver comes on, but implementing that choice takes some action. Your computer probably came with a default time lag and a default screen saver. Chances are good that those are the settings you still have.

Choice architects (such as Carolyn the cafeteria director) have many opportunities to choose defaults, and they can do so in ways that are self-serving or welfare enhancing. This is true in both the public and private sectors. In 1938, Germany held an election in which voters were asked, "Do you approve of the reunification of Austria with the German Reich accomplished on 13 March 1938 and do you vote for the list of our Führer, Adolf Hitler?" As shown in Figure 5.2, the option "ya" was more than gently nudged.[4] Similarly, in the private sector, firms often can and do choose defaults that are either well-meaning guesses about what their customers would prefer or self-serving grabs of privacy data or money. They might, for example, automatically enroll people in programs that are

not at all in their customers' interests. We have more to say about this when we discuss the topic of sludge in Chapter 8, but for now we should be clear that we are not naive optimists about the intentions of choice architects in any sector. Whenever Thaler is asked to sign a copy of *Nudge*, he signs it "Nudge for good!" This is meant as a plea, not an expectation.

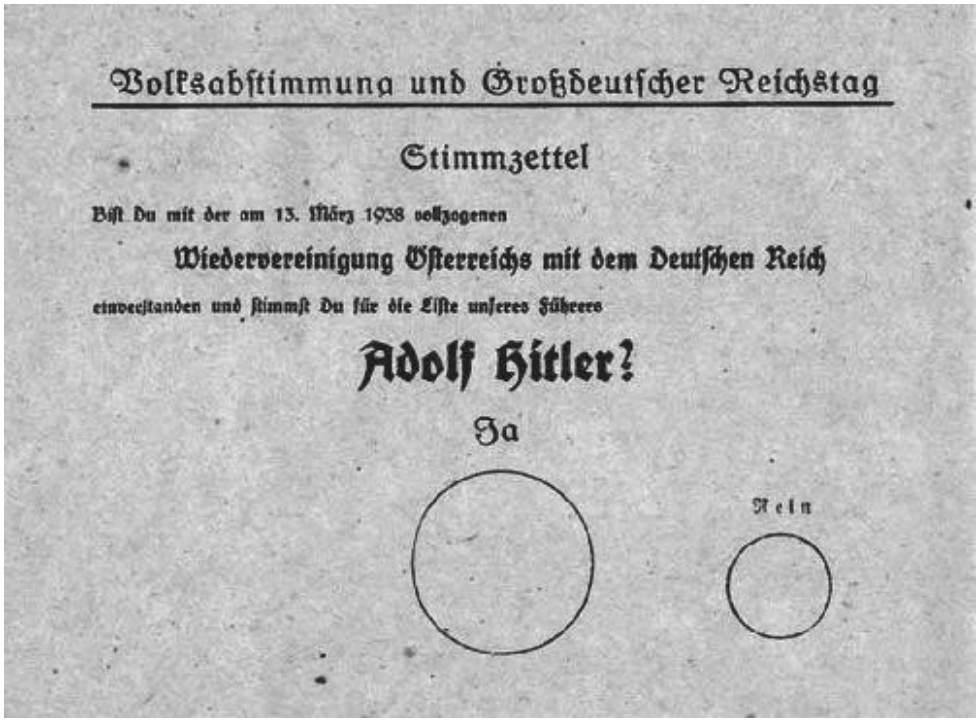

Figure 5.2. German election ballot, 1938

We should reiterate that defaults are not always sticky, and we will see examples of that later. For example, people will be more likely to override the default if the outcome is obviously bad and the cost of opting out is low. When most cars are started, the default setting for the sound system is to play the previous source at the volume setting last used. That works well enough if the car has only one driver, but a parent whose normal choice is a news station at a low volume will quickly change the volume, source, or both if the last user was a teenager who listens to hip-hop at high volume. In fact, the two drivers are likely to adopt the habit of immediately changing the music as soon as they enter the car (the same way that they alter the position of the driver's seat and mirrors if they are very different

heights). Modern cars allow the second adjustments to be automatic if the keys electronically identify the drivers. Maybe music will be next?

There is a broader lesson here. If people know their preferences, and know that they dislike the outcome that is embedded in the default, they will probably change it. Here's a simple demonstration. A change in the default thermostat setting had the expected effect on employees at the Organisation for Economic Co-operation and Development (OECD). During winter, a 1°C decrease in the default caused a significant reduction in the average setting. But when choice architects reduced the default setting by 2°C, the reduction in the average setting was actually smaller. The reason? A lot of employees thought that it was too cold, and promptly returned the setting to the one that they preferred. The general rule appears to be that even Humans will reject a default if it makes them really uncomfortable.[5]

We have emphasized that default rules are inevitable—that private institutions and the legal system cannot avoid choosing them. In some cases, though not all, there is an important qualification to this claim. The choice architect can force the choosers to make their own choice! This approach has various names, including "required choice," "mandated choice," and "active choosing."[6] In setting up a new app, for example, required choice would be implemented by leaving all the possible options unchecked and requiring that at every opportunity, people select one of the options before being allowed to proceed to the next step. Government forms often have this characteristic. For benefits programs in the United States, you might be asked to answer a bunch of questions, and if you leave an answer blank, you might not be allowed to go on to the next page.

Active choosing is not uncommon. In many contracts, some issues are considered so important, and so easily overlooked, that people are required explicitly to consent that they have agreed to the specified terms, because we do not want them to make such decisions inadvertently or mindlessly. Active choosing has the advantage of overcoming inertia, inattention, and procrastination; choice architects can find out what people actually prefer, without having to guess. You can think of requirements of explicit consent as a behaviorally informed policy, one that reflects an effort to protect people not only against their own inattention but also against manipulation.

(In fact many such policies can be understood to reflect an emerging legal right: the right not to be manipulated.) Active choosing can be designed to ensure that people really do consent to something. When the University of Chicago reopened its buildings in the fall of 2020 following the COVID-19 shutdown, both students and employees were required to complete a "COVID attestation" that said they were familiar with all the rules and agreed to follow them.

There is a kind of intermediate option: prompted choice. If you are buying some product online, you might be prompted to buy some ancillary service, too (such as insurance). With prompted choice, you are not required to choose at all; you can simply ignore the prompt and click "next screen." To work, prompted choice has to have a default (to establish what happens if you disregard the prompt). In one particularly charged issue, organ donation, we will have some nice things to say about prompted choice. In a sense, it is softer and less intrusive than required choice, which really forces people to say what they want.

We believe that required choice, favored by many who like freedom, is often the best way to go. But consider two objections to that approach. First, Humans will often consider required choice to be a nuisance or worse, and would much prefer to have a good default. In the software example, it is really helpful to know what the recommended settings are. Most users do not want to have to read an incomprehensible manual to determine which arcane setting to select. When choice is complicated and difficult, people might greatly appreciate a sensible default. It is hardly clear that they should be forced to choose.

Second, required choosing is often more appropriate for simple yes-or-no decisions than it is for more complex choices. At a restaurant, the default option is to take the dish as the chef usually prepares it, with the option to ask that certain ingredients be added or removed. In the extreme, required choosing would imply that the diner has to give the chef the recipe for every dish she orders! When choices are highly complex, required choosing may not be a good idea; it might not even be feasible. See Chapter 10 about the Swedish pension system to see what can go wrong if people are strongly urged to choose for themselves.

Expect Error

Humans make mistakes. A well-designed system expects its users to err and is as forgiving as possible. Some examples from the world of real design illustrate this point.

- For decades in the Paris subway system, Le Métro, users would buy a packet of small tickets that were inserted into a machine that read the ticket, printed a record on it that rendered it used, and then spit it out from the top of the machine. (Locals now just use an electronic card that they wave at a sensor.) The tickets had a magnetic strip on one side but were otherwise symmetrical. On Thaler's first attempt to navigate the Métro, he was not sure how to use the system, so he tried putting the card in with the magnetic strip faceup and was pleased to discover that it worked. He was careful thereafter always to insert the card with the strip faceup. Many years and trips to Paris later, Thaler was proudly demonstrating to visiting friends the correct way to use the Métro system when his wife started laughing. It turns out that it didn't matter which way you put the ticket into the machine! The only reason Thaler never made a mistake was that it was impossible to do so.

  In stark contrast is the system still used in most Chicago parking garages. When entering the garage, you put your credit card into a machine that reads it and remembers you. Then, when leaving, you must insert the card again into a machine at the exit. This requires reaching out of the car window and inserting the card into a slot. Because credit cards are not symmetrical, there are four possible ways to put the card into the slot (faceup or facedown, strip on the right or left). Exactly one of those ways is the right way. And in spite of a diagram above the slot, it is very easy to put the card in the wrong way, and when the card is spit back out but the gate does not go up, it is not immediately obvious what caused the card to be rejected or to recall which way it was inserted the first time. Both of us have been stuck for several painful minutes behind some idiot who was having trouble

with this machine, and we both have to admit to having occasionally been the idiot who makes all the people behind him start honking.

- Over the years, automobiles have become much friendlier to their Human operators. In fact they are full of nudges. If you do not buckle your seat belt, you are buzzed. If you are about to run out of gas, a warning sign appears and you might be beeped. If you wander into another lane, your car makes an unpleasant sound. If you back up and are close to hitting something, you hear a loud warning. If you drive for three hours or more without stopping, your car might ask you if you would like to stop for a cup of coffee. Any remotely sensible car comes with an automatic switch for the headlights that turns them on when you are operating the car and off when you are not, eliminating the possibility of leaving your lights on overnight and draining the battery. Nudges of these kinds are saving lives, and we can expect many more of them in the future.

  But some error-forgiving innovations are surprisingly slow to be adopted. Take the case of the gas tank cap. On most cars, the gas cap is now attached by a piece of plastic, so that when you remove the cap you cannot possibly drive off without it. Our guess is that this bit of plastic cannot cost more than 10 cents. Once some carmaker had the good idea to include this feature, what excuse can there ever have been for building a car without one?

  Leaving the gas cap behind is a special kind of mistake psychologists call a "postcompletion" error.[7] The idea is that when you have finished your main task, you tend to forget things relating to previous steps. Other examples include leaving your ATM card in the machine after getting your cash or leaving the original in the photocopier after getting your copies. Most ATMs (but still not all!) no longer allow this error because you get your card back immediately. Another strategy, suggested by Don Norman, is to use what he calls a "forcing function," meaning that in order to get what you want, you have to do something else first. So if you have to remove the card in order to get your cash, you will not forget to do so. Unless, of course, you forget why you came to the ATM.

- Another automobile-related bit of good design involves the nozzles for different varieties of gasoline. The nozzles that deliver diesel fuel are too large to fit into the opening on cars that use gasoline, so it is not possible to make the mistake of putting diesel fuel in your gasoline-powered car (though it is still possible to make the opposite mistake). The same principle has been used to reduce the number of errors involving anesthesia. One study found that human error (rather than equipment failure) caused 82 percent of "critical incidents."[8] A common error was that the hose for one drug was hooked up to the wrong delivery port, so the patient received the wrong drug. This problem was solved by designing the equipment so that the connectors were different for each drug. It became physically impossible to make this previously frequent mistake.

- A major problem in health care is medication adherence and drug compliance. Many patients are on medicines they must take regularly and in the correct dosage. In the United States, more than 125,000 people die annually because they do not take their prescribed medicines.[9] In principle, all of those deaths ought to be preventable. Nudges should be able to help, which brings us to an interesting choice-architecture question: If you are designing a drug and you have complete flexibility, how often would you want your patients to have to take their medicine?

  If we rule out a onetime dose administered immediately by the doctor (which would be best on all dimensions but is often technically infeasible), then the next-best solution is a medicine taken once a day, preferably in the morning. It is clear why once a day is better than twice (or more) a day, because the more often you have to take the drug, the more opportunities you have to forget. But frequency is not the only concern; regularity is also important. Once a day is *much* better than once every other day, because it can be incorporated into the morning routine. And since people tend to take more pills as they age, adding another is not a problem. (Pill container boxes, one for each day, are useful nudges.) By contrast, remembering to take your medicine every other day is beyond most of us. (Similarly, meetings

that occur every week are easier to remember than those that occur every other week.) Some medicines are taken once a week, and many patients take such medicines on Sundays (because that day is different from other days for most people and thus easy to associate with taking one's medicine). Take the pill before going to church, turning on the game, doing the puzzle, or what have you.

Birth control pills present a special problem along these lines, because they are generally taken every day for three weeks and then skipped for one week. To solve this problem and to make the process automatic, the pills are sold in a special container that contains twenty-eight pills, each in a numbered compartment. Patients are instructed to take a pill every day, in order. The pills for days twenty-two through twenty-eight are placebos whose only role is to facilitate compliance for Human users. There is room for a lot more thinking about effective nudges to promote medication adherence; they could save numerous lives.[10]

- While working on the first edition of this book, Thaler sent an email to his economist friend Hal Varian, who works for Google. Thaler intended to attach a draft of the introduction to give Hal a sense of what the book was about, but he forgot the attachment. When Hal wrote back to ask for the missing attachment, he noted with pride that Google was experimenting with a new feature of its email program, Gmail, that would solve this problem. A user who mentions the word *attachment* but does not include one would be prompted: "Did you forget your attachment?" Thaler sent the attachment along and told Hal that this was exactly what the book was about.

  Google caught on and now has an assortment of nudges specifically designed to address forgetfulness. As the company put it in 2018, "When your inbox is flooded with emails, some will inevitably slip through the cracks. Luckily, the new Gmail can help. It will now 'nudge' users to reply to emails they may have missed and to follow up on emails for which they haven't received a response."[11] As both of us have found, the feature is useful. With respect to an email sent to Sunstein about one of his writing commitments, for example, the

program said, “Sent 6 days ago. Follow up?” To its credit, Google practices libertarian paternalism. The company adds: “Nudging is on by default for users with the new Gmail enabled, but they can turn it off from their Gmail settings menu if they choose.” Hurray!

- Visitors to London who come from the United States or other parts of Europe have a problem being safe pedestrians. They have spent their entire lives expecting cars to come at them from the left when they cross the street, and their Automatic System knows to look that way. But in the United Kingdom, automobiles drive on the left-hand side of the road, so the danger often comes from the right. Many pedestrian accidents occur as a result. The city of London tries to help with good design. On many corners, especially in neighborhoods frequented by tourists, the pavement has signs that say, “Look right!” After the initial publication of this book, Thaler became a frequent visitor to London and was always grateful to those signs for preventing unhappy collisions with oncoming traffic.

Give Feedback

An excellent way to help Humans improve their performance is to provide feedback. Well-designed systems tell people when they are doing well and when they are making mistakes.

- An important type of feedback is a warning that things are going wrong or, even more helpful, are about to go wrong. Our laptops warn us to plug in or shut down when the battery is dangerously low. A Tesla will alert a driver on a trip whether there is enough power left in the battery to reach the destination, and if not, it will alter the GPS directions to include a stop at a charging station. Health alerts can tell you all sorts of things, increasingly in real time. But warning systems have to avoid the problem of offering so many warnings that they are ignored. If our computer constantly nags us about whether we are sure

we want to open that attachment, we begin to click "yes" without thinking about it. The warnings are thus rendered useless.

- Feedback can be improved in many activities. Consider the simple task of painting a ceiling. This task is more difficult than it might seem because ceilings are usually painted white, and it can be hard to see exactly where you have painted. Later, when the paint dries, the patches of old paint will be annoyingly visible. How to solve this problem? Some helpful person invented a type of ceiling paint that goes on pink when wet but appears white when dry. Unless the painter is so colorblind that she can't tell the difference between pink and white, this solves the problem.

Understanding "Mappings": From Choice to Welfare

Some tasks are easy, like choosing a flavor of ice cream; other tasks are hard, like choosing a medical treatment. Consider, for example, an ice cream shop where the varieties differ only in flavor, not calories or other nutritional content. Selecting which ice cream to eat is merely a matter of choosing the one that tastes best. If all of the flavors are familiar, most people will be able to predict with considerable accuracy the relation between their choice and their ultimate consumption experience. Call this relation between choice and welfare a *mapping*. Even if there are some exotic flavors, the ice cream store can solve the mapping problem by offering a free taste.

Choosing among treatments for some disease is quite another matter. Suppose you are told that you have been diagnosed with early-stage prostate cancer and must choose among three options: surgery, radiation, and "watchful waiting," which means doing nothing for now. Watchful waiting can be an attractive option because prostate cancer usually progresses slowly. Each of these options comes with a complex set of possible outcomes regarding side effects of treatment, quality of life, length

of life, and so forth. Comparing the options involves making such trade-offs as the following: Would I (hypothetically) be willing to risk a one-third chance of impotence or incontinence in order to increase my life expectancy by about three years? This is a hard decision on two levels. First, the patient is unlikely to know the data about the relative risks and benefits of each option, and second, he may have difficulty forecasting what life would be like if he were incontinent.

And here are two scary facts about this scenario. First, many patients are asked to decide which course of action to take in the very meeting at which their doctor breaks the bad news about the diagnosis. Second, the treatment option they choose depends strongly on the type of doctor they see.[12] (Some specialize in surgery, others in radiation. None specialize in watchful waiting. Guess which option we suspect might be underutilized.) Note that in an attempt to increase the number of patients who elect watchful waiting, it has been reframed as "active surveillance," which sounds less passive.

The comparison between ice cream and treatment options illustrates the concept of mapping. A good system of choice architecture helps people to improve their ability to map choices onto outcomes and hence to select options that will make them better off. One way to do this is to make the information about various options more comprehensible, by transforming numerical information into units that translate more readily into actual use. If I am buying apples to make into apple cider, it helps to know the rule of thumb that it takes three apples to make one glass of cider. If you are told that a tire's safety rating is 4 on a scale of 1 to 10, it would be valuable to give you a sense of what that means, in terms of what actually matters to you. (And yes, this example comes from actual deliberations within the U.S. government, about how best to convey the safety ratings of tires.)

Structure Complex Choices

People adopt different strategies for making choices depending on the size and complexity of the available options. When we face a small number of well-understood alternatives, we tend to examine all the attributes of all the

alternatives and then make trade-offs when necessary. But when the choice set gets large, we must use alternative strategies, and these can get us into trouble.

Sometimes the choice architect provides a function similar to that of a curator at a museum. To the two of us, the most enjoyable art exhibits are rich enough to offer a meaningful experience but also small enough to be enjoyed in less than two hours, about the length of most movies. The old expression that less is more rings true here. Good choice architects often winnow the choice set down to a manageable size.

Often, however, people are their own choice architects; they even nudge themselves. A self-nudge can be called a "snudge," and for most of us, life can be improved via well-chosen snudges. People might limit the amount of food in their refrigerators; they put some money they don't want to spend into a one-year certificate of deposit that has a penalty for early withdrawal; they might delete Facebook or Twitter from their smartphones; they might program their computer so that they cannot receive email during certain hours. People work to counteract their own self-control problems, often by redesigning the architecture within which they make choices—for example, by making certain options harder or less fun, or by eliminating them together.[13]

For a more elaborate example, consider Jane, who has just been offered a job at a company located in a large city far from where she is living now. Compare two choices she faces: which office to select at her workplace and which apartment to rent as her home. Suppose Jane is offered a choice of three available offices. A reasonable strategy for her to follow would be to look at all three offices, note the ways they differ, and then make some decisions about the importance of such attributes as size, view, neighbors, and distance to the nearest restroom. This is described in the choice literature as a compensatory strategy, since a high value for one attribute (big office) can compensate for a low value for another (loud neighbor).

Obviously, the same strategy cannot be used to pick an apartment. In a large city, thousands of apartments might be available. If Jane ever wants to start working, she will not be able to visit each apartment and evaluate them all. Instead, she is likely to simplify the task in some way. One strategy to use is what Amos Tversky called "elimination by aspects." Someone using

this strategy first decides what aspect is most important (say, commuting distance), establishes a cutoff level (say, no more than a thirty-minute commute), then eliminates all the alternatives that do not come up to this standard. The process is repeated, attribute by attribute (no more than $2,500 per month; a functional kitchen; dogs permitted), until either a choice is made or the set is narrowed down enough to switch over to a compensatory evaluation of the finalists.

When people are using a simplifying strategy of this kind, alternatives that do not meet the minimum cutoff levels may be eliminated even if they are fabulous on all other dimensions. So, for example, an apartment that is a thirty-five-minute commute will not be considered even if it has a dynamite view and costs $500 a month less than any of the alternatives.

Social science research reveals that as the choices become more numerous or vary on more dimensions, people are more likely to adopt simplifying strategies. The implications for choice architecture are related. As alternatives become more numerous and more complex, choice architects have more work to do, and are much more likely to influence choices (for better or for worse). For an ice cream shop with three flavors, any menu listing those flavors in any order will do just fine, and effects on choices (such as the order in which they are listed) are likely to be minor because people know what they like. As choices become more numerous, though, good choice architecture should provide structure, and structure will affect outcomes.

Consider the example of a paint store. Even ignoring the possibility of special orders, paint companies often sell thousands of colors that you can apply to the walls in your home. It is possible to think of many ways of structuring how those paint colors are offered to the customer. Imagine, for example, that the colors were listed alphabetically. Arctic White might be followed by Azure Blue, and so forth. While alphabetical order is a satisfactory way to organize a dictionary or a workplace directory, it is a horrible way to organize a paint store.

Instead, paint stores have long used something like a paint wheel, with color samples organized by similarity: all the blues are together, next to the greens, and the reds are located near the oranges, and so forth. The problem of selection is made considerably easier by the fact that people can see the actual colors, especially since the names of the paints are spectacularly

uninformative. (On the Benjamin Moore Paints website, three similar shades of beige are called Roasted Sesame Seed, Oklahoma Wheat, and Kansas Grain.) Thanks to modern computer technology and online shopping, many problems of consumer choice have been made far simpler. A good paint website not only allows the consumer to browse through dozens of shades of beige but also permits the consumer to see (within the limitations of the computer monitor) how a particular shade will work on the walls with the ceiling painted in a complementary color.

Of course, the variety of paint colors is tiny compared to the number of books sold by Amazon (zillions) or websites covered by Google (many zillions). Successful online companies succeed in part because of immensely helpful choice architecture. Customers looking for a movie or television show to stream can easily search movies by actor, director, genre, and more, and they can also get recommendations based on the preferences of other movie lovers with similar tastes, the method called "collaborative filtering." Algorithms use the judgments of other people who share your tastes to filter through the vast number of books or movies available in order to increase the likelihood of picking one you like. Collaborative filtering is an effort to solve a problem of choice architecture. If you know what people like you tend to like, you might well be comfortable in selecting products you don't know, because people like you tend to share your tastes. For many of us, collaborative filtering is making difficult choices easier.

A cautionary note: Surprise and serendipity can be fun for people, and good for them too, and it may not be entirely wonderful if our primary source of information is about what people like us like. Sometimes it's good to learn what people unlike us like—and to see whether we might even like that. If you like the mystery writer Harlan Coben (and we agree that he's great), collaborative filtering will probably direct you to other mystery writers (we suggest trying Lee Child, by the way), but why not try a little Joyce Carol Oates or A. S. Byatt, or maybe even Henry James? If you think of yourself as a progressive, and you like books that fit your predilections, you might want to see what conservatives think; if nothing else, you will fare better when arguing with your relatives at family gatherings. Public-spirited choice architects—those who provide our various sources of news, for example—know it's good to nudge people in directions that they might

not have specifically chosen in advance. Structuring choice sometimes means helping people to learn, so they can later make better choices on their own.

Incentives

We now turn to the topic with which most economists would have started: prices and incentives. Though we have been stressing factors that are often neglected by traditional economic theory, we do not intend to suggest that standard economic forces are unimportant. This is as good a time as any to state for the record that we believe in supply and demand. If the price of a product goes up, suppliers will usually produce more of it and consumers will usually want less of it. So choice architects must think about incentives when they design a system. Sensible architects will align the incentives of the most important decision makers. One way to start to think about incentives is to ask four questions about a particular choice architecture:

Who chooses?
Who uses?
Who pays?
Who profits?

When one person chooses, uses, and pays for a good or service provided by a single supplier, things are pretty simple and incentives are well aligned. If you go somewhere for lunch, you choose what you want and pay for it. If you don't like what you got, you can pick something else next time, or go to a different restaurant. It is a little more complicated when a group dines together and shares the bill. If the group is large, some people might be inclined to order more expensive items than they would alone, since they are paying only a small share of the extra cost. Others might do just the opposite. Thaler might enjoy an expensive bottle of wine but would feel bad about Sunstein having to pay for his share of it. When the answers to the first three questions above is one person, markets tend to work reasonably well, at least so long as people have adequate information and are not

suffering from behavioral biases. (We ignore externalities for now but will return to them in Chapter 14, on climate change.)

The opposite is true of the notorious U.S. health care system. In this system, patients receive health care services that are often chosen by their physicians and (for most people) paid for by an insurance company or government. The fees are then divided up among a host of providers, from medical workers to equipment manufacturers to hospitals to drug companies to malpractice lawyers. Two patients receiving identical services can pay wildly different prices. It is no surprise, then, that the United States has the most expensive health care system in the world, with only mediocre health care outcomes.

Aligning incentives is very standard economics. But as usual, it is possible to elaborate and enrich the standard analysis by remembering that the agents in the economy are Humans. To be sure, even mindless Humans demand less when they notice that the price has gone up. But will they notice the price change?

The most important modification that must be made to a standard analysis of incentives is salience. Do choosers actually notice the incentives they face? In free markets, the answer is usually yes, but in important cases it can be no. Consider the example of members of an urban family deciding whether to buy a car. Suppose their choices when they are unable to walk or bike are to take taxis, ride-share services, and public transportation or to spend a significant amount of their savings to buy a used car, which they can park on the street in front of their home for a small fee. Once they acquire the car, the only salient costs of owning will be the stops at the gas station, occasional repair bills, and a yearly insurance bill. The opportunity cost of money spent on the car is likely to be neglected. (In other words, once they purchase the car, they tend to forget about the up-front payment and stop treating it as money that could have been spent on something else.) In contrast, every time the family uses a taxi, the cost will be in their face, with the meter clicking every few blocks. So a behavioral analysis of the incentives of car ownership will predict that people will underweight the opportunity costs of car ownership and possibly other less salient aspects, such as depreciation, and may overweight the very salient costs of using a taxi.*

An analysis of choice architecture systems must make similar adjustments. It is common to use the tax system to alter incentives—but which taxes are salient? In many countries, retirement savings are encouraged through tax incentives, such as making contributions and earnings tax-free until the money is withdrawn. Do such incentives work? The best study we know finds that they have little effect, especially when compared to (drum roll, please) defaults![14] Rich savers are more likely to pay attention to tax incentives, in part because they have hired advisers to attend to such things, so they will switch money into tax-exempt accounts, but that is mostly just moving money around rather than increasing savings. Worse, these kinds of incentives given via tax breaks are not very visible to the public. In the United States they are called tax expenditures, but no one gets a bill for the money that the government is not collecting. Behaviorally sound public policy would evaluate policies based on how efficient they are at achieving their goals and also on the visibility of their costs. Unfortunately, politicians often do not find it in their best interest to make the costs of their activities transparent.[15]

Of course, salience can be manipulated, and good choice architects can take steps to direct people's attention to incentives. Before Ronald Reagan was elected President of the United States, he served as governor of California. In 1967, California was the only state with an income tax that did not withhold money regularly from employees' paychecks. Instead, people had to pay the entire amount once a year when taxes were due. There was a bill in the state legislature to join all the other states and start withholding money from each paycheck, but Reagan, a fiscal conservative, opposed it. In justifying his position, he famously said, "Taxes should hurt." However, the Democrat-controlled state legislature went against his wishes.[16]

In some domains, people may want the salience of gains and losses treated asymmetrically. For example, no one would want to go to a health club that charged its users on a "per step" basis on the treadmill. At the same time, many treadmill users enjoy watching the "calories burned" meter while they work out (especially since those meters seem to give generous estimates of calories actually burned). For some people, even better might be a pictorial display that indicates the calories one has burned

in terms of food: after ten minutes, a user would only see a small bag of carrots, but after forty minutes, a large cookie.

When to Take a Break

One tool in the choice architect's arsenal can be easy to neglect: when to schedule an intermission. In theatrical plays, operas, and concerts there is usually at least one break in the performance that allows both the performers and the audience a chance to stretch their legs, use the toilets, get a snack, and, at least for audience, an opportunity to realize that there are more comfortable places to nap. Good choice architects realize that the timing of the break can be an important part of the design. Some plays are designed to be performed in one sitting because there is simply no place in performance where an intermission can be added without ruining the experience.

The authors of books have similar decisions to make. How long should the chapters be? Action-packed thrillers tend to have short chapters, but our favorite writers somehow manage to end each of those chapters with us dying to find out what happens next. Many a long night has been created that way, with us sleepily thinking, Oh, just one more chapter. You have probably noticed that this book is neither a thriller or a concert, but we are die-hard choice architects and we feel like this might be a good time to take a short break. We can promise you that the next chapter, which wraps up what we have to say about the tools of choice architecture, is really fun. Really! Furthermore, taking a break is your choice. To opt out, just turn the page.