

# BRAIN SCIENCE PODCAST

*With Ginger Campbell, MD*

## [Episode #19](#)

**Discussion of *Gut Feelings: The Intelligence of the Unconscious* by**

**Dr. Gerd Gigerenzer**

Aired August 23, 2007

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## INTRODUCTION

Hi. I'm Dr. Ginger Campbell, and this is the *Brain Science Podcast*—the podcast for everyone who has a brain. In this podcast we explore how recent discoveries in neuroscience are unraveling the mysteries of how our brains make us who we are.

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Welcome back to the *Brain Science Podcast*. This is [Episode 19](#). Today we are going to be talking about a very interesting new book, [Gut Feelings: The Intelligence of the Unconscious](#) by Gerd Gigerenzer.

But first I would like to welcome any new listeners to the podcast and to just mention that it's perfectly fine if you haven't heard any of the previous episodes. I sometimes refer to older episodes, but you can go ahead and listen to this one and if you want to go back and listen to the other episodes later you can. But it's not necessary.

I love to get feedback from listeners, and there are three ways that you can send me feedback. One is to send me email at [docartemis@gmail.com](mailto:docartemis@gmail.com). Another way is to leave comments at the website [brainsciencepodcast.com](http://brainsciencepodcast.com). The best way to leave feedback is to participate in the Brain Science Podcast Discussion Forum which is located at [brainscienceforum.com](http://brainscienceforum.com). The Discussion Forum is also a good place to find announcements and links to Show Notes from previous episodes, as well as a great place to meet other listeners.

I know you're probably in a hurry for me to get into the actual episode but there is one other thing that I need to mention, and that is that I'm working with Wizzard Media and I have an Audience Survey that I would very much appreciate all of you participating in. It is located at [wizzard.tv/survey/brainsciencepodcast](http://wizzard.tv/survey/brainsciencepodcast). There will be a link on the website and on the Discussion Forum.

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## **DISCUSSION**

Today we are going to discuss the new book, *Gut Feelings: The Intelligence of the Unconscious* by Gerd Gigerenzer. Gigerenzer is the Director of the Center for Adaptive Behavior and Cognition at the Max Planck Institute for Human Development in Berlin, Germany. His work is said to have been one of the inspirations for the book *Blink*, which we talked about on a previous episode when we talked about unconscious decision making.

A major theme of this book is the importance of what he calls unconscious intelligence. He says that *Gut Feelings* is about, "How the mind adapts and economizes by relying on the unconscious, on rules of thumb, and on evolved

capacities.” Another theme of this book is that more thinking and more information is not always better. And we’re going to explain why this is true.

This idea contrasts with the long-held assumption that logical reasoning is always the best way to make decisions. For example, Benjamin Franklin thought that the way to make any decision was to make a list of pros and cons, rank them, and come up with a final tally. Yet when we make decisions in this way it often conflicts with our intuition. And people consistently report dissatisfaction with the choices they make when they go against their intuition. Think about your own experience and I’m sure you can recall an incident where this happened in your own life.

If weighing all the pros and cons doesn’t generally make us happy, how do we know when to trust our feelings? It seems to relate to whether or not we’re having to make decisions with incomplete information—which in real life is how most decisions are made. Here’s an example: If you ask people to choose which of two cities is larger they will tend to pick the one that they’ve heard of if they’ve only heard of one out of two. And they will usually be right. This represents the instinct to go with what you know. And it’s easy to see how this would have had survival value in the natural world. For example, eating a strange food out in the woods could be fatal.

One of the themes of this book is the use of heuristics, or rules of thumb. Gigerenzer argues that rules of thumb are the basis of most of our so-called unconscious or intuitive decisions. Let’s take another example. How do you catch a fly ball or any other flying object? You certainly don’t do it by calculating differential equations. It would be too slow, even if you knew what the differential equations were.

It has been discovered that what people really do is use something called gaze heuristics. The basic rule of thumb is that if the ball is high in the air you fix your

gaze on the ball, you start running, and you adjust your speed so that the angle of the ball remains constant. If the ball isn't high in the air you adjust your speed so that it rises at a constant rate. Now, if the ball is hit straight at you this is very difficult, because you can't apply this rule of thumb.

Obviously most outfielders are completely unaware of how they catch a ball. And, again, this rule would apply to a whole class of intercepting moving objects. It's probably the same method that dogs use to catch balls and frisbees. In contrast it is very difficult to program a robot to catch a ball.

A main theme of this book is that, "On many occasions intuition is the steering wheel through life. Intelligence is frequently at work without conscious thought." Now, this is not a new idea to those of you who have been listening to the podcast. However, we are going to go into this idea in a little more depth today.

First we need a definition: the definition for gut feeling, intuition, or hunch—these three words are going to be used interchangeably. An intuition is a judgment that meets three criteria: 1) It appears quickly in consciousness; 2) We are not fully aware of the underlying reasons; and 3) It is strong enough to act upon. This is what we're going to be talking about—the kind of decisions that we make almost instantly without a full awareness of why.

Gigerenzer is opposing the traditional viewpoint that intuition is inferior and unreliable. But he is also defining it in a way that is rooted in the brain. It's not something mystical or mysterious. We need to learn when we should trust our guts.

The purpose of this book is to explore the so-called inner workings of intuition, which he argues really comes down to heuristics, or using rules of thumb. His contention is that gut feelings are based on simple rules of thumb which take

advantage of the evolved capacities of our brain. The goal of these heuristics, or rules of thumb, is to hit on the most important information and ignore the rest.

First let's consider two different ways to approach problem solving. One is to use logical principles to solve a complex problem with a complex strategy. This approach assumes that our minds are functioning like calculating machines. It ignores our evolved capacities including cognitive abilities and social instincts. The second approach, which is the one that he is arguing for, is to bet on simplicity and take advantage of our evolved brain.

A basic assumption here is that less is sometimes more—that more choices are not necessarily better. And this is something I think I have talked about in the past. It's been shown experimentally in many different contexts that if you put people in a situation where they have a lot of choices they will tend to be paralyzed by the number of choices. This can be applied to examples like going shopping or the decisions that doctors make.

However, psychologists have long assumed that there is a speed-accuracy trade-off when making decisions. They have assumed that if we had enough time and more attention we would end up making better decisions. However, numerous experiments have shown that this is not true—especially for expertly mastered skills, both motor and otherwise.

Back in Episode 13 when we first introduced the idea of unconscious decision making we talked about how skills, once they're mastered, tend to be moved down into the unconscious where they are more rapidly accessed. And it's easy to see why this would have survival value. There are some examples in *Gut Feelings* of this also.

I can think of an example from my own experience. When I was in medical school I did an experiment that I think supports Gigerenzer's contention. When

you take exams there are two ways of taking them. You can go through and answer the questions rapidly, or you can go through and consider each question very carefully.

Another thing you can do is you can go back and look at questions you weren't too sure about and perhaps change the answer. And what I did was I went through, and as I was taking the test my style would be to take the test fairly rapidly. But I would mark any question that I wasn't sure about, and then I would go back and look at the ones I wasn't sure about and reconsider them.

And I kept a tally and I determined that on the average if I went back and changed an answer I was more likely to change it to an incorrect answer. After I determined this on multiple occasions I just went to going with my first instinct on any question I wasn't sure about, because I had determined to my satisfaction that was going to be my best bet for making the best possible score. I think this is very similar to the principle that he talks about in this book.

But getting back to the whole idea of the use of heuristics, or rules of thumb, what he's saying is that what makes it possible for a skill that we've mastered to move from conscious thinking into the unconscious level is the use of these rules of thumb, or heuristics. So, these are happening but they're happening outside of our awareness.

But again he's challenging two long-standing assumptions: 1) More information is always better; and 2) More choice is always better. Instead he argues that, "Good intuitions ignore information." This is the same argument that Malcolm Gladwell made in *Blink*, and both authors have given a lot of real world examples to illustrate this principle.

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Let's talk about how intuition works. For one thing our brains can't help but draw inferences from the world. In terms of perception an example is that everyone has a blind spot on their retina, which means that there is a place that corresponds to that spot where you actually can't see anything. But you don't see that blind spot because your brain fills it in. So, that's basically a hard wired kind of inference.

Optical illusions take advantage of this. When it comes to optical illusions it's clear that we can't change what we see, so these are hard wired inferences that our perceptual system will make. However, intuition as we're talking about here is more flexible than perception. It's not fully automatic. For one thing it's subject to experience, and for another, these intuitions can be subject to conscious interaction.

One way that we can show that these are two different things is an example that he gives in the book where he shows a picture of a boy, and there are four different candy bars around him but his eyes are looking at one of the candy bars. Now, if you show this to a normal child he will tell you that the boy wants the candy bar that he's looking at.

If you show the picture to an autistic child he will be able to tell that the boy is looking at the candy bar, but not make the inference that the other child wants that candy bar. So, the rule of thumb in effect here is that whatever a person looks at the longest is the thing that they want. This is the kind of inference that we make completely without conscious awareness.

So, perception—seeing that the boy is looking at the candy bar—is separate from the intuitive inference that the boy wants the candy bar. The key idea is that the way gut feelings work is by using rules of thumb. These rules of thumb are usually unconscious but they can be lifted up into the conscious level.

And these rules of thumb are anchored in both the evolved brain and the environment. Gigerenzer says that gut feelings are what we experience, while the rules of thumb produce the gut feelings, and the evolved capacities of the brain are what he calls the construction material for the rules of thumb. Finally, the environmental situation is going to determine how well the rule of thumb works.

Gut feelings aren't in themselves inherently good or bad, rational or irrational. It just depends on whether the rule of thumb fits the context. This means that the underlying intelligence of gut feelings, or intuition, depends on selecting the right rule of thumb in the right situation.

One of the important elements of Gigerenzer's approach is his realization that it is important to take into account both the mind and the environment. He argues that neither can be analyzed in isolation. And for that reason he looks at what he calls adaptive theories, which are looking at the relationship between the mind and the environment.

An example he gives is something he calls tit for tat, which he says turns out to be a winning strategy in a lot of different circumstances. Tit for tat is the basic rule of thumb that whatever the other person does, you are going to do it back. Obviously this could lead to opposite behaviors, depending on where it starts. If the person is nice to you, then you're going to be nice back. But if the person is mean, you're going to be mean back. So, the rule in and of itself doesn't tell you the behavior; it's all about where it starts.

He argues that this makes use of some very simple building blocks: the basic ideas that cooperation pays, that forgetting pays, and that imitation pays. The ability to imitate is an example of an evolved capacity, and this evolved capacity is what makes it possible for us to do tit for tat. In fact, he talks quite a bit about the fact that our ability to imitate is an important evolved capacity.

This brings us to the subject of how our brains evolve. Gigerenzer argues that we have to take the evolved capacities of our brains into account in understanding this kind of decision making, and he points out that this is often ignored in standard textbooks about decision making. And this is an important oversight because it's these evolved capacities that allow us to solve problems in a uniquely human way—in a way that makes our decision making different from reptiles and from computers.

Three examples of evolved capacities that he mentions are: 1) One that I already mentioned, the ability to imitate; 2) The ability to trust; and 3) The ability to experience emotions such as love. We have already talked in the past about the importance of emotions in intelligence. Note that these evolved capacities are necessary but they aren't sufficient on their own. For example, you may have the ability to track another person's gaze, but that's not enough to infer their intelligence.

The actual rules of thumb go on top of these evolved capacities because they allow us to go beyond the actual information, and that's what gives us our intuitions. We have the evolved capacity to see that another person is looking at something, and we have a rule of thumb that says that the fact they are looking at it is important in some way. And that allows us to then make some conclusions beyond the actual information about what they're looking at.

In the early days of artificial intelligence it was thought that human intelligence could be recreated with computers—which would be basically a disembodied cognition. But this proved to be a dead end. Now it is recognized, especially by those working in the field in Europe, that embodied intelligence is the key idea. This is a subject I'd like to come back to in the future.

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One of his key ideas is that our brains are adapted. He says that an important thesis of this book is to try to understand behavior, and in order to understand behavior one must consider the environment. He argues that you can't understand human behavior by studying cognition or the environment alone. He says—and this is his imagery that I can't really improve upon—it's like trying to understand how scissors cut by looking at only one blade.

What is the key feature of the environment? If you'd said uncertainty, you'd be right; because the more uncertain or unpredictable the environment, the more effective simple rules of thumb become. He gives several examples to prove this somewhat paradoxical conclusion. But the bottom line is that in an uncertain environment good intuitions have to ignore information.

Hindsight is 20/20 but it tends to rely on information that wasn't available in real life. That's the reason why doctors tend to really resent lawyers, because in real life our information is always incomplete. Medicine is a good example of the fact that decisions have to be made with incomplete information.

For example, if a person has a severe side effect from a particular treatment or medication, in hindsight it is easy to say that they shouldn't have been given that medicine. However, in reality that might have been the best choice at the time. That's what I mean by hindsight is 20/20.

But it's not just in medicine. Throughout life our information is always incomplete. This not only limits the effectiveness of complex rules, but it makes it even more important that we know what information to ignore. And that's really the tricky part—how to know what to ignore and what to use.

Before the days of computer simulation it was assumed that if you could get all the factors in there accurately you could find the optimal solution. But it turns out that often the optimal solution is even out of reach of computers because the

use of computers has revealed that many of these problems are intractable; which means that the only way to find the perfect solution would require checking a number of steps that gets increasingly large with the size of the problem, and the size increases exponentially.

Chess is an example of a problem that is intractable. And it's not even that complex compared to, say, something like trying to model global warming. This means that even when a problem is very well defined, a perfect solution may be out of reach.

So, getting back to real life problem solving, usually we only partly know what the rules are. Ambiguity is the rule, not the exception. And then of course there are our computational limits. I mean there are only so many things we can take into account in our minds while making a real decision. Gigerenzer observes, "The study of the match between the mind and its environment is still in its infancy." But I think it's clear that this is a very important area that deserves more attention.

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One of the attacks you often hear against intuition is that it's not logical. So, the question might be, should good intuitions be logical? He argues that the answer is no. And I'm going to give you an example from the book to demonstrate this. I'm going to actually take this example straight from the book. It's from page 92.

"Suppose that you are told the following. Linda is 31 years old, single, outspoken, and very bright. She majors in philosophy and as a student she was deeply concerned about issues of discrimination and social justice, and participated in antinuclear demonstrations. Which of the following two alternatives is more probable: Linda is a bank teller; or Linda is a bank teller and active in the feminist movement?"

Experiments have shown that most people will choose the second option, even though from the standpoint of probability that answer would be wrong—this is just the basic rules of probability. If the probability of a certain event is 50% and the probability of a second event is 50%, then the probability of those two events multiplies together. So, the probability of the two events is  $.5 \times .5$ , which is  $.25$ —or 25%. From a pure probability standpoint the probability of two statements being true cannot be more probable than the one statement alone being true. So, choosing the second one would be what is known as the conjunction fallacy.

Stephen Jay Gould famously said, “Our minds are not built to work by the laws of probabilities.” And lots of other people have made this claim. This assumes that mathematical logic should be the basis of whether judgements are rational or irrational—that is, that we should use the logical definitions of words such as ‘or,’ ‘and,’ and, ‘probable.’ This formal logic is what is known as content-blind because it ignores the content of the particular statements and the goals of the thinking involved.

But he argues that rigid logic ignores the fact that intelligence has to operate in an uncertain world, which is very different from the artificial certainty of these logical systems. He argues that in the real world we have to use intelligent rules of thumb to solve problems of ambiguity. We know this happens with perception, and he argues that it also happens with what he calls higher order cognition. So, for example, when we’re trying to resolve problems of ambiguity in language we generally unconsciously follow what might be called the maxim of relevance, which is, assume that the speaker follows the rule ‘Be relevant.’

So, if we applied this to this example of Linda, then we’d assume that the description of Linda was relevant and that the meaning of ‘probable’ was related to the description, because using ‘probable’ in its mathematical sense would not be relevant in this context. So then using that rule of thumb, the second choice is

very reasonable. And he argues that this is an example of what he calls conversational intuition rather than a logical error.

Think about it. We make statements all the time that can't stand up to any kind of logical analysis, but we are perfectly understood by others. And experiments have shown that people will actually make very reasonable guesses under uncertainty if they get asked the right questions. The bottom line is that natural language doesn't follow the laws of logic.

Another element that come up here is the issue of framing, which is expressing logically equivalent information in different ways. The simplest example of this is to say the glass is half empty vs. the glass is half full. Logic would say these two statements are exactly the same, but human intuition does not see them as the same.

For example, if your doctor says, 'This operation has a 90% chance of success,' you would probably conclude that he thinks you should have the operation. But if he says to you, 'There is a 10% chance that this operation will kill you,' you might infer that he is not so sure that he wants you to do it. We do this all the time. We use how information is framed to extract information—does your doctor want you to have the operation?

He argues that intuition is richer than logic. If logic and intuition conflict, how do we choose? Well, logic is ideal in a disembodied system, but logic represents only a small part of the real thought process because it ignores content, culture, evolved capacities, and environmental structure. In real life we have to go beyond the information given, and that's where good intuition is better than logic.

The easiest way to sum up the conclusion of this book is that gut feelings—intuition, whatever you want to call it—are necessary because we live in a world of

uncertainty. We have to make decisions based on incomplete knowledge, and the better we are at picking out what information matters and what to ignore, the better we will do.

In the next half of this podcast I'm going to give some examples of what he calls gut feelings in action.

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Now let's look at some examples of how gut feeling, or intuition works. The first principle that he talks about has to do with what he calls the recognition heuristic. We have talked in the past about how our recognition memory is much better than our recall memory. It turns out that our capacity for mere recognition has a surprising influence on both our intuitions and our emotions in everyday life.

This capacity is adapted to the environment. So, for example, for gulls, they will sit on anything that looks like an egg because that's an important behavior for getting as many eggs hatched as possible. In the case of people, we have an extremely large capacity for recognizing faces, voices, and pictures. No computer can match the facial recognition ability of even a small child. People who have impaired memories can often recognize whether they have seen something or someone before, even if they can't remember anything else about them.

The recognition heuristic, or rule of thumb, is that if you recognize one object and not the other then infer that the recognized object has more value: Choose what you recognize. If you're an expert in a particular field you can't use the recognition heuristic because all of the choices would be familiar. We're talking about in a situation where you don't know everything—which in the real world turns out to be most of the time for most of us. And he gives several examples in

the book where knowing more actually led to poorer performance on tests, such as picking which city was larger or which team was likely to win.

Brand name recognition is based on this heuristic, as it has been shown that people consistently prefer brand names even though taste tests show that they can't really tell the difference. It's easy to imagine the original role of this heuristic, such as not eating unknown food that might be poisonous. We also intuitively know when a lack of recognition represents a lack of safety. For example, you know that if you are in a restaurant with a good reputation you could eat a strange food. However, if you're in a foreign country where there are issues of food poisoning you would be much more reluctant to do this.

So, we automatically react to whether something is familiar, but the recognition heuristic involves an evaluative process. And this is flexible and can be suppressed. This is not really like a reflex.

Now, you may wonder whether this is really true. Well, it's been tested and proven that the evaluation process is separate from recognition, although sometimes in time course they can be hard to tease apart. What they did was they took some people—they used a functional MRI machine—and they gave people the names of pairs of European cities. They used European cities because this experiment was done, I think, in Germany.

One group was asked which city they thought was largest—which is evaluation. The other was just asked which cities they had heard of—which is recognition. And what they found was that only the group that was asked which city was the largest showed activity in a part of the frontal lobe called the anterior medial frontal cortex; which implies that's the neural correlate of the evaluation process.

In general the basic 'go with what you know' turns out to be a fairly helpful guide in life. Gigerenzer argues that people tend to follow the recognition heuristic

intuitively when it is valid. He did not address how this recognition heuristic can be exploited, such as by politicians, but he did mention that brand name recognition can be abused when a company just goes for recognition rather than ever establishing any track record of quality.

I wish we had more time so we could think somewhat about the implications of this heuristic. This is something that might be good to discuss on the [Discussion Forum](#). And a question I would propose is, is this recognition heuristic less useful in a world of rapid change? Or perhaps more useful? I don't know. I'd be interested in hearing what you think.

So, that's the 'go with what you know' kind of heuristic—or the recognition heuristic. Another one that people use all the time is what he calls the 'one good reason.' For example, many animals will choose their mates based on one trait, such as which one has the biggest tail. Have you ever wondered why political ads seldom provide information about the issues? It seems to me that besides using name recognition and trying to stir up negative emotions toward their opponents, they tend toward this 'one good reason' approach.

He gives an example of how people pick their political parties in Germany, where they have like six parties. But what came to my mind was how candidates manage to make one issue all that matters in people's minds, even when most of what their actual job would be if they were elected would have nothing to do with that issue.

Obviously, there are lots of situations where the 'one good reason' method won't work. In this case a lot of times people use what he calls the 'take the best' heuristic, which consists of taking your reasons in order, and considering them one at a time, and stopping as soon as you get to one that's different. I'll give you an example of this.

Let's say you're going to choose a new doctor—and for simplicity I'm going to give three questions: Does he listen? Will you have to wait a long time? Do you know him? So, first off you decide of those three things what is the most important. Let's say you pick 'Does he listen?' as the most important. So, you have two doctors. You ask, 'Does he listen?' If the answer is yes for one and no for the other, then you pick the doctor for whom the answer is yes.

But let's say that both of them are good listeners. Now you go on to the next one: How long are you going to have to wait? Here again, if the length of wait is significantly different between the two you can use that as a way of choosing. But let's say it's not. Then you come to your third question: Do you know the doctor? And, say the answer is yes for one and no for the other—you stop there with the one you know; assuming you'd prefer to see a doctor you know. And the list could go on, but the basic idea is you're going to go until you find a criterion that you can choose between the two.

He gave an example in the book of how people could do better at predicting the winners of NBA games using a couple of rules than using [Bayes' rule](#), which is considered the gold standard for making rational predictions. It's surprising, I guess, but it turns out that the 'one good reason' rule can actually make very accurate choices.

So, remember the question was, well, when should we trust our intuition? He says, "The lesson is to trust your intuition when thinking about things that are difficult to predict and when there is little information." It sounds like most of life, doesn't it?

In an uncertain world complex strategies often fail because they explain too much in hindsight. In other words, someone goes and they look at all the factors of, say, how a battle was won. And they take all these factors and they decide that they're important. But they'll have all the stuff that no one really knew at the

time—which doesn't make for making any good real life decisions. He says, "The more complex strategy is better than the simple one in hindsight, but not in prediction."

Now, obviously the key is to find the right sequence of questions. He gives several examples from medicine. Besides using the 'one good reason' rule he presents something which he calls the 'fast and frugal decision tree.' This is similar to what I just described except that the decisions are always going to be yes/no. The example he gives in the book is deciding whether or not to put somebody into the ICU.

The important thing is, by using these yes/no questions you end up with a lot fewer choices and you can get to a decision a lot quicker. I don't have time to get into the details of this, but one of the points that he makes that I think is important is that doctors tend to use rules of thumb but they don't admit it. What we really need is to have research on how to make this kind of decision making more accurate.

For example, he argues that the 'fast and frugal decision tree' is very powerful and accurate. If that's true doctors need to be taught how to do this. And I don't just mean by giving us formal algorithms, but just the basic principle of how to think. I think this is a good example of a point he's trying to make, which is that awareness of how we really make these decisions should be able to help us to become better at making decisions—which is really I think what matters.

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As usual I'm running kind of long, but there are two more areas that I want to talk about—moral behavior and social behavior—because these are areas in which this kind of intuitive decision making is very important. When it comes to moral behavior, recently several writers have argued that moral behavior is a function of

the mind. He agrees with this, but he is looking at moral behavior from the standpoint of heuristics, or rules of thumb.

He says that there are several deeply entrenched aspects of human morality. Two rules of thumb he gives are: 1) Don't break ranks; and 2) If there is a default, do nothing about it. What does that mean? Well, for example, in countries where the default decision is that you're going to be an organ donor there are more organ donors than in the United States, where the default decision is to opt out. In other words, people will tend to go with the default decision. So, in the United States you aren't an organ donor unless you choose to be an organ donor, and the rate is pretty low. I guess it's just another way of saying that people tend to do nothing.

Gigerenzer argues, like many other writers these days, that we have an innate capacity for moral behavior. He says we have an innate capacity for moral behavior just as we do for language, and that we acquire local moral rules just like we do grammar, but that these underlying rules are largely unconscious. Moral grammar may be described by rules of thumb, but unlike language these rules often conflict with one another. He argues that the rules aren't in and of themselves right or wrong.

According to him in order to be a moral intuition it has to be based on three principles: 1) Lack of awareness—because just like other intuitions, moral intuitions appear quickly in consciousness, they're strong enough to act on, but the underlying rationale can't be verbalized; 2) Roots and rules: that is, the intuition is tied to one of three roots—individual, extended family, or community—and to an emotional goal such as 'do no harm,' and can be described by rules of thumb. The social environment is number 3, because moral behavior is contingent on the social environment.

Another writer, [Jon Haidt](#), has suggested that we have five evolved capacities that are relevant here: harm, reciprocity, hierarchy, in-group, and purity. And obviously cultures vary on which of these they think are important. Recognizing that moral feelings are anchored in different roots implies that conflict will be the rule rather than the exception. This contrasts with the view of moral psychology which he says is like moral philosophy in linking moral behavior with verbal reasoning and rationality.

Basically what he is saying is that is not how moral feelings really work. He says that years of experimental studies don't support theories of cognitive development that assume that there's a logical progression of moral understanding that occurs in stages. He is not the first writer to argue that people are often unaware of the reasons for their moral actions. In fact it appears that what happens is that the reasons people give are often given to justify what was done after the fact.

So, what kind of heuristic do we use in making moral decisions? One that people often use is 'do what the majority of your peers do.' Obviously this is a heuristic that can guide behavior even if it doesn't have a moral implication. And this rule is going to be a good or bad rule depending on your peers. That's the reason why your parents didn't want you to hang out with a bad crowd.

One thing he thinks is important is to realize that it's not about putting feelings and reasons against each other because he argues that gut feeling have reasons too. The difference between intuition and moral deliberation is that the reasons underlying moral intuitions are typically unconscious.

An important principle is that if we know the mechanisms underlying moral behavior and the environments that trigger them, then we might be able to prevent or reduce moral disasters. A similar argument is made in the book, *The Lucifer Effect: Understanding How Good People Turn Evil* by Philip Zimbardo,

who was an expert witness in the Abu Ghraib trial and also ran the famous Stanford prison experiment.

If you don't know about that experiment, it is one in which—this was done back in the 70's—students were assigned randomly to be guards or inmates. And those assigned to be guards found themselves behaving in a very sadistic and abusive manner. In fact, the experiment had to be stopped because of this.

So, it just shows how easily environment can lead a person to behave in a way that you wouldn't think that they would behave. In this book Gigerenzer argues that moral behavior is based on evolved capacities that include the capacity for intense identification with one's peer group. This capacity can be used for both good and evil, depending on how it's exploited.

[music]

The last topic that I want to talk about is social instincts. This is an area where we clearly use heuristics and we are constantly making inferences beyond the information at hand. One point he makes is that it is very important to realize that people often have more than one driving motivation.

The two most basic social instincts are family—take care of your kin—although this isn't even present in all animals; and tribal, or community identity. And this can be with a symbolic group. But in this tribal identity we are going to cooperate and defend the members. This tribal identity thing is really the thing that sets us apart from animals. You really don't see this in animals.

Not surprisingly, the family and community instincts often come into conflict. One aspect that we see in social behavior is what's called reciprocity. Darwin thought reciprocity was the foundation of morality. Reciprocity means the ability to do something for someone in the expectation that they will do something later in return.

Social contracts require a combination of trust and reciprocity. Now, trust is kind of interesting because he points out that trust was fairly rare in premodern societies because everybody knew what everyone else was doing. It actually requires more trust to function in our complex modern world.

Remember that I talked about one of our evolved capacities being that of imitation. And imitation seems to be at the root of much social behavior. He says that besides teaching and language, this is the third way that allows a vast cultural transmission from generation to generation.

So, what is the basic heuristic, or rule of thumb, here? Again, just similar to the moral intuition, it's 'do what the majority of your peers do.' Plus, 'do what a successful person does.' Is imitation of the majority going to be always the right choice? It's really only going to be adaptive if the environment is relatively stable.

And also—something you might not think about—is the fact that there must be a lack of feedback. That is, when you're making a unique decision on something that would take a long time to see how it's going to turn out, then you're going to imitate; because you can't just make a decision and then see how it works out—which would be feedback—and then change it. That's not where you do imitation. Imitation is in the situation where you really don't have feedback.

Also, it's usually implied that there are going to be dangerous consequences for mistakes. Now, what's dangerous is obviously in the eye of the beholder. If you're an adolescent, being an outcast would be considered a dangerous consequence, and therefore that would be a strong motivation to imitate your community. However, imitation may be futile in a world that is rapidly changing.

So, if everyone is pretty much imitating everyone else, how does anything ever change? He talks about this in the book. He says that sometimes it happens because someone does something because they didn't know what the rules were.

You see this oftentimes: change happens from the young. They try something that the older people think is impossible, and it happens, and then things change.

A very interesting example that he talks about in the book is how the Berlin Wall fell, and that what really happened was that there was false information out that the gates were already open. So, people from all over East Germany started going there and basically swamped the guards, and they ended up with no choice but to open the gates. If you want to learn the details of this I recommend reading the book. Because this is a German author, so he obviously has a different perspective on the subject.

[music]

We have progressed from relatively straightforward examples of intuition where the main principle was making decisions in a world of uncertainty, to more complicated areas such as moral intuition and social instincts. But all three of these examples follow the rule of using heuristics, or rules of thumb, to allow us to make rapid decisions that almost happen before we have actually thought about it.

The conclusion, I think, that he is trying to press forward is that, while in Western thought, intuition has fallen from a position of respect to something that is scorned as inferior to logic, he argues that this is wrong. He argues that intuition, "...takes advantage of the evolved capacities of the brain and is based on rules of thumb that allow us to act with astounding accuracy. Quality of intuition lies in the intelligence of the unconscious—the ability to know without thinking which rule to rely on in which situation."

The next time you find yourself with an intuitive gut feeling about something, see if you can look at it more closely and see if you can tell what kind of rule of thumb you might be using. If you feel that you tend to make poor intuitive decisions

perhaps you aren't using the most reliable rules of thumb. I think that if we knew more about how this works we might be able to make better decisions.

[music]

I hope you've enjoyed this episode of the *Brain Science Podcast* and have found information that you can use in your own life. I hope you will tell others about the podcast. And if you aren't subscribed, you can subscribe in iTunes or go to [brainsciencepodcast.com](http://brainsciencepodcast.com) and you will see the subscription options there, which include RSS feed and email subscriptions. Don't forget to visit the Discussion Forum at [brainscienceforum.com](http://brainscienceforum.com) and to send me email at [docartemis@gmail.com](mailto:docartemis@gmail.com).

The next episode of the *Brain Science Podcast* will be an interview of Dr. Louann Brizendine, author of the best selling book *The Female Brain*. We'll be talking about how hormones affect our brains—both the brains of men and the brains of women. It should be a very interesting interview, so I hope you will tune in. That will be up in a couple of weeks.

Meanwhile, I look forward to hearing from you. Thanks for listening. And don't forget to go to the website and click on the ad for [Audible.com](http://Audible.com) to get your free audiobook download. Thanks a lot. Bye.

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