

Decision-making has never been my strong suit. In fact, for as long as I can remember, it has been a weakness. Whether making a major life choice or choosing from a restaurant menu, I become completely overwhelmed in the face of decisions. This is not the case for everyone – I know plenty of people who have no trouble at all when faced with the simple task of ordering a meal – which leads me to wonder why I find decision-making to be so difficult. I am especially perplexed by this disability because I love to make art, an activity that is wrought with decision-making situations. With these thoughts in mind, I set out to learn more about decisions. How are they made, and what is the best way to make them?

According to the Milan Zeleny, a professor and author of the book *Multiple Criteria Decision Making*, it is a three-phase process, which I will illustrate using the example of selecting a meal from a restaurant menu.

Phase one of the decision-making process is known, fittingly, as the “predecision stage.” First, the decision maker will assess their options, and come to the conclusion that the ideal choice is not available. In my case, that would mean skimming the menu and realizing that the most perfect, delicious meal in the entire world, that would satisfy all of my needs and desires, is not available. This “infeasibility of the ideal alternative” causes the “predecision conflict.” If the ideal did exist, in this case my dream meal, the choice would be obvious and there would be no need to make a decision. Since it does not, I am forced to decide which of the available alternatives is the best substitute. This predecision conflict is what initiates the decision-making process. Zeleny says that, “conflict provides the decision-motivating tension, a frustration and dissatisfaction with the status quo” (Zeleny 87). It prompts us to make a choice between two or more courses of action.

At this point, the decision maker has an established, if subconscious, image of the ideal or its attributes, in their mind. I have a vague idea of what would satisfy my hunger most fully and pleurably and I begin to compare the menu items to that “ideal.” Then, one systematically and logically eliminates those options that are farthest from the ideal, and eventually stops seeking out new options as they determine that the choice will be made between those that they have gathered. In my case, this would probably mean eliminating certain items or sections on the menu that I know I am not interested in – maybe I decide that I definitely do not want soup, or that I shouldn’t have shellfish because I (hypothetically) am allergic to it. Eventually, I will have determined a few options that appeal to me and decided to choose between those rather than continuing to search the menu for more possibilities. This begins what is known as the “divergence process.” The decision maker will now contrast the selected options and figure out where they diverge in value. “This one is more nutritious, but that one will taste better. I know this one will be good, but I’ve never tried that one before.” Information is gathered until the decision maker knows all that there is to know about their choices.

Now, begins phase two – “partial decision.” In partial decision-making all of the choices are reevaluated in comparison with the ideal and “those which are farthest away are removed from further consideration.” Up until now, the process has been pretty objective – only the obviously incorrect possibilities have been ruled out – but now all of the remaining options are plausible and appealing on some level. Pure logic cannot discern between these choices and some subjectivity must be allowed in order to narrow down the options. Zeleny says, “[an] important consequence of a partial decision, or of any decision, is the cognitive dissonance that emerges after the decision has been taken” (Zeleny 89). In other words, once we start choosing between things that are logically equivalent, we have to let our emotional brains sway us one way or another. The result is tension, apprehension, and regret. Do I really want the lasagna?

The partial decision phase repeats itself over and over, the elimination of alternatives becoming more subjective as those remaining become less divergent. Eventually, one is forced to make a final decision. Maybe I have ruled my decision down to two entrees. Both are equally attractive, though for different reasons. My logical brain looks at them and says either will do; they are equidistant from the ideal. Now it is up to my emotional brain to decide which one I feel most strongly about. When I make this final, subjective decision, the cognitive dissonance level in my brain is going to be at its height, and I will start to second-guess my decision.

That is where the “postdecision” phase comes into play. According to Leon Festinger, the man who coined the term “cognitive dissonance,” the postdecision phase involves what is called the “dissonance-reduction process.” Basically, in order to get rid of the cognitive dissonance that results from the subjectivity of decision-making and causes post-decision regret, people tend to continue justifying their decisions after they are made. We continue to gather information to support the position we have chosen, as if we were still making the choice, and the information that we gather is increasingly altered and manipulated in favor of our choice. That is why, even after I have already ordered the salmon, I will keep coming up with reasons why it was a much better choice than the lasagna (Zeleny 85-95).

Having a basic understanding of the decision-making process, I am curious to find out more about what goes into our decisions. One idea is central – all decisions are subjective. There is no such thing as a purely logical decision. The reason for this is simple. When pure logic can be used to make a choice, a decision is not necessary. The answer is predetermined by logic and your only task is to make the appropriate calculations and determine what that answer is. For example, let’s say that someone shows you two coins. One of them is a penny, and one is a quarter. Your goal is to choose the coin of the highest monetary value. This is not a decision. It is a problem with one logical solution. The difference between solving a problem by logic and making a decision is the number of criteria involved in the process. For example, in the aforementioned coin problem, there was only one criterion by which the decision was being made, and so it could be easily calculated. Now let’s say that you are presented with the same problem, but this time there is no goal. You are allowed to choose any coin you want based on any criteria you want. For example, you might choose the penny for its color, or the quarter because you have a thing for George Washington. This is a decision because there is no logical reason to choose one over the other. It may be an easy decision, however, because if you choose to think in terms of monetary value, one coin is still superior to the other. But what if the penny is replaced with a second quarter, identical to the first. Now you must choose between two things that are logically exactly the same. So how do you choose? The only way to do it is by using your personal bias (Zeleny 85-95).

Subjectivity is often viewed negatively. In Western society the prevailing belief is that the most logical choice is the best one, and that if humans did not have any emotions, we would be much better at decision-making. In reality, however, making decisions would be almost impossible without our emotions. No one knows this better than Dr. Antoine Bechara, a neurologist at the University of Southern California. Dr. Bechara once had a patient with a brain tumor in his frontal cortex. The patient had what appeared to be a successful operation, and the tumor was removed. When he returned to his normal life, however, the patient found that it took him inordinate amounts of time to make the most insignificant decisions. He would spend a half an hour analyzing what color pen to use to sign a contract, or what kind of cereal to buy from the supermarket. The patient was given a series of tests to figure out what had gone wrong. In one test he was shown a series of images that trigger automatic emotional responses in most people.

The images had no effect on him whatsoever. Bechara and his colleagues concluded that the patient was unable to make decisions because he was completely detached from the emotional part of his brain. Without his emotions to catalyze his decisions, the patient would spend hours logically analyzing every situation before making a decision. Bechara's patient exemplifies the fact that humans need emotional responses to give them some guidance in decisions where logic fails to distinguish. While logic is a useful tool, it cannot be the sole basis of a decision. Just imagine trying to pick a pen color based on logic alone. Blue and black are both acceptable options. The question is: which one do you *want* to use? (Abumrad, and Krulwich)

This idea that decisions are made subjectively presents another question: How does our subjective brain decide between two equal courses of action? Where do those decision-swaying "feelings" that we have come from? The truth is that most of our brain function is subconscious. According to Timothy D. Wilson of the University of Virginia, the brain can take in as much as eleven million pieces of information at one time, but people can only be consciously aware of, at most, forty of them (Brooks *x*). According to *New York Times* journalist David Brooks, "mental processes that are inaccessible to consciousness organize our thinking, shape our judgments, form our characters, and provide us with the skills we need in order to thrive" (Brooks *xi*). Our subconscious mind stores and organizes both the information that we consciously pick up from our surroundings, and that which we are not aware of. It holds a vast amount of wisdom and intelligence and our feelings and intuitions are their way of communicating to us what they know. Take, for example, the story of writer Steven Johnson. One day while watching a storm from a picture window in their New York apartment, Johnson and his wife heard a distinct cracking noise. Johnson assumed that it was the sound of a door closing in the next room, so his wife went to investigate. Moments later, the window that they were both looking out of shattered from the pressure of the storm winds pressing in on it. If Johnson's wife hadn't moved she probably would have died. Years later, Johnson reported that every time he heard even the slightest sounds of wind against a window he would become extremely anxious, even in completely safe situations (Abumrad, and Krulwich). I had a similar experience myself a few weeks ago. My family and I were staying in a small cabin in a forest of red woods on our vacation. For what seemed like no particular reason I could not sleep in the cabin at night – I was paralyzed by a completely irrational fear that I could not explain. No matter what I did I could not shake the feeling that it was not a safe place.

They seem ridiculous, but both my and Steven Johnson's fears were actually the result of some very intelligent data analysis on the part of our subconscious minds. Though I was completely unaware of it, my subconscious brain was calling up every experience I have ever had relating to cabins in the woods, attempting to determine whether or not I was in a safe situation. Apparently, all of the information it had on file about cabins in the woods was overwhelmingly negative. This does not surprise me given the number of horror movies, ghost stories, and mystery novels that describe horrible things happening to people in remote cabins. Even in my conscious brain I cannot recall one positive experience that I have ever had relating to such a place for the seemingly hundreds of negative ones that come to mind. My subconscious brain was simply summing up what it knew about the situation I was in, based on past experience, and sending me a warning signal. It was trying to protect me. The subconscious functions similarly when we are making decisions. It sums up what information it has stored about our various options and decides which would be most favorable (Abumrad, and Krulwich). In fact, some researchers argue that our subconscious makes our decisions long in advance of our

conscious brain, and that our conscious brain does little more than justify them and sometimes act upon them (Brooks, *x*).

Some people might be horrified at the idea that their brain makes decisions without really consulting them, but in actuality, the subconscious brain is incredibly intelligent. Our intuition can make surprisingly accurate judgments about people we meet, what will make us happy, what we should have for dinner (Brooks, Gigerenzer). In one study, performed by Alexander Todorov of Princeton University, subjects were given “microsecond glimpses of the faces of competing politicians” (Brooks 9). Brooks reports that, “his research subjects could predict, with 70 percent accuracy, who would win the election between the two candidates.” Within microseconds, the subconscious brains of these ordinary people were able to make an intuitive decision about the candidates’ character. That is how powerful our minds are below the surface.

Not only are our subconscious brains intelligent, our conscious brains are also surprisingly weak. One famous psychology study, performed by Stanford professor Baba Shiv, illustrates this weakness. In this study, several research subjects were gathered in a room and each was given a number to memorize. Some were given seven-digit numbers; others were given two-digit numbers. They were then asked to simply walk to the next room and recite their number. On their way to the next rooms, however, the subjects were approached and offered a snack. They could choose between a piece of delicious chocolate cake and a bowl of fruit salad. The result was that the subjects who were asked to memorize the seven-digit number chose the cake almost twice as often as those asked to memorize the two-digit number. The conscious, rational brain and the emotional brain tend to struggle for control of our actions. The conscious brain, however, can hold a very small amount of information at one time – seven digits (plus or minus two) to be exact – while still being able to function properly and exert any control over us. Therefore, when subjects were asked to memorize seven digits, their conscious brain was completely consumed with that task and was not available to push them towards the more reasonable choice of healthy fruit salad (Abumrad, and Krulwich). Baba Shiv’s study is enough to make one rethink the idea that our conscious brain ought to dominate over our subconscious. Given how little capability our conscious mind has, and how vast that of the subconscious is, it is hard to imagine that the conscious has much say in our decisions at all. But if many of our decisions are made at a subconscious level, then why do I struggle with decisions so much? Is there some malfunction in my subconscious?

What I discovered is that my problem is not actually in my subconscious, but in my rational brain. I may not be a bad decision maker at all. I believe that my subconscious is probably functioning just fine, but my rational brain is failing at justifying and acting upon the decisions made in my subconscious.

Recent psychology research suggests that there are two types of conscious thinkers in the world: those who see the world in “black and white” versus those who see it in “shades of gray.” A 2010 *Wall Street Journal* article states, “People who have conflicting feelings about situations – the shades-of-gray thinkers – have more of what psychologists call ambivalence, while those who tend toward unequivocal views have less ambivalence” (Wang). Black and white thinkers tend to have strong views one way or another, and therefore find it easier to make decisions. Shades of gray thinkers, on the other hand, have a greater ability to see the positives and negatives of multiple viewpoints or choices. As a result, ambivalent people are “likely to procrastinate and avoid making a choice” (Wang). Despite encouraging procrastination, ambivalence is believed to be a sign of maturity. Psychology professor Jeff Larsen describes it as “coming to grips with the complexity of the world” (Wang). To deal with the difficulty in the

decision-making department, Dr. Frank van Harreveld, a psychologist at the University of Amsterdam, says that when thought and consideration do not prompt a decision in ambivalent people, “one’s gut reaction may be the way to go” (Wang). He says that he flips a coin to choose between options, and if his gut immediately tells him that the coin is wrong, he follows that intuition. Some times you just need to give your intuition an ultimatum to make it fess up about its decisions.

There are many external factors that also go into decision-making as well. One of the most forceful ones is culture. Some cultures, especially the United States, put a huge value on the individual’s right to decide. It is the general consensus in America that choice and freedom are synonymous. As Barry Schwartz, author of *The Paradox of Choice*, says our society believes that “the way to maximize freedom is to maximize choice; the more choice people have, the more freedom they have, and the more freedom they have, the more welfare they have”(Schwartz). Like many other researchers, Schwartz refutes this belief. This idea does not always hold true in practice, and many cultures do not believe that more choice is better.

Schwartz gives one example of this idea’s failure involving that modern medical system. It is common practice today for a doctor to leave all major decision-making to the patient or their family in medical situations. Most Americans would say that this is a good thing, but Barry Schwartz points out that it is really not the best way for medical decisions to be made. “What it really is,” he says, ”is the shifting of the burden and responsibility for decision-making from somebody who knows something, namely the doctor, to somebody who knows nothing and is almost certainly sick and thus not in the best shape to be making decisions, namely the patient” (Schwartz). It also shifts the responsibility of ensuring the patients’ safety from a trained professional whose job it is to do so, to the patients themselves, or to their family. Imagine if you were put in the position of making a decision that, if made incorrectly, could cost your life or the life of a family member, with no expertise on the matter. The pressure, stress, and guilt that result would be unbearable.

A study conducted by Sheena Iyengar, a professor at Columbia University who researches choice, supports Barry Schwartz’s hypothesis. Several French and American parents were interviewed after experiencing the same tragic loss. All of the parents’ newborn children had suffered from cerebral anoxia at birth, a lack of oxygen supply to the brain. Their children could either live in “a permanent vegetative state, never able to walk, talk, or interact with others,” (Iyengar) or they could be taken off life support. All of the children whose parents were interviewed were taken off life support and died. The major difference was that in France, the attending physician had made the decision to remove the child from life support, while in America that decision always rested in the hands of the parents. “Even up to a year later American parents were more likely to express negative emotions as compared to their French counterparts,” says Iyengar. The French parents were less likely to be wrought with guilt and “what if” thoughts. One American parent admitted, “I feel as if I played a role in an execution.” (Iyengar). It is believed that such choices give us freedom, but in practice they seem to trap people into feelings of self-hatred and guilt.

The American perspective on choice plays out in our culture in other ways as well. For example, let’s look at the American economy. Go into any American super market today and you are bound to find countless varieties of soda, candy, snacks, and even apples. With so many options, it is actually more difficult to make logical decisions. You might recall from the cake experiment that our rational brains can only think about seven pieces of information at a time. In his book, Barry Schwartz says that because there are so many choices available to Americans

they are more likely to believe that the perfect choice exists. The expectations of Americans today are through the roof, says Schwartz. But what happens when they aren't met? Choices make people expect more but they also put more pressure on the consumer to find and select the best option, and when the product that they end up with isn't perfect, Americans don't blame the producer. They blame themselves (Schwartz).

Schwartz uses the example of buying blue jeans. "There was a time when jeans came in one flavor," he says. Now there is a monstrous selection of jeans available to the American consumer. When he went to buy a new pair of jeans, after years of wearing "what used to be the only kind" he found, even though he bought a better fitting pair of jeans, that he was not as happy with them. He explains this phenomenon, saying, "With all of these options available, my expectations about how good a pair of jeans should be went up." Because his expectations were so high, it was impossible for them to be met and, therefore, he was disappointed. "I had no expectations when they came in one flavor," he explains "when they came in a hundred flavors, damnit one of them should have been perfect" (Schwartz).

When so many options are available, not only are we disappointed, but we also tend to internalize that disappointment. I know that when I go shopping for jeans I try on a hundred different pairs, and when I don't find ones that fit perfectly, I don't think, "Oh well, they didn't have a pair that fit me." I think, "What is wrong with me that I don't fit in any of the hundred jeans that I tried on?" And when I find a pair that is good enough, I will probably dismiss them because "something better *must* be out there."

There is a point at which one can have too much choice, and Americans have hit the mark. But the worst part is that half of the time they are not really choices at all. Take soda, for example. "Research shows repeatedly that we can't actually tell the difference between Coke and Pepsi. Of course, you and I know that coke is the better choice", she says jokingly (Iyengar). The truth is that many of our choices are completely artificial. Think about your favorite kind of chewing gum for a second. Is it Doublemint? 5 Gum? Extra? Orbit? Big Red? Hubbabubba? Juicy Fruit? Freedent? Wrigley's? It appears as if there is a great deal of choice available when it comes to gum, and most people probably prefer one of these brands to the others. In actuality, however, Wrigley owns all of the brands that I just listed. The difference between these chewing gums is miniscule, so why do we stand at the drug store counter, staring at the selection and trying to make a choice between them? What is the point?

As someone who has trouble making decisions, it is hard to function in a society where little choices like this are *everywhere*. Supermarkets are enough to make me go insane. On what basis am I supposed to make a choice between 7up and Mountain Dew, which, by the way, are both owned by Pepsico, and probably made of exactly the same ingredients? Not every culture is like this. Sometimes I think I would be better off if I had been raised in Japan. The Japanese have a much more reasonable attitude toward choice than we do. In one study conducted by Iyengar, Japanese and American children were asked to do an activity. The American children performed best when they were allowed to choose from a selection of activities themselves, while the Japanese children performed best when given an activity and told that their mothers had selected it. Iyengar says that for the Japanese children "choice was not just a way of defining and asserting their individuality, but a way to create community and harmony by referring to the choices of people they trusted and respected." If you think about it, referring to the choices of an entire culture of people who are older, and often wiser than you, makes perfect sense. Americans are insistent on making their own decision, even when another individual, say a doctor, or a larger community, may have better judgment and more experience in the matter. As Sheena

says, and I can support from experience, “It is a mistake to assume that everyone can thrive under the pressure of choosing alone” (Iyengar).

When interviewing a group of people from various Eastern European countries, Iyengar stumbled upon another difference in attitude between Americans and other cultures. She offered the subjects she was interviewing a choice between seven varieties of soda. Confused, the subjects responded that it did not matter which of the beverages they were given. “It’s all just soda; that’s just one choice,” they told her (Iyengar). People in other cultures can see through the illusion of choice that Americans persistently seek in our society. Iyengar found that the subjects were very overwhelmed when she asked them to choose between things that were so similar. How could they tell the difference? I know how they feel.

America is not an easy place to be ambivalent, to say the least. But there must be a good way to deal with my decision paralysis, right? What I want to know is, what is the best way to make choices? Dr. van Harreveld says gut feelings are the way to go, but what about those of us who tend to second-guess our intuition? Humans, especially one’s like me, could learn a thing or two from one of the more intelligent creatures in the insect community – the honeybee. Honeybees don’t have any trouble making decisions at all, and there is one fundamental reason why. They make all of their decisions as a colony. Honeybees practice democracy in a very effective way.

A study by Thomas D. Seeley, Scott Camazine, and James Sneyd, in the science journal *Behavioral Ecology and Sociobiology* examined hive-style decision-making in action. The study explains how bee colonies choose among nectar sources. Apparently they do so very well, and without any individual bee having to compare and choose between two nectar sources. Basically, each forager bee leaves the hive to retrieve nectar from a source. “Each forager knows only about its particular nectar source and independently calculates the absolute profitability of its source,” the researchers say (Seeley, Camazine, and Sneyd). If the source is very profitable, they will return to it and dance vigorously in order to communicate to their fellow foragers that it is profitable. If the source is not profitable, the forager will abandon it, and others will therefore avoid it. This way no bee has to decide between this source and that – the colony as a whole picks out the best ones and ditches the worst based on the collective behavior and simple analysis of all of the bees. “Even though each of a colony’s foragers operate with extremely limited information about the colony’s food sources,” Seeley, Camazine, and Sneyd observe, “together they will generate a coherent colony-level response to different food sources in which better ones are heavily exploited and poorer ones are abandoned” (Seeley, Camazine, and Sneyd).

This group format for decision-making has the potential to be extremely effective in human populations as well. With modern technology, like the Internet and social media, it is very easy to source information from a larger group of people when making decision. After all, a group of people is almost always more intelligent than any one of its members. One classic way of exhibiting this intelligence is by having a group of people individually guess the number of jellybeans in a full jar of them. Individually, the group members’ answers may not be very accurate, but it is highly likely that the average of their guesses will come very close (Surowiecki). Maybe the best way to make decisions is simply to collect as many opinions as possible and gather a consensus.

My explorations in decision-making brought me insight into both the psychological process of making choices, and on a deeper level, what goes into decisions, both internally and externally. I have also discovered some possible reasons behind my difficulty with decision-making. Most important, however, I learned that intuition is a powerful tool. In a strange way, it

is comforting to believe that my brain is functioning without my awareness. Maybe my decisions are already made for me, and I just have to listen to my intuition to figure out what they are. The only question is how do you get in touch with a part of your brain that doesn't want to be found? Perhaps, for ambivalent people like myself, consulting a group is the best way to make tough choices. So next time I am faced with a major decision, like "chicken or fish?" I will consult my friends before committing.

Works Cited

- Abumrad, Jad , and Robert Krulwich, perf. "Choice." Radiolab. National Public Radio, 2008. web. April 2012.
- Brooks, David. *The Social Animal: the hidden sources of love, character, and achievement*. New York : Random House, 2011. 1-23. Print.
- Gigerenzer, Gerd. *Gut Feelings: The Intelligence of the Unconscious*. New York : Viking, 2007. 1-47. Print.
- Iyengar, Sheena. "Sheena Iyengar on the art of choosing." TEDGlobal 2010. TED . Oxford. July 2010. Lecture.
- Schwartz, Barry. "Barry Schwartz on the paradox of choice." TEDGlobal 2005. TED. Oxford. July 2005. Lecture.
- Seeley, Thomas D., Scott Camazine, and James Sneyd. "Collective decision-making in honey bees: how colonies choose among nectar sources." *Behavioral Ecology and Sociobiology*. 28.4 (1991): 1. Print.
- Surowiecki, James. "James Surowiecki:When social media became news ." TED2005. TED . Monterey, CA. February 2005 15, 2011. Lecture.
- Wang, Shirley s. "Why So Many People Can't Make Decisions." *Wall Street Journal*. (2010): n. page. Print.
- Zeleny, Milan. *Multiple Criteria Decision Making*. New York : McGraw-Hil Book Company, 1982. 85-95. Print.