

*A short version of this review can be found in Ethical Theory and Moral Practice*

**Gerd Gigerenzer, Gut Feelings: Short Cuts to Better Decision Making, Penguin Books, 2008 (1st ed. 2007)  
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**Christine Clavien**

**Department of Ecology and Evolution, University of Lausanne, Switzerland**

**e-mail: christine.clavien@unil.ch**

Many birds provide parental care by following this rule: ‘Feed any small bird sitting in the nest in which you have laid your eggs.’ These birds do not need to recognize their own eggs and chicks in order to provide efficient care for their offspring. In an environment where the content of one’s nest is almost bound to be one’s own eggs and chicks, simple cognitive machinery that is less demanding than individual recognition can do the job. This is why the simplest decision-making mechanism has been selected in the course of evolution.<sup>1</sup>

In *Gut Feelings*, Gerd Gigerenzer (director of the Center for Adaptive Behavior and Cognition at the Max Plank Institute for Human Development in Berlin) sets himself the task of showing that the human mind is constructed in a similar way: it contains a collection of domain-specific cognitive mechanisms. Psychologists term these mechanisms ‘simple heuristics’. They consist in intuitive rules, such as, “Always do x when you find yourself in a situation of type y”, which have evolved because they happened to help humans cope successfully with particular aspects of their environment.

### **Style**

*Gut Feelings* is an introductory book on the nature of intuitive thinking and decision-making in which Gerd Gigerenzer (GG) draws on his own research as well as that of others. It is written for a general audience and as such does a remarkable job. The book is enjoyable to read (although there is a tendency to slip into self-praise); it does not require any particular background knowledge and it provides useful tips for further reading. It is a good way to begin to familiarise oneself with the main concepts and recent developments in the theory of intuitive behaviour.

To support his theoretical claims, GG addresses practical questions that have direct application to everyday life. Some of his reflections are particularly refreshing, especially when they challenge old prejudices, such as the idea that men are more rational and women more intuitive (chap. 4), or when they reveal the mechanisms underlying consumer choices (chap. 7) and voter preferences (chap. 8). Other reflections are sharp and challenging, in particular when it comes to revealing the dark side of common medical practices (chap. 9) and court decisions (chap. 10), or when his analysis reveals the uselessness of some professions such as investment adviser (chap.2) and stock forecaster (chap. 5).

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<sup>1</sup> Of course, some of these birds might be deceived by parasitic species. Cuckoos, for example, lay their eggs in others’ nests, thereby freeing themselves of the feeding task. But evolution will not bother with these cases provided they only occur occasionally. It is only if parasitism becomes recurrent that more specialised mechanisms, such as individual egg and chick recognition, will evolve.

### **Main targets**

GG's first main goal is to explain the hidden mechanisms underlying intuition. Throughout his book, he deploys a (non-exhaustive) list of simple heuristics that guide our behaviour. Among them, there are the "gaze heuristic", which helps one to catch a fly ball without making a complicated calculation of distance and velocity (chap. 1), the "tit-for tat heuristic" which helps one to cope with other individuals in social settings (pp. 51-52) and the "take the best heuristic", which helps one to choose among various alternatives (chap. 5 & 8). These heuristics are essential keys for understanding ordinary human behaviour in all sorts of contexts (e.g. moral, economic). The second, most thought-provoking, goal of the book is to show that simple heuristics often produce more successful choices and actions than complex consideration. In other words, careful rational analysis often fails to outcompete primitive mechanisms. One should note here that GG does not deny the human capacity for logical thinking and complex reasoning. His aim is rather to challenge its importance in successful decision-making. In a similar vein, his third goal is to better understand which environmental conditions favour the use of simple heuristics over reflection involving complex calculations. Another, albeit secondary, domain of investigation relates to the practical consequences of GG's theory.

In what follows, I will provide a more detailed analysis of some key aspects of the book.

### **Gut feelings and the plasticity of their underlying heuristics**

According to GG, gut feelings are intuitions (he uses both terms interchangeably). They are natural, basic, instinctive responses to cues from the environment. These intuitive judgements are automatic, effortless and unreasoned. They appear quickly in our consciousness and are sufficiently strong to make us act on them (p.16). Ordinary people do not know why they have these feelings and where they come from. They simply feel them and act upon them.

It is important to be clear about the distinction between intuitions, or gut feelings, and simple heuristics, or 'rules of thumb' (another way to describe heuristics). They are two distinct aspects of the same phenomenon. In GG's account, heuristics are the psychological mechanisms that lie behind our intuitions, whereas intuitions are what we feel.

GG likes to think of the mind as an "adaptive toolbox", containing many different rules of thumb. The nature of these heuristics is largely the result of the evolutionary pressures exerted on our ancestors. They are genetically coded and usually unconscious (p. 47). However, their use is not fully automatic; even if encoded, their expression is shaped by cultural environment and individual learning.

Indeed, varying the social environment, the same rule of thumb can lead to opposite behaviour. Take, for example, the "tit-for tat heuristic", which says "Be kind to others first, remember your partner's last action and always imitate your partner's last action". Depending on other people's behaviour, the very same rule can lead to nasty or kind responses (pp. 51-52). Here we can see that "behaviour is not a mirror of a trait, but an adaptive reaction to one's environment" (p. 51). We can also see that a limited number of rules of thumb can explain complex behaviour (p. 75).

Moreover, with concentration one can raise underlying heuristics to the conscious level and bring them under voluntary control (pp. 45-47). Here is an example: the "recognition heuristic" is a form of mind-reading that helps one to infer others' intentions. It says "If a person looks at one alternative longer than at others, it is likely to be the one that the person desires". Now, say that in a particular circumstance, I have reason to assume that my friend Charlie wants to deceive me. In this case, I can override my natural inference and think instead that Charlie looks precisely at the object he does not want. Hence a heuristic is not merely a reflex; while inbuilt, it is malleable to a certain extent.

### **Gut feelings versus classical ways of understanding intuition**

The way GG conceives of intuitions differs from the most well-known paradigm offered by behavioural economics: the neo-classical model of decision-making. According to this model, intuitions are unconscious smart calculations that make us see the best thing to do. Such a view assumes that the human brain contains either one central system or a small number of general-purpose decision mechanisms based on logic or optimisation. These central processes are capable of resolving all sorts of task; they can ascertain the statistical structure inherent in an environment and weigh the pros and cons before any decision is taken. Here, rationality is to be found in the intuitions themselves because they are supposed to proceed from complex analysis, during which the subject unconsciously takes into account all consequences, weighs them carefully and chooses the solution with the highest value or utility.

On the contrary, GG conceives of intuitions as prompted by the activation of different local and domain specific mechanisms, a view that assumes massive modularity of the brain.<sup>2</sup>

It seems to me that the simple observation of behavioural mechanisms such as the parental caring mechanisms of birds provides a good reason to favour GG's view. Are we not evolved animals, after all?

GG provides additional reasons to favour the simple heuristic paradigm. His strategy consists firstly in showing, with help of evocative examples, that ordinary people often make decisions by using simple unconscious mental processes instead of careful analysis *and* that these procedures are efficient. Secondly, he presents experiments where the respective results of sophisticated calculation versus simple heuristics are compared. As it turns out, a decision procedure based on simple heuristics often yields better results than a decision procedure based on logical calculation.

For example, he shows that making use of the "recognition heuristic" (which says "If you recognise one object but not the other, infer that the recognised object has higher value") leads in average to better predictions regarding the outcome of tennis matches than professional experts are able to provide (chap. 7). The same holds for the outcome of investments on the stock market! (pp. 79-81)

Here is another example: the "take the best heuristic" refers to the fact that people attribute subjective values to different cues in the environment. They rank them in a precise order and behave according to this ranking. The way people rank their preferences reflects the evolutionary past and a particular learning process. Inspired by the "take the best heuristic", GG has elaborated a methodology designed for making fast decisions in uncertain environments: he calls it a fast and frugal decision tree (chap. 9). The idea is to determine several relevant decision criteria and order them. The top criterion is considered first. If it helps in making a decision, the other criteria are simply ignored. If the first criterion does not help one to make a decision, the second criterion is taken into consideration, and so forth, looking at each criterion in turn. This frugal decision tree has been put into practice by Green and Mehr (1997) for the task of rapidly assessing the probability that a patient admitted to an emergency unit suffers from heart disease. It turned out that the application of this methodology more accurately predicted actual heart attacks than classical decision trees based on sophisticated calculations (simultaneous computation of all the relevant criteria with their respective weights).

### **Less information is sometimes better – GG's misleading understanding of rationality**

Daniel Kahneman and Amos Tversky (1982) have famously showed that individuals' decision-making systematically deviates from neo-classical norms of rationality. But because these authors do not free themselves from the neo-classical paradigm, they interpret these

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<sup>2</sup> For a vivid example of this controversy, see Dougherty et al., 2008, Dougherty et al., 2008, Gigerenzer et al., 2008, Gigerenzer et al., 2008.

deviations as systematic errors; people are considered biased by cognitive illusions and persistently irrational in their decision-making. Instead, GG proposes a reconsideration of the notion of rationality to show that people are, in fact, acting rationally while following simple rules of thumb. In order to achieve this, he challenges the common idea that more information is always better. He shows situations in which, even when information is free, more information is detrimental. This phenomenon can partly be explained by the fact that “the more options one has, the more possibilities for experiencing conflict arise, and the more difficult it becomes to compare the options” (p. 38). It is typically the case when quick decisions have to be made under conditions of uncertainty. In other words, what seems to be a limitation of the brain can in fact be its strength: sometimes there is a beneficial degree of ignorance.

Now the fact that our intuitions are prompted by simple relevant cues in the environment is precisely what allows us to ignore unnecessary (or relevant but non-crucial) information and focus on the most useful bits of information (p. 39). According to GG, when snap decisions based on primitive feelings yield systematically better results than careful analysis, one can speak of the intelligence of the unconscious (p. 132) and there is a sense in which one can speak of rational feelings. Here GG claims that he has discovered a “new land of rationality” (p. 19). As he writes: “With this book, I invite you on a journey into a largely unknown land of rationality, populated by people just like us, who are partially ignorant, whose time is limited and whose future is uncertain” (p.4).

I fear that GG’s attempt to democratise the concept of rationality does not help the debate. He goes one step too far in his crusade against neo-classical accounts of decision-making. Logical theories of decision-making are clear on the distinction between rational choice and optimal choice (see Perea, 2009: chap. 2). A choice can only be rational with respect to a set of beliefs; under conditions of limited knowledge, a rational choice might not be optimal. Therefore, showing the optimality of a behavioural strategy does not help in deciding whether people who use this strategy are rational. To enter into “new lands of rationality” simply confuses the debate and shortcuts discussions with the advocates of the neo-classical view. If we attempt to forcefully challenge the “misguiding fascination with logic” (p. 96),<sup>3</sup> it is important to adapt our vocabulary in such a way as to be understood by our opponents. This said, I think that GG does not need such artifice (which consists more or less in confusing social intelligence with rationality) because his contribution is important and innovative even in the context of the old land of rationality.

### **How are we supposed to know when gut feelings are good feelings?**

*Gut Feelings* is not intended to be normative. GG wisely avoids expressing his ideas about how one should act and concentrates instead on descriptive topics.

However, while reading GG’s book, some readers might be struck by the idea that dreadful intuitions are fairly common; think of the many people who share the profound conviction that the death penalty is right. How are we supposed to assess such an intuition after having read that intuitions are usually beneficial for human beings? Of course, GG is aware of the difficulty; curiously, he does not emphasise how careful one has to be with the perils of intuitions. There is a risk here that GG’s overly glowing account of intuitions might deter readers from simple heuristic approaches to human behaviour. What is now urgently needed is an extensive analysis of when and why it is wise to rely on our intuitions.

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<sup>3</sup> Note that GG’s account of the chain paradox (pp.100-102) seems particularly unfair. Selten’s formal analysis can obviously not represent reality because it assumes perfect knowledge. In a world with imperfect knowledge, the logical prediction would be different.

### **Some further issues**

GG has laid down some fundamental building blocks for an innovative interpretation of human decision-making. We now have a general comprehensive account on which is it possible to elaborate. To conclude, I will mention some 'hot' issues that are not mentioned or are only briefly touched upon in this book.

One issue (that GG does not seem to take really seriously) is the fact that what people take to be relevant for decision-making does not always correspond to the unconscious cues that effectively lead them to act; this brings us into the domain of cognitive illusions and post hoc made-up reasons.

Another interesting issue is to investigate when intuitions are likely to succeed or fail. GG recognises that in stable and predictable environments, gut feelings cannot compete with complex rational calculation; intuitions are mostly efficient in uncertain and changing environments. This is valuable but somewhat vague information. It seems to me that the heuristic account of decision-making would significantly gain in credibility if it were possible to elaborate more thoroughly on the general domains of efficacy of both mechanisms.

A further topic of interest is the investigation of the neural mechanisms underlying human behaviour; for example, one could try to determine which parts of the brain are implicated in the process. This is, of course, a topic for neuropsychologists.

Finally, a particularly tricky issue concerns the practical consequences of a heuristic approach to decision-making. Indeed, knowing when and how people use particular heuristics means that one could provide decision-makers, such as politicians, economists or private industry managers, with valuable advice on how to influence others. GG develops some thoughts along this line here and there in his book. However, as soon as the theory is put into practice, important moral difficulties pop up. Indeed, using knowledge about ordinary people's rules of thumb leads directly to manipulation, which could be for good, as well as bad, ends. The moral consequences of such practices must be carefully weighed.

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