

INTUITION

Intuiting can be conceptualized as a way of ‘direct knowing’, that is, knowing “without any use of conscious reasoning” (Sinclair & Ashkanasy, 2005: 357), through a process that seems to bypass sequential (i.e. step-by-step) reasoning. Although the terms ‘intuiting’ and ‘intuition’ are often used interchangeably, it is important to differentiate between them. While intuiting is the process of ‘direct knowing’, intuition is the outcome of this process. Top professionals in any area of expertise, including scientists, engineers, business managers, musicians, chefs, athletes, and designers, are esteemed precisely for their ‘sense of the game’ in their domains, even when formally they are recognized for performance. Yet, until recently, it was mainly philosophers who advocated for intuition, while the scientific community was wary of it.

What Is Intuition?

These days, numerous scientists admit to relying on intuition as a part of scientific inquiry. In fact, based on interviews with 20 top scientists, including 17 Nobel Laureates, Dörfler and Eden (2019: 538) assert that “no significant research result seems to have been achieved without intuition playing a major role in the process”. The interviewed Nobel Laureates offered examples of using intuition in some form in their work, such as their ability to see simple patterns in complex situations. These examples, while not necessarily labeled as intuition, fit the description of direct knowing without sequential reasoning or understanding how the knowledge was obtained.

Scholars generally agree about recognizing patterns with which an intuitor had previous experience; this is often referred to as expert intuition. Some scholars, however, argue that experts may also identify previously unseen patterns, and further, can create new patterns that did not exist before, which is the bases of creative intuition.

Contemporary scholars agree that people tend to go back and forth between intuitive and non-intuitive modes of working through things, a thesis that has been proposed decades ago by both Michael Polányi, and Henri Bergson, two scientists-turned-philosophers who advocated for intuition. Intuition frequently endures unfounded criticism of being recklessly impulsive and ignoring facts. Contrary to this misrepresentation of intuition, research shows that scientists, much like investors, typically diligently analyze available data, as well as use intuition to sense the validity of their assessments. Intuiting is far from acting on a whim; it is an elaborate, highly complex process that incorporates facts, and processes them in a wholistic way. Perhaps the very reason for the non-conscious nature of intuiting is that the conscious mind is not always capable of the level of complexity often required for situations at hand. Even in highly quantitative domains, such as experimental science, software engineering and finance, intuitive decision-makers frequently use stories rather than computations to frame their decisions. Gary Klein describes intuitive decisions taken by firefighters: they take calculated risks rooted in elaborate perceptions. Huang and Pearce, based on their study of angel investors, suggest that decision makers who use intuition in their practice, are less likely to miss seemingly trivial details that are in conflict with analytical presumptions about a situation; these details often provide essential clues about investment outcomes. A number of prominent intuition researchers approached intuition by exploring some of its components that can allegedly be measured, while others moved on to exploring the sensory, experiential aspects of intuition. Intuition is less of a construct to be

measured and quantified, and more of a phenomenon to be observed, sensed, and synced with in order to understand its nature.

What Intuition Is Not

When dealing with something new, one way to explain it is through what it is not, demonstrating how this new entity is not like the known entities, as initially, there is a lack of vocabulary to explain the new entity. In line with this logic, it is important to point out that intuition is *not random guessing*. In guessing, none of the solutions are recognizable, but during intuiting, some solutions may produce psychophysiological coherence or an adverse response. If the response is accurately interpreted, it can be useful in selecting a preferred option. Importantly, intuition is correct far more often than the probability of random guessing. Intuition is not *instinct*; unlike *instinct*, which is hard-wired and is always unconscious, the quality of intuition can improve as one's experience increases. Intuition is also not *heuristics*. In contrast to *heuristics*, which means applying a predefined rule to a specific situation, intuition is adaptive and may involve recognition of patterns not seen before. Related to this, intuition is also unlike *biases*, which are tacitly held preferences that manifest in specific decision situations. This does not mean that intuition is never biased, since the complex pattern recognition may involve biases, as shown by Amos Tversky and Daniel Kahneman (1974), but sequential reasoning can be equally subject to biases. Intuition is more than just a *gut feel*, although it is often described as something felt at the pit of a stomach; intuiting can involve one's whole body. Jennifer Frank Tanti proposes that intuition is not simply a gut feel, but rather, a whole-body experience, extending into space around the subject's body as well as into the imaginary realm.

Further, intuition is not a *sixth sense*, as it is often described. Intuition seems to make use of all of our senses and capacities. Intuiting is not *supernatural*; what is understood about intuition can be explained in terms of people's natural abilities to perceive themselves and their environments. Neither is intuition *extrasensory*, as it relies on the body's psychophysiological system, including senses of vision, hearing, taste, smell, and touch, in addition to other senses, to receive information or make sense of something without resorting to sequential analysis. Some discomfort with the subject of intuition may be due to its association with under-researched and underexplained phenomena like remote viewing, telepathy (e.g. mind to mind communication), and precognition (sensing future events). While studies related to these topics still remain marginalized, broader intuition studies and projects are gaining acceptance, ranging from getting published in top journals like Human Relations to being explored by the US military.

Intuition is contrasted with analysis, which is incorrect. The opposite of analysis, which dissects something to examine its parts, is synthesis, which fuses separate parts into a larger phenomenon to understand a bigger picture. While intuition can involve synthesis, the two are not the same.

Intuitive Judgment and Intuitive Insight

In the management literature on intuition there appears to be an underlying assumption that all intuitions are judgments. This neglects a possibility of intuitive insight, the "aha moment" resulting from intuiting rather than from deliberate sequential reasoning. Dörfler and Ackermann put forth a notion of *intuitive insight*, suggesting that insights can be both intuitive and non-intuitive, much like judgments that can be intuitive and non-intuitive. Often both intuitive insight and intuitive judgment appear in addressing a problem. For example, a decision-maker can create new solutions

through intuitive insights, and then judge alternative solutions intuitively or otherwise. In another example, expert chefs rely on both intuitive judgment and intuitive insight to consistently produce creative, original, interesting food experiences; chefs may use intuitive insight to envision new dishes, and intuitive judgment to decide whether these dishes may work out in the context of their restaurants.

Features of Intuiting and Intuition

For the time-being, it seems that intuition research is being informed by practice more than the other way around; the most useful and relevant data on intuition is gathered through interviewing, observing and surveying expert practitioners. For instance, it was primarily through interviewing decision-makers and creative problem-solvers that intuition researchers reached a general consensus (for the time-being) on six necessary features of the process of intuiting and its outcome, intuition:

- Intuiting is *rapid*, meaning that it occurs almost instantaneously, and in this respect, it is similar to guessing. However, it is guessing which is “frequently correct” (in line with Simon, 1983: 25).
- Intuiting is *alogical*, meaning that it operates independently of the general principles of reasoning that we call logic, therefore it is neither *logical* nor *illogical*, as it neither follows nor contradicts the rules of logic. In deliberate sequential reasoning we work our way through the logical connections from a particular problem to the idea that addresses it, while intuiting leaps to the solution.

- Intuiting is *tacit* in the sense that intuitors can describe the outcome, but not the way they arrived at it. Although intuitors are often good at defending their intuitive judgments or insights, there is no evidence that the justification has anything to do with the way the intuiting was used. The tacit quality of intuiting suggests that the process of intuiting takes places outside the scope of the conscious mind, which is why it is also referred to as non-conscious.
- Intuition is *holistic* or *gestalt*, as it is about the ‘big picture’, including broad context, and far-reaching implications. It even takes into account items inaccessible to deliberate sequential reasoning, sometimes referred to as the ‘unknown unknowns’. Furthermore, intuiting also involves the totality of the intuitor’s experiences.
- Intuition, as the outcome of intuiting, has an *intrinsic certainty*: intuitors are confident they have the right answer (or one right answer). Even though intuition often brings with it a *feeling of knowing*, this does not make intuiting infallible, and intuitors do not usually claim infallibility. Robert A. Burton (2009: 101) points out that the *feeling of knowing* can occur with both proven and unproven insights, and is not a reliable indicator of accuracy.
- Finally, intuition, as the outcome of intuiting, is considered to be *spontaneous*. This means that intuiting does not require conscious effort at the moment when it happens. This is the one feature on which intuition scholars (i.e. academics who study intuition empirically) and intuition practitioners (i.e. practitioners who tap into their intuition in their practice) disagree. Spontaneous nature of intuiting has recently been brought into question, as intuition practitioners have been reporting intentional summoning and use of intuition. The

two contradictory views may be reconciled by allowing for the *spontaneous nature* of intuition, i.e. useful and relevant information emerging into consciousness without deliberate effort, and the *intentional use of intuiting*, i.e. a process of deliberately conjuring the process of intuiting on cue.

Besides the abovementioned six features of intuiting, it is also often mentioned that intuiting is frequently accompanied by somatic (visceral) effects and affective charges. While the role of affect in intuiting and intuition has been addressed, the somatic aspects are much less understood. It seems inevitable that some aspect of somatic experience will soon be added to the list of the abovementioned six characteristics.

Facets of Intuitive Awareness

Facets of intuiting refer to the various pathways through which intuitive messages arrive or become known to an individual. For the physical facet of intuiting, Frances Vaughan suggests that one may notice muscle tension, stomach ache or back pain seemingly not in response to anything in the environment of which the person is aware (1989: 47). This lack of congruence between somatic experience and either the environment or one's mental state may prompt one to examine closer what is going on beyond the obvious.

Vaughan clusters together both emotions and feelings in the emotional facet of intuiting. For instance, one may feel safe in some place or in presence of a particular person, or to the contrary, may experience a sudden emergence of anger with a person, seemingly without reason. Vaughan suggests learning to recognize our emotional states, and notice how one feels, as these feelings

may affect perceptions, memories, and interpretations. There is some disagreement among scholars regarding the role of affect in intuiting: whether it always accompanies intuition, and whether its presence is prognostic or reactive. Marta Sinclair noticed that fluctuation of emotions can serve as a channel for intuiting, rather than being an add-on to intuition, while Huang and Pearce suggest that affect is a reaction to the level of decision-maker's confidence in the decision.

The mental facet of intuiting is related to thinking: it could be an intuitive insight for a challenge that one is dealing with, or an unexpected thought, seemingly without a prompt from the environment, and not resulting from sequential thinking through ideas. This facet of intuiting is most studied and the best understood, as it is the mental facet that provides account of both intuitive judgements and insights.

The spiritual facet of intuiting, according to Vaughan, is a transcendent, holistic form of intuition. While there is no clear description of spiritual intuition, it probably closest to the notion of indwelling, e.g. attending to the object of one's interest, much like being fully engaged in listening to a musical composition or exploring a work of art.

Interplay Between Intuition and Sequential Reasoning

There are still considerable gaps in understanding the dynamic between deliberate sequential reasoning and intuition. One concern that academics, practitioners, and corporate leaders have about employing intuition is that if intuiting becomes widely accepted as a valid way of knowing, students and employees may be tempted to use it as a substitute for rigorous analysis, logical argument, or deep thinking. While intuiting cannot replace all aspects of deliberate sequential

reasoning, thinking and data crunching cannot replace intuition for types of problems that require a sensory or experiential component, like creating psychological safety in a team.

Until fairly recently, it was unclear whether intuition and deliberate sequential reasoning are two aspects of one continuum, or whether these are two separate dimensions, as the dual process theories suggest. Early ideas of the interplay between intuition and analysis suggested a continuum, on which one would be either more or less intuitive. As more recent research indicates, intuition and deliberate sequential reasoning are likely *two separate dimensions*. One can be good or bad at both, or better at one than the other, relying on each dimension more or less, depending on one's level of expertise, the type of problem at hand, and the environment. Expert decision makers, scientists, design engineers and other practitioners reconcile their intuition and formal reasoning by creating a cohesive narrative.

Factors Affecting Intuition

The quality of intuition is related to three factors: characteristics of the intuitor, the problem at hand, and the environment. Level of expertise is one of the most frequently discussed characteristics of an intuitor. "Intuiting becomes the dominant mode of knowing at the highest level of expertise" (Dörfler & Stierand, 2017). A closer look at studies claiming to have provided experimental evidence on the failure of intuition reveals that these experiments targeted intuition of novices. In contrast, studies that have found empirical evidence of intuition working well, typically focused on intuition of people at a high level of expertise (predominantly using non-experimental methods, such as interviews and observations in natural context). Some researchers

point out that high level of expertise is necessary for good intuitions. Therefore, it seems that expertise fuels intuiting, enabling intuiting to become the dominant form of knowing.

In addition to expertise, other factors that influence intuiting on an individual level are attitude toward intuition (dismissive vs. accepting), physical, emotional and intellectual self-awareness, as well as preference for intuitive vs. sequential processing style.

Characteristics of problems under which intuiting is the dominant mode of reasoning are typically those that do not allow the use of deliberate sequential reasoning, including uncertainty, limited data, no precedent, time pressure, volatility of the situation, high complexity, and ambiguity. In other words, the usual environment of today's organizations.

Organization's openness to intuiting and a cultural fit for use of intuition contribute to employees' willingness to employ (and disclose the use of) intuiting. Accountability to others seems to reduce the inclination of knowledge workers to rely on intuition. Organizational culture against intuiting as a way of knowing may lead to suppressing intuitions in an attempt to conform, or get approval for the way the answers have been arrived at. However, is the danger of downplaying or hiding the use of intuiting is in reducing transparency around the problem-solving process.

Intuition as Sensing + Sensemaking

Practice-based explanation of intuiting is founded on accounts of *intuition practitioners* – practitioners whose expertise in the use of intuiting, and who consistently use intuiting in their practice, intentionally and on cue. Intuition practitioners see intuiting as a sensory-based *direct*

way of obtaining awareness of phenomena. *Affect and visceral sensations* are essential to intuition practitioners: affective and visceral cues typically serve as starting points that make intuition practitioners pay attention to intuiting. Intuition practitioners employ a sensory-based way of obtaining awareness of phenomena, achieving first-hand experience. For the purpose of this article, we use the term ‘*sensory*’ to mean ‘comprised of the five primary senses, as well as visceral (e.g. hunger), affective (e.g. love), and mental sensations (e.g. pride)’.

While intuition practitioners may or may not describe intuiting as rapid, tacit, holistic, alogical, and having intrinsic certainty, as scholars do, they often talk about intuition as *both spontaneous and intentional*. For example, intuiting could be engaged by asking oneself a question about a situation, or defining a desired outcome, and staying attuned with soft focus to sensory and environmental cues emerging in response to the initial inquiry. After posing a question, practitioners may attend to shifts in the mental, physical and affective states. These shifts seem to occur without apparent causes either from the external environment or from internal processes, and hence labeled as intuitive.

Someone not experienced with paying attention to sensing may wonder how it is possible to get intuitive information seemingly out of nowhere, unless there is a way to justify it as expertise. Intuition practitioners suggest that over time, a student of intuiting could learn to understand various sensations underpinning their intuiting. Consciously making sense of these sensations can create a useful, actionable narrative. As an analogy, to a musically challenged person, observing someone differentiate between F# and G in the third octave just by hearing the sounds may seem like a lucky guess or a sort of a magic trick. Similarly, when it comes to intuiting, it may seem just as mysterious to observe someone differentiate among the meanings of their sensory signals. To

highly trained musicians, even the notion of confusing F# and G may seem strange, because they perceive the two notes as two distinct sounds. Similarly, a someone practiced with intuition is able to distinguish between an intuition about a positive resolution versus unfounded hope.

The academic literature on intuition treats intuition as a unitary construct. A more nuanced way to look at intuiting is in terms of a process comprised of two phases: *sensing* and *sensemaking*, resulting into intuitive judgment or intuitive insight. Expert practitioners of intuition who admit to using intuition in their work, actively engage with both sensing and sensemaking.

The sensing phase of intuiting delivers signals which an attentive person can perceive as visual images, auditory sensations, phrases, and changes in physical and emotional state. Intuition arrives to each person in a language that is unique to the person, therefore it cannot be standardized. For example, the same visual image of a dog can represent protection to one person and fear to another, or mean different things to the same person in different contexts. Hence, if sensing is not followed by sensemaking, the product of sensing cannot be utilized for intuiting on cue. Sensemaking is concerned with revealing the meaning of sensed signals. The sensemaking phase appears to be tied to one's domain expertise relevant to the particular situation (i.e. expert intuition). The pitfall of expert intuition is that experts may not be aware of the sensing part of intuiting, as they only perceive the signals of which they have already made sense. Thus, they do not distinguish between 'the outcome of intuiting' and 'the outcome of sensemaking', being oblivious to the notion that intuiting as a whole includes not only sensemaking, but also sensing. This may lead to a missed opportunity to improve intuiting by developing the sensory awareness.

In Conclusion

Knowledge workers in today's business environment must be prepared to operate in volatile, uncertain, complex and ambiguous conditions. Under these conditions, best or satisfactory solutions for complex problems arise through cognitively flexible response rather than additional analysis; scientists, managers, design engineers may need to use their intuition (knowing without knowing how) as they move through uncertainty. How can analytically minded practitioners become better at intuiting? They need to develop attention to *sensing* through enhanced awareness of their physical, emotional and mental states, and they should advance their subject area expertise to improve *sensemaking*. At the highest level of expertise, it seems that intuiting, supported by deliberation, is the predominant way of working through a problem. Yet, while Western education places great emphasis on teaching sequential reasoning skills as means to achieve expertise, it often neglects the development of sensory capacities, which appear to be essential for exceptional performance.

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See also Analysis, Artificial Intelligence, Cognitive Science, Knowledge, Philosophy of Mind, Rationality, Reasoning

Further Readings

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