



## Introduction

## Unveiling the Lady in Black: Modeling and aiding intuition



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## ABSTRACT

The cognitive and decision science literature on modeling and aiding intuitions in organizations is rich, but segregated. This special issue offers a sample of that literature, stimulating exchange and inspiring intuitions about intuition. A total of 16 articles bring together diverse approaches, such as naturalistic-decision-making, heuristics-and-biases, dual-processes, ACT-R, CLARION, Brunswikian, and Quantum-Probability-Theory, many of them co-authored by their founders. The articles cover computational models and verbal theories; experimental and observational work; laboratory and naturalistic research. Comprising various domains, such as consulting, investment, law, police, and morality, the articles relate intuition to implicit cognition, emotions, scope insensitivity, expertise, and representative experimental design. In this article, we map intuition across poles such as Enlightenment/Romanticism, reason/emotion, objectivity/subjectivity, inferences/qualia, Taylorism/universal scholarship, System 2/System 1, dichotomies/dialectics, and science/art. We discuss intuitions as inspirations, instincts, inferences, and insights. Finally, we review the contributions to this special issue, placing them into historical, philosophical, and societal contexts.

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*“Oh lady lend your hand,” I cried,  
“Oh let me rest here at your side.”  
“Have faith and trust in me,” she said  
and filled my heart with life.  
“There is no strength in numbers.  
Have no such misconception.  
But when you need me be assured I won’t be far away.”*  
(Lady in Black, Uriah Heep, Songtext)

*Die Farben sind Taten des Lichts, Taten und Leiden.  
The colors are the deeds of light: what it does and what it endures.*  
Johann Wolfgang von Goethe (1810), Zur Farbenlehre  
(Colour Studies), Translation: Miller (2012, p. 106).

The two of us study decision making. When we talk to executives and other senior professionals about decision making, one reaction we often get can be summarized as follows: ‘Many of my decisions are based on gut-feelings. Instincts of some sort. Ideally,

I know what I need to do, the answer is simply there. For instance, I simply *knew* that we would need to build a new factory. But, I cannot admit that openly. So what do I do? My team and I spend hours to search for facts to back up what I felt I knew all along.’ In our experience, typically, it is the middle-management who feels that way. Top executives and managers in family-businesses are more willing to admit that they make decisions based on intuition. But even for them, there are limits to frankness, namely if they can be held accountable at the end of the day in case something goes wrong.

Indeed, the literature, both scientific and popular, is full of anecdotes and stories of people – artists, inventors, engineers, athletes, physicians, managers, mathematicians, teachers, various experts in their respective fields – who report instances where they just knew how to assess a situation, how to decide, how to act, or how to create something. Yet, such “knowing-how” is often hard, if not impossible, to describe and to justify. At the same time, we tend to admire people who seem to have had – in retrospect – good but counterintuitive intuitions, be it in science, business, or in daily life. In short, intuition remains beautifully mysterious; we ambivalently waver between wonder and bewilderment. Most of us encounter – once in a while and more or less secretly – this unknown and elusive, but surprisingly familiar *Lady in Black*.

Intuition, allow us to peak behind your veil! And please take it with a smile if we try to shed some light on you. We know your element is the night and you may not like our torches, beaming

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into the dark – your dark. We apologize. But we are cognitive scientists, we are curious, and we want to learn more about you. At the moment, we do not even know your gender. Do you bear closer resemblance to Michelangelo's beautiful David, or to Leonardo's mysteriously smiling, shadowy Mona Lisa? Maybe you do not even have any gender, even though the two of us would like to believe that you are female – maybe because we trust that there is some wisdom in those languages in which the day is a masculine word (*der Tag, le jour, el dia*) and the night (*die Nacht, la nuit, la noche*) is feminine, or simply because we are male, happily married, and deeply admire our better halves. Maybe not seeing you clearly can be described as a mental state of darkness and hence our name for you, Lady in Black, is our own projection into our own darkness. We hope you like the name and we hope you will reward our efforts with our torches by granting us some charming glances from underneath the veil of your mystery.

## 1. Intuitive and historical accounts of intuition

What is intuition? For us, as researchers, it would be straightforward to screen the answers given in the scientific literature, provide an overview of theoretical accounts of intuition and of methodological approaches to study it, and then to use this overview as a context for the articles that we assembled in this special issue. Had we proceeded this way, this would have been a standard introduction – not much different from other introductions to other special issues or edited books. We started this way, but at some point we felt that something important might be missing: the Lady in Black.

Francis Bacon (1622/1938) provided a roadmap for the human species. *Where do we come from?* Kicked out of Paradise. *Where are we now?* Left alone, standing on our own. *Where do we go?* Unable to return to God's paradise, we only have one option: create our own paradise – the *Novum Atlantis* (which also provided the title of his book). *How to do this?* Torture nature so that it reveals its secrets (an enterprise called science) and use this knowledge (an enterprise called technology) to survive and, eventually, also to have a comfortable life on earth. *Could this program also be applied to intuition?* Tricky. We dig a few knives into it, and once we know its secrets, this knowledge aids us to live and thrive? Alas, what if intuition is not just another “object” – another “it” – out there in nature with organs that could be laid out on a dissection table? Or that could be moved into a brain scanner? Perhaps intuition really is “subject” and “she”. And actually, how much can one, possibly, learn when trying to catch intuition in psychological experiments or when attempting to force her into mathematical models?

While scientists walking in Bacon's footsteps may struggle with compelling intuition to reveal *its* secrets, the “ungraspable” may have a closer relationship with artists. To them, *she* actually comes. And there she lends herself to being experienced and transmitted – through paintings and poems, as mediums, for instance. And in contrast to scientists, CEOs and other leaders in society, artists do not need to justify themselves for letting intuition speak in their work, and for how they let her speak.

There is one problem though: The two of us are psychologists, not artists. So back to the dissection table? No. It is important to distinguish between having intuitions on the one hand, and understanding and modeling them on the other. Why should scientists – including those who make intuition their object of study – not also have intuitions? To enhance the chances of having the Lady in Black at our side, as our ghost author when writing the present piece, we tried our best to embrace the mindset of an artist.

Specifically, we did not shy away from reproducing artworks, from weaving metaphors into the text, and from using a style that is quite unusual for a scientific journal – not even from both

personalizing and anthropomorphizing the notion of intuition, replacing the “it” with “she” and turning an “object of inquiry” into a “subject”. Most importantly, we tried to think out-of-the-box and to adopt a wider perspective. We took towering historical figures, such as Johann Wolfgang von Goethe, the German scientist, poet and writer, or Leonardo da Vinci, the Italian inventor, scientist and painter as stars to look up to and give us direction in our night. There is one difference though: these two were artists and scientists throughout their entire lives – while, for us, the present piece is more like a momentary excursion from the routines of publishing in scientific journals.

Talking about excursions, Goethe is said to have escaped the oppressive rules of courtly life on a trip to Italy where he, after encounters with Italian artwork, received new impulses of utmost importance for his future work, both as scientist and artist. Why don't we do something similar: Make an attempt to escape from our own, isolated, intellectual cave, explore the territory around us, and locate ourselves in broader context? Let us depart on a journey into the *Enlightenment, Romanticism, Sturm und Drang*, and meet intuition, analysis, science and the contents of this special issue through them.

### 1.1. Animalistic instincts, divine inspirations and the black-box in the middle

Again, what is intuition? Many would use the term at various, possibly quite diverse occasions. And even though people may have an intuitive understanding of what intuition is, the possible answers they would come up with will certainly show some variance. We would like to structure the following candidate answers by adding another question: “where do our intuitions come from?” Locating objects or concepts, so one might argue in good scientific manner, requires a coordinate system. For the purpose at hand, we would like to draw one that follows from a statement of the Greek philosopher Protagoras (c. 490–c. 420 BC): “*Man is the measure of all things.*” Putting us in the middle of our coordinate system, and adopting the convention that animals are below us in a hierarchy spanning from matter to the divine, let us start by looking upwards.

Is intuition a sixth sense, some kind of extrasensory perception, an inner voice through which some supernatural beings – Gods, Angels – speak to us? Note that the Latin word *persona* is composed of *per* and *sonare* – “sounding through”. When having intuitions, do we resonate with something that is transcended, that can be conceived as being outside of us, possibly above, and that manages to somehow and mysteriously affect us and to leave some kind of traces or vibrations? According to this conception, a *persona* is a facade, like a theatrical mask as those used in Ancient theatres. In modern terms, one could say that an actor plays a social role or a character, and it is the latter through which the actor, concealed behind the mask, interacts with the world. Take, for instance, Perseus or Dardanos, both sons of Zeus. Without doubt, the Ancient Greek knew what this meant, but how can we, today, make sense of the information that a mythological figure like Perseus or a historical figure like Dardanos is the son of a God? One possibility could be to say that Perseus was more like a *persona*, a mask, and that the real, true and hidden actor, Zeus, was acting through him. Intuition, then, would be Perseus' ability to hear what Zeus wanted him to do, or, to put it another way, Perseus' intuitions were Zeus' orders on how to play on the theatre called human life.

Others may prefer to look in the opposite direction, namely downwards. Is intuition some sort of animalistic instinct – and do animals have intuitions, maybe even better ones than humans? Staying within the animalistic sphere, but allowing this sphere to enter the human kingdom: are intuitions an evolutionary remnant of our reptilian brains, an old but fast track on the neuronal highway? Or are they located in the Freudian unconscious? And how

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