



Modeling and Aiding Intuition: Introduction to the Commentary Section[☆]



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This section of JARMAC includes a series of commentaries on articles published in the September, 2015, special issue of JARMAC: “Modeling and aiding intuition in organizational decision making” (Marewski & Hoffrage, 2015). The commentaries focus on research programs such as naturalistic decision making, heuristics-and-biases, ACT-R, and CLARION. They feature topics ranging from evolution to decision styles. In this introduction, we provide a brief overview of those contributions, alongside with concluding words on this project of pulling together multiple and very different strands of research on intuition.

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Not too long ago, one of us stood, in the evening twilight, on top of a hill, letting his gaze wander across a valley. On the other side of the valley, the eye met distant trees, and then, all of a sudden, partly veiled by branches and waning fog: A fallen column, remnants of a theatre, and a small, round temple. These ruins were not built by ancient Rome’s architects, as one might suspect, but crafted during the Enlightenment. The ruins’ hidden, foggy romance contrasts with the aesthetics of a beautiful palace, built on the very same hill from which this scene unfolds. This palace is intact, characterized by ordered shapes, colonnades, and statues. It sits on top of that hill like a jewellery-braced crown, with majestic stairs reaching down and widening into an open park landscape – that of Sanssouci, Potsdam, Germany.

The dialectics of these two poles – the ruins in the distance, dreamt-up re-creations of a once powerful empire, and the seemingly more modern palace with its intact golden lines, clear structure, and order on the hill – is akin to the contrast that forms the central theme of this special issue and its commentaries: The savage, almost ancestral mysticism of intuition, gut feelings, and

subjective hunches on the one hand, and the majestic, enlightened garments of reason, rationality, and careful analysis on the other hand.

What is Intuition?

The ideal of using rational, reasoned analysis to understand the world dates back, at least, to the Enlightenment. Nowadays, it continues to be strong in academia, business, medicine, and other areas of professional activity – together with the belief that subjective intuitions are something inferior, preferably avoided in serious scientific or other professional activities. Many authors juxtapose intuition to reason and embed both in long lists of associates, such as feelings and heuristic shortcuts on the one hand, and analysis and slow thinking on the other hand – just think of the title of Kahneman’s (2011) bestseller “Thinking, fast and slow”. The associates, in turn, are given different connotations, with those linked to intuition ranging from animalistic to fast but error-prone, and those linked to reason from optimal to rational. Yet, despite having some idea of what intuition is to

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them personally, many scientists seem to be at pains to specify precisely what it is, so that one single, commonly agreed-upon definition does not exist. Contrary to reason – which can be cast in terms of models of logic, careful information integration, or optimization – intuition remains, scientifically, an elusive notion.

Indeed, one striking observation we noted when putting together the special issue (Marewski & Hoffrage, 2015) and the present commentary section is that there is little consensus in the literature as to what intuition is and how it ought to be studied. Different authors link intuition to diverse definitions and notions, including the unconscious, the opposite of reason, or heuristics. Moreover, studies of intuition use diverse methodologies, ranging from plain story-telling to experimental work and computer simulations. In this introduction, we will illustrate those different views on – and their corresponding methodological approaches to – intuition by providing a brief overview of the commentaries.

Views on Intuition

Intuition Seen in Different Dimensions and Domains

What is intuition? Various authors of the special issue focus on *single* – and different – aspects of intuition, such as unconscious decision-making (Chassot, Klöckner, & Wüstenhagen, 2015), holistic decision-making (Brown & Daus, 2015), or effortless decision-making (Baron, Scott, Fincher, & Metz, 2015). Others, in contrast, including ourselves (Hoffrage & Marewski, 2015), see *multiple* dimensions of intuition. Amit, Rusou, and Arieli (2016) contrast those various uni-dimensional and multi-dimensional conceptualizations of intuition and review research that tested whether there is an empirical basis to separate various dimensions of intuition.

Independent of whether intuition is conceptualized as a uni-dimensional or multi-dimensional concept, several interesting questions, both theoretical and applied, mark the field: When should one follow one's intuition, and when should one adopt an analytical decision style? And what do people actually do? Do the answers to these prescriptive and descriptive questions depend on the domain? After all, when looking at ourselves, as researchers, we find that in most of our scientific work, we claim to stay on one pole: Experiments, computer code, numbers, logic, and scientific reasoning. Yet, deeply inside we all know that for many – if not most – of our scientific insights our intuitions played an eminent role as well. And when it comes to romantic love, most would hasten to stress that they did not espouse their romantic partners solely based on analysis and without listening to their intuitions and feelings (Gigerenzer, 2014).

Two of the articles in the special issue address the question whether and when people favor intuition over analysis. Specifically, Brown and Daus (2015) probed police officers' behavior (more spontaneously and affect-laden vs. more deliberate and rational) in two different situations, and Pachur and Spaar (2015) asked students for their preferences to use intuition versus analysis in six different domains. Olds and Link (2016) build on Pachur and Spaar's findings, namely that people's preferences for one or the other style are domain-specific, and they discuss

two possible sets of explanations for such domain-specific preferences: One can be found in objective characteristics of the domain itself (e.g., predictability of events; see also Shanteau, 2015), and the other one in individual differences (e.g., with respect to expertise).

Szaszi (2016) also expands upon Pachur and Spaar (2015), but raises a conceptual issue: Is people's tendency to adopt an intuitive decision style the same as their preference for that style? Szaszi warns that these two concepts should not be used interchangeably.

Intuition Reflected in Clashes and Conflicts

Lewin (1952) once remarked, "There is nothing more practical than a good theory" (p. 169). Yet theory and practice do not always find each other, and sometimes, the two even conflict. Gore and Conway (2016), discuss the contrast of intuition and analysis in the fuzzy and uncertain world of organizations, that is, in practice. Similar to Brown (2015), they call for a hybrid approach that combines intuition and analysis, and discuss (a) ways to build bridges between academia and practice and (b) how research in general and intuition research in particular can have greater impact on policy and practitioners.

Frey, Neys, and Bago (2016) also focus on conflict, albeit not on the conflict between theory and practice, but on conflicts between intuitive and analytic forms of thinking, most notably between scientific theories that conceive of such forms of thinking in different ways. For example, within the *fast-and-frugal heuristics framework* (e.g., Gigerenzer, Todd, & the ABC Research Group, 1999) heuristic decision making processes – linked to intuition (e.g., Gigerenzer, 2007, 2014) – are thought of underlying fast, but possibly also very smart and adaptive judgments and decisions. Similarly, research on *naturalistic decision making* (e.g., Klein, Orasanu, Calderwood, & Zsombok, 1993) stresses the clever nature of intuitive decision making processes. On the other hand, the *heuristics-and-biases research program* (e.g., Kahneman, Slovic, & Tversky, 1982) and associated work on System-1/System-2 dichotomies highlight the superiority of analytic, deliberate over intuitive, heuristic processes. In their commentary, Frey et al. focus on what happens when individuals detect that intuitive processes produce outcomes that violate normative standards (see also Dhami, Belton, & Goodman-Delahunty, 2015).

Intuition Cast into the Language of Mathematics and Computer Code

In the cognitive and decision sciences, a fundamental question is how people arrive at their judgments and how they make decisions in situations of risk or uncertainty. The language to describe those situations is that of mathematics: Variables or clues in the environment (e.g., a person's reputation) correlate with unknown criteria (e.g., whether this person will cooperate in a given situation), and, by assessing those environmental *cues*, individuals can try to infer those criteria. This conceptualization of decision making environments in terms of formal language is also key to other approaches to judgment and decision making that have been featured in this special issue. Cases in point

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