Handbook of Intuition Research

Edited by

Marta Sinclair
Senior Lecturer, Griffith University, Australia

Edward Elgar
Cheltenham, UK • Northampton, MA, USA

© Marta Sinclair 2011

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical or photocopying, recording, or otherwise without the prior permission of the publisher.

Published by
Edward Elgar Publishing Limited
The Lypiatts
15 Lansdown Road
Cheltenham
Glos GL50 2JA
UK

Edward Elgar Publishing, Inc.
William Pratt House
9 Dewey Court
Northampton
Massachusetts 01060
USA

Paperback edition 2013

A catalogue record for this book
is available from the British Library

Library of Congress Control Number: 2011925707

ISBN 978 1 84844 888 9 (cased)
978 0 85793 465 9 (paperback)

Typeset by Servis Filmsetting Ltd, Stockport, Cheshire
Printed and bound by MPG Books Group, UK

Contents

Contributors vii
Acknowledgements xv
Introduction xvi

PART 1 CONCEPTUALIZING INTUITION

1 An integrated framework of intuition 3
Marta Sinclair
2 Types of intuition: inferential and holistic 17
Jean E. Pretz
3 Intuition and unconscious thought 28
Madelijn Strick and Ap Dijksterhuis
4 The influence of valence and intensity of affect on intuitive processing 37
Seymour Epstein
5 Investigating intuition: beyond self-report 52
Gerard P. Hodgkinson and Eugene Sadler-Smith

PART 2 FUNCTIONS OF INTUITION

6 Expert intuition and naturalistic decision making 69
Gary Klein
7 Strategic intuition 79
William Duggan and Malia Mason
8 Entrepreneurial intuition 88
Jill R. Kickul and Lisa K. Gundry
9 The role of intuition in ethical decision making 97
James Richard Guzak and M. Blake Hargrove

PART 3 INTUITION IN PROFESSIONAL/ OCCUPATIONAL DOMAINS

10 Life, death, and intuition in critical occupations 111
Janice Langan-Fox and Vedran Vranic
11 Intuition in crisis management: the secret weapon of successful decision makers? 122
Bjørn T. Bakken and Thorvald Haerem

1 An integrated framework of intuition

Marta Sinclair

One of the reasons why conceptualizations of intuition vary so much is the absence of a comprehensive, overarching framework that would reconcile different views. This void is particularly worrying as individual interpretations often do not contradict but rather focus on specific aspects of intuition, oblivious to the big picture in which they are all embedded. Hence, there is a need for a unifying framework that outlines the relationships of discordant views rather than disqualifying them. In other words, instead of having a debate about what is *not* intuition, we shall shift our focus to how various perspectives complement each other. Creating such a framework requires that we view the construct in its broadest sense as 'direct knowing'. This is, in a way, a return to the original understanding of intuition (Behling & Eckel, 1991; Osbeck, 2001), before we started exploring and defining it in modern times – in an attempt to grasp it. But somewhere along the way we got lost in the myriad of qualifying factors. It is time to reclaim the big picture that will allow us to examine not only different perspectives but also how they relate to each other – and possibly interact. This 'return to basics' will free us to think about intuition in new, fresh terms.

This is a rather speculative chapter, the labels and categories are tentative, and most links are yet to be developed. Some boxes are still empty, waiting for results from future studies. I hereby invite colleague researchers to fill in the blanks: to amend, expand, and modify the proposed framework, which is meant to serve as a starting point for our discussion. Its goal is to help categorize various facets of intuition more clearly and select appropriate tools to capture them. Interestingly, from practitioners' perspective, the usefulness of intuition and the means to develop it may depend on the 'box' we are dealing with. Recent research into the role of emotions and expertise also indicates that intuition is more contextual than we thought (see, e.g., Baylor, 2001; Coget, 2004; Sinclair, 2011). It refers to both how we interact with our environment and what transpires inside us. The identified between- and within-person differences should draw attention to the development of links across categories that would make the proposed framework dynamic. Otherwise we shall end up with another static model that does not reflect accurately what is happening in real life.

'Direct knowing' implies the absence of conscious information processing. It does *not* specify how the information was gleaned, which factors influenced it, and how accurate or effective is the outcome. Paraphrasing Frances Vaughan (1979), it simply states that we know something without knowing how. All 'knowing' is about information. Naturally, questions arise: where do we get this information from, along which channels does it 'travel', and how does it become available to us? This raises a fundamental question for intuition research: does intuitive processing rely exclusively on a separate system or can it use the deliberative system as well? And does the latter scenario imply that intuition could also be inferential, not only holistic? Although Seligman and Kahana (2009) assert that the cognitive architecture of intuition remains mostly a mystery, many advances in mapping the structure have been made. The challenge is rather how to disentangle the confusion stemming from nebulous boundaries among its various facets. Let us start by reviewing the commonly used distinctions and use them as building blocks of the framework.

PROCESSING SYSTEMS

With the onset of dual processing theories (see Evans, 2007; Stanovich & West, 2000), there has been a growing consensus that information is processed by two independent systems that interact seamlessly – until we consciously intervene. Following on that, intuition is believed to be handled by the experiential system (System 1) that is 'preconscious, rapid, automatic, holistic, primarily nonverbal, [and] intimately associated with affect' (Pacini & Epstein, 1999: 972). This view implies that any processing that uses neural pathways for deliberation should be disqualified as intuition. Not necessarily so – if we view intuition in the broad sense of 'direct knowing'. Proponents of naturalistic decision making suggest, for instance, that intuitive expertise is based on quick pattern matching that is too fast for us to register consciously (Klein, 1998, 2003). The information could then very well be processed through the deliberative system. It would mean though that the process is merely non-conscious, rather than preconscious, as stipulated by experientiality. Also, the theory of unconscious thought (Dijksterhuis, 2004) implies that our mind processes information when we divert our conscious attention elsewhere, which does not exclude the employment of a rational/deliberative system (System 2). We somehow assume that deliberation requires awareness – but does it always? Research suggests that humans are capable of complex behavior and activities without conscious awareness (Dijksterhuis & Aarts, 2010), it is yet to be determined whether deliberation is one of them.

Even if some intuiting does utilize the deliberative system, it is not clear whether the processing is structured the same way as conscious deliberating or whether it is organized differently. For instance, could it be more holistic since we do not have to follow the rules of inferential logic that we would impose consciously? Intriguingly, this argument may be tailored to Western cultures where the emphasis is placed on logical reasoning. Social conditioning in some non-Western cultures where intuition is taught from an early age (Iannello, Antonietti, & Betsch, ch. 15, this volume) could result in a reliance on different knowledge structures for both conscious and non-conscious processes. This raises questions about universality of intuition and possible effects of social conditioning on its use. Sadly, a comparative cultural view on intuition in the Western management literature is missing.

PROCESSING TYPE AND STYLE

Inferential Processing

Some researchers make a distinction between an inferential and a holistic type of intuiting which process information differently (e.g., Hill, 1987; Pretz & Totz, 2007). Inferential processing is sometimes likened to 'analysis frozen into habit' in that it relies on automated responses based on a quick recognition of memory patterns accumulated through experience (see Hammond et al., 1987; Pretz, ch. 2 this volume; Simon, 1987). This is the type discussed most frequently in expertise because it requires extensive practice. Nevertheless, its functioning appears to be more fine-grained than that (see Glöckner & Ebert, ch. 14 this volume). It can draw on a quick impression triggered by previous experiences (*associative style*), which presumes minimum processing and its associonistic nature implies involvement of the experiential system. Or it can be more complex in that it compares the current situation with stored mental schemas and searches for a match or an anomaly (*matching style*) (see also Kahneman & Klein, 2009; Klein, ch. 6 this volume). This requires a deeper level of processing that could very well use the deliberative system suited for drawing inferences.

Holistic Processing

The holistic type of intuiting, on the other hand, processes information non-sequentially, in a jigsaw puzzle-like manner (Sinclair & Ashkanasy, 2005). It usually deals with synthesis of 'unconnected memory fragments

into a new information structure' (Mintzberg et al., 1998: 164) and is often mentioned in terms of integrating complex information, too complex for a speedy conscious deliberation (Pretz, ch. 2 this volume). Since the intuitive outcome represents something new, it necessitates a more sophisticated processing mechanism than matching. Many authors consider the resulting type of intuition entrepreneurial (Crossan et al., 1999) and creative (Dörfler, 2010). On closer examination of their characteristics, it seems prudent to distinguish between the two.

Borrowing from Dane's (2010) differentiation between incremental and radical idea generation as prevention mechanisms for cognitive entrenchment of experts, I propose a similar distinction here. Incremental intuiting seems to connect information in a new but predictable manner that builds on the existing domain knowledge, which opens the possibility that it could be mediated by the deliberative system. It is amenable to experts relying on extensive schemas (ibid.) and possibly entrepreneurs with experience in spotting opportunities (Sinclair, 2010). This seems to correspond broadly to the description of 'constructive style' offered by Glöckner and Ebert (ch. 14 this volume). It is also plausible that such processing could accommodate the dynamics of unconscious thought (Dijksterhuis, 2004), which was demonstrated even among novices. Radical intuiting, on the other hand, departs dramatically from the existing knowledge patterns and generates a surprising novum in a truly 'creative style' (Dörfler, 2010), which requires a certain predisposition and talent (Kahneman & Klein, 2009). It appears therefore that this processing might be anchored in the experiential system.

Contrary to Dane and Pratt (2009), I have categorized creative intuiting as a style that can be utilized in decision making or problem solving rather than a function itself, as their typology would be understood in the context outlined here. Nevertheless, I concur with their description and characteristics. All labels in the proposed framework are tentative, and the assumptions need to be tested rigorously. Some researchers also identified affective and moral intuition as separate entities (e.g., Dane & Pratt, 2009; Guzak & Hargrove, ch. 9 this volume; Pretz, ch. 2 this volume). I have organized them differently and discuss each in turn in the following sections on processing components and functions.

Nonlocal Processing

There is also the intriguing possibility, implied by theories underpinning *nonlocal* intuition (see Bradley, ch. 17 and Radin, ch. 16 this volume), that no information processing occurs at all – since we receive 'prepackaged' information from somewhere. *Local* intuition assumes that intuitive

answers are a result of processed information that we contain in the raw form already (as mental schemas or affectively coded memories; Damasio, 1994, 1999; Simon, 1987) or we have been in contact with (through reading, learning, noticing our environment or other form of cursory exposure; Duggan, 2007; Sinclair, 2010). But what if, in some instances, we tap into an external source of information that does not require any additional modification? A certain extent of processing would be likely even here, especially in the case of goal-directed intuiting (see Strick & Dijksterhuis, ch. 3 this volume). Nonlocalists propose that this could be achieved by means of passionate attention, which is consistent with the question of passion raised in entrepreneurial intuition research (Kickul & Gundry, ch. 8 this volume). And the information would have to be identified through some sort of environmental scanning in order to be 'received'. Of course, all of this is highly speculative but we should reserve space in our framework for this possibility.

Mode of Reception

Putting aside the location of the processed information, there is a higher-order question about the mode of reception – which may not be related to the actual processing at all. Intuition can emerge into our consciousness in various ways. We may register it as a thought, a feeling, or through any of our senses (Vaughan, 1979). The reception mode appears to be very personal and clearly distinct from processing *per se* (Sinclair, 2010). The former refers to how we become aware of intuition as the *outcome* of our information processing while the latter enables the *process* of intuiting that remains 'hidden' from our awareness. As discussed elsewhere (Sinclair, 2010: 3), another distinction has to be made between the lack of awareness of how intuiting occurs and our ability to facilitate the process consciously or even trigger it. There appear to be four levels of awareness in this respect, ranging from an accidental non-conscious situation (when intuition emerges at whim) to an actively conscious approach (when we enter a relaxed mental state with a clear intention to intuit a desired outcome). It seems therefore that 'we can learn how to invoke intuiting at will without knowing how it generates the answer'.

In summary, from the perspective of 'direct knowing', intuiting can utilize experiential *or* deliberative processing; it can be of a holistic *or* an inferential nature in various degrees of complexity, or maybe even received 'prepackaged' from an external source. The resulting intuition can be received through a number of channels, dictated by individual preferences and sensitivities. And while we can learn to intuit we are not aware of its inner workings.

PROCESSING COMPONENTS

Until recently, there has been a split view between proponents of experience-based intuiting who stress its cognitive component or even consider affect detrimental (e.g., Simon, 1987), and those in favor of affect-based intuiting who highlight the emotional and sensory nature of the process (e.g., Epstein, 1990). As I argued elsewhere, these seem to focus merely on different components of the same multifaceted construct (Sinclair & Ashkanasy, 2005). More recent research has taken on a similar perspective and tends to acknowledge the importance of both. I am not qualified to even speculate whether intuiting proper (not the resulting intuition) could occur in the absence of cognition. Let us leave this conclusion to cognitive psychologists and neuroscientists. The more palatable questions at the moment are whether affect is present at all and which function it fulfills. The connection of intuition to the experiential system implies a strong affective component in the embedded styles by default, although as Epstein (ch. 4 this volume) points out, even deliberative processing can be infused with affect (see also Forgas, 1995). While the presence of affect alone does not guarantee intuiting, it remains of interest how prevalent it is in the process.

Affect in Processing Styles

One instance where researchers suggest a dominant role of affect is the associative style which operates via 'relatively direct affective responses to stimuli that result from previous experiences with sufficiently similar stimuli' (Glöckner & Ebert, ch. 14 this volume; see also Slovic et al., 2002). This mechanism could be attributed to somatic markers which are affectively encoded memories reactivated in a context-congruent situation (Damasio, 1994; see also Sinclair et al., 2009). The associative style therefore appears to function as simple 'affective matching' between the received stimulus and its counterpart in the 'somatic bank'. Interestingly, somatic states seem to activate different parts of the brain depending on the provenance of the stimulus (Reimann & Bechara, 2010), which implies that the underpinning mechanism may be less straightforward than it appears at first sight. Moreover, the above discussion does not preclude the possibility that this simple matching mechanism may also be triggered by a different, non-affective kind of a cue.

In more complex intuiting, the importance of affect may depend on the novelty of the faced problem or decision. As Bechara (2004) suggests, dealing with an unfamiliar situation may require a stronger presence of affect as the information 'travels' via the (affect-rich) 'body loop' while

less novel situations are assessed via the (affect-poor) 'as-if' loop. There is a possibility that affect can be absent altogether, for instance, in some kind of super-speed inferential processing. This could be the case of the matching style that draws on habitual mental schemas. Following on this argument, affect is likely to be found in both constructive and creative intuiting, although one would expect it to be less prevalent in the constructive style that relies on a new arrangement of established *convergent* patterns (see Dane & Pratt, 2009). On the contrary, since creative intuiting deals with a markedly new constellation of *divergent* associations, affect is likely to play a more important role in this style, which is consistent with its proposed embeddedness in holistic processing of the experiential system. Reports about affective intensity of creative intuiting abound in the literature (e.g., Hayashi, 2001; Monsay, 1997) but it is yet to be determined whether affect is *inherent* in the processing or whether it acts merely as a conduit. 'In other words', as I asked recently (Sinclair, 2010: 4), 'is the affective component built in the stored information that is processed intuitively – or is it "hard-wired" in the pathway along which intuiting proceeds?'.

Affect as Antecedent or Attribute

The above discussion relates to intuiting proper, which is distinct from what happens *before* and *after* it. In the antecedent stage, affective factors were found to be influential (see Epstein, ch. 4 this volume; Sinclair et al., 2010). Although a comprehensive summary of factors facilitating intuition is beyond the scope of this chapter, I would like to mention a few new developments on the affective front where research to date has focused mostly on the influence of generic mood. More attention should be paid to mood intensity that may override the opposite effects of positive vs. negative mood (see Sinclair et al., 2010). New findings also indicate that discrete moods (such as happy vs. glad) and emotions (such as angry vs. fearful) could have different effects that might even be contextual. This could be the case of emotional intuitive decision making reported by Coget (ch. 12 this volume). Intense anger or fear as determinants of information processing can hinder intuiting if the decision maker focuses on the emotion itself. This may result in substandard deliberation, if not paralysis. Alternatively, the decision maker may activate effective intuiting if he/she 'channels the emotional charge' into the intention to reach the desired goal (see Sinclair et al., 2002). In the post-processing stage, or at the onset of intuition emergence into consciousness, its most commonly mentioned attribute is a confirmatory feeling, which is usually of an affective nature but not always (see Sinclair, 2010).

PROCESSING FUNCTIONS

Traditional Perspective: Decision Making and Problem Solving

It seems that, like other information processing, intuiting serves predominantly two functions: decision making and problem solving. There appears to be a different dynamic in each, although these functions are usually intertwined (Dane & Pratt, 2009; Dörfler, 2010). Most research in management has been conducted in the decision-making paradigm, which may be the reason for the emphasis on expertise and speed. With the exception of quick holistic associations (associative style), it appears to be more closely linked to the convergent variants of intuiting that may utilize the deliberative system, such as matching and constructive styles.

Decision making, however, offers a rather narrow view of intuiting. Complex problem solving often requires a protracted incubation period (Goldberg, 1983), hence the discrepancy regarding the role of speed. Also, it often involves dealing with new situations, otherwise the problem would be treated routinely; consequently there is a higher likelihood that an experiential system with affect infusion will be activated (see Sinclair, 2010). However, like in decision making, it depends on how the retrieved information is used. If the situation is simply matched to stored patterns (matching style), then inferential and deliberative aspects are more likely to be at play. If schemas are 'reshuffled' in a new but predictable way, an incremental innovation may be generated (constructive style). And if the process is used to create something fundamentally new, then the likely outcome will be a creation, an invention, or a scientific discovery, as a result of creative intuiting. As discussed previously, the more novel the situation, the more likely it is that experiential processing will be used with a stronger presence of affect.

Although I use different labels, the above distinction is overall consistent with Dane and Pratt's (2009) differentiation between problem-solving intuition (here decision-making function) and creative intuition (here problem-solving function). As elucidated above, the key distinction between the two approaches is that I do not view these as intuition types but rather as processing functions that can be applied to any type (and its embedded styles).

As mentioned earlier, some researchers also recognize moral intuition as a separate type (ibid.; Guzak & Hargrove, ch. 9 this volume) but I see it as an affect-driven variant of the decision-making function. In the case of individual, personal decisions, it is likely to rely on a simple associative style, matching quickly the given situation with a socially conditioned

schema. Since the sense of rightness usually evokes strong feelings in individuals, one would expect the association to occur by means of the previously discussed 'affective matching'. In the case of law professionals adjudicating morality, the style is likely to be more complex, usually that of constructive intuiting (Glöckner & Ebert, ch. 14 this volume). Since this type of processing relies heavily on the social construction of what we consider right or wrong, I concur with Dane and Pratt (2009) that it is likely to be heavily influenced by culture. This accentuates my previous call for more comparative cultural research.

Neglected Perspective: Interpersonal Interaction

Not much has been written in the academic literature about intuiting between/among people, probably because it implies a transpersonal interaction. Naturally, a lot of information can be gleaned non-consciously from non-verbal cues, such as facial expressions, gestures, or tone of voice (e.g., Kahneman & Klein, 2009). These are usually expressions of an underlying emotion; hence one would consider it likely that people-related intuiting will be affect-infused. Other than that, there is no substantiation so far to assume that the gathered information would be processed differently from task-related intuiting. That applies to the local variant of the process.

Should we be able to receive information from or about another person (or event, for that matter) externally, as the nonlocal perspective proposes (see Radin, ch. 16 this volume), then an interpersonal connection is needed. That goes for interaction in the same physical location as well as at a distance. If this is indeed the case, then more research into the dynamic of the processing will be needed. Heart studies also indicate that we might be able to intuit events before they actually occur (see Bradley ch. 17 and Tomasino, ch. 21 this volume). Although the current research has identified a lead-time only in terms of seconds, it opens an intriguing possibility for redefining our understanding of foresight, both in people- and task-related intuiting.

AN INTEGRATED FRAMEWORK: INFORMATION-BASED FUNCTIONALITY

Another way of categorizing intuitive processes is according to the nature of the processed information. Extending the previously outlined differentiation (see Sinclair, 2010, for an overview), I reviewed (i) type of information, (ii) point of time when the information was acquired,

and (iii) location of the information. Based on combinations of the first two factors, I grouped intuitive functions into intuitive expertise, intuitive creation, and intuitive foresight. The third factor has been added in this chapter. Although I agree with Dane and Pratt (2009) that these labels may confound the discussion since they confuse intuiting with its antecedents (expertise) or possible outcomes (creativity), the intention was to create generic categories that would reconcile previously conflicting views. The labels, however, are arbitrary and open to suggestions. Labeling debate aside, let us focus first on the information typology:

Type of information One way to distinguish the provenance of information, common in the literature, is among (i) domain-specific expertise, (ii) general experience, and (iii) cursory exposure. While expertise presupposes an extensive network of information patterns in a specific domain (e.g., chemistry) and/or practice (e.g., conflict resolution) (Klein, 1998; Simon, 1987), general experience relates to accumulated bits of information from unrelated domains or life in general, which seem to provide additional stimuli in more complex intuiting (see Dane, 2010; Monsay, 1997). Furthermore, we should take into account the impact of a cursory exposure that may act as a catalyst, especially for the creative style (Sinclair, 2010). In summary, when intuiting, we draw on different 'pools' of stored information in a varied depth – but also breadth if we combine information from various pools.

Time acquisition of information This relates to the point of time when the processed information is integrated into our knowledge structure. The obvious benchmarks on the time continuum are (i) past, (ii) present, and (iii) future. Most information we accumulated in the past, through learning, practice, or other type of exposure, and stored in schemas or somatic markers in our brain or other parts of the body (see, e.g., Damasio, 1994; Duggan & Mason, ch. 7 and Klein, ch. 6 this volume). Some information, as mentioned above, we appropriate at the moment of processing in the form of a current stimulus or fleeting exposure (Sinclair, 2010). It may be the missing 'piece of the puzzle' we have been waiting for in order to process, as often reported by artists or inventors. Another mind-boggling possibility suggested by nonlocal presentiment experiments, is that we might be able to connect to information residing in the future (see Bradley, ch. 17, and Radin, ch. 16, this volume).

Location of information Also there appear to be three categories, depending on where the information is located in relation to us: (i) local

internal, (ii) local external, and (iii) nonlocal. Large amounts of information have already been stored in our system; hence most of the intuiting is focused inward (local internal) (Kahneman & Klein, 2009). As outlined above, some elements may be gleaned from the surrounding environment at the present moment. These are the outward stimuli incorporated into the processing as it occurs (local external) (Sinclair, 2010). And following on the nonlocal perspective argument, it is to be determined whether we may tune into information that is outside of our mental and physical presence.

Intuitive Expertise, Creation, and Foresight

Using the tentative labels (see Table 1.1) it becomes obvious that each of the three intuitive functions relies on a different combination of information in terms of the above categories (see Sinclair, 2010). *Intuitive expertise* draws mostly on locally stored domain-specific patterns accumulated in the past. Following on the prior discussion about its convergent focus, it is likely that it will utilize predominantly the matching and constructive styles with little or no involvement of affect. *Intuitive creation* also tends to handle domain-specific information (however, not always), but it usually incorporates general experience, and cursory exposure. This means that the information has more breadth, and although it can be sourced from the past, it has a critical present element. Being of a local nature, it remains to be seen whether it can also tap into nonlocal sources, as implied by findings from entrepreneurial research. Depending on whether the processed patterns are combined in a convergent or divergent manner, it is likely to utilize the constructive or creative style with lower and higher presence of affect, respectively. Least is known about the inner workings of *intuitive foresight*. It appears that it uses the broadest scope of information, possibly encompassing expertise, experience, and cursory exposure. Although it may utilize locally stored information from the past, conclusions from strategic intuition research hint at the coalescing effect of a present stimulus, while entrepreneurial research even suggests the possibility of sensing from the future. A collateral implication is that some of the information might be sourced nonlocally. A question remains whether foresight could be accommodated by the constructive style, drawing on expertise in spotting opportunities, or whether it is reliant on the creative style, combining diverse stimuli along the time continuum. In this case, the role of passionate attention would call for a strong presence of affect. These conclusions are, of course, speculative and warrant a research scrutiny. I hereby invite everybody's contribution.

Table 1.1 Integrated Framework of Intuition – Tentative Categorization

	Intuitive expertise	Intuitive creation	Intuitive foresight
Type of information			
Domain-specific expertise	xx	x	xx
General experience	x	xx	xx
Cursory exposure	?	xx	xx
Time acquisition of information			
Past	xx	x	x
Present	x	xx	xx
Future	?	?	??
Location of information			
Local internal	xx	xx	x?
Local external	x	xx	xx
Nonlocal	?	?	??
Processing style			
Associative	x	?	?
Matching	xx	?	?
Constructive	xx	x?	x?
Creative	?	xx	x?
Processing type			
Inferential	xx	?	x?
Holistic	x	xx	x?
Processing system			
Deliberative	xx	?	x?
Experiential	x	xx	x?
Involvement of affect			
Low to none	xx	?	?
Some	x	x	x
Dominant	?	xx	xx
Main function			
Decision making	xx	x?	x?
Problem solving	x	xx	x?
Personal interaction	x	?	x?
Type of outcome			
Decision about existing issue/dilemma	xx	x?	n/a
Solution to existing problems	xx	x	n/a
Creation of new knowledge	?	xx	x?
Relationship impact	?	?	?
Information about future	?	?	xx

Table 1.1 (continued)

	Intuitive expertise	Intuitive creation	Intuitive foresight
Area of application	Professional domain and/ or practice	Creation Innovation Invention	Future opportunities and/or issues
Influential antecedents	Complexity etc.	Novelty etc.	Passionate attention ?
Outcome attributes	Speed etc.	Aha moment etc.	?

Note: xx = highly likely; x = probably; x? = maybe; ? = to be determined; ?? = to be determined but theorized.

REFERENCES

Bechara, A. 2004. The role of emotion in decision-making: Evidence from neurological patients with orbitofrontal damage. *Brain and Cognition*, 55: 30–40.

Behling, O., & Eckel, N. L. 1991. Making sense out of intuition. *Academy of Management Executive*, 5(1): 46–54.

Baylor, A. L. 2001. A U-shaped model for the development of intuition by level of expertise. *New Ideas in Psychology*, 19: 237–244.

Coget, J. F. 2004. *Leadership in motion: An investigation into the psychological processes that drive behavior when leaders respond to 'real-time' operational challenges*. Doctoral dissertation. Anderson School of Management, UCLA.

Crossan, M. M., Lane, H., & White, R. E. 1999. An organizational learning framework: From intuition to institution. *Academy of Management Review*, 24(3): 522–537.

Damasio, A. R. 1994. *Descartes' error: Emotion, reason and the human brain*. New York: HarperCollins.

Damasio, A. R. 1999. *The feeling of what happens: Body, emotion and the making of consciousness*. London: Vintage.

Dane, E. 2010. Reconsidering the trade-off between expertise and flexibility: A cognitive entrenchment perspective. *Academy of Management Review*, 35: 579–603.

Dane, E., & Pratt, M. G. 2009. Conceptualizing and measuring intuition: A review of recent trends. *International Review of Industrial and Organizational Psychology*, 24: 1–40.

Dijksterhuis, A. 2004. Think different: The merits of unconscious thought in preference development and decision making. *Journal of Personality and Social Psychology*, 87: 586–598.

Dijksterhuis, A., & Aarts, H. 2010. Goals, attention, and (un)consciousness. *Annual Review of Psychology*, 61: 467–490.

Dörfler, V. 2010. *Creative intuition*. Manuscript in preparation. Strathclyde University, Glasgow.

Duggan, W. 2007. *Strategic intuition*. New York: Columbia Business School Publishing.

Epstein, S. 1990. Cognitive–experiential self-theory. In L. Pervin (Ed.), *Handbook of personality theory and research*: 165–192. New York: Guilford Press.

Evans, J. St. B. T. 2007. *Hypothetical thinking: Dual processes in reasoning and judgment*. Hove, UK: Psychology Press.

Forgas, J. P. 1995. Mood and judgment: The Affect Infusion Model (AIM). *Psychological Bulletin*, 117: 39–66.

Goldberg, P. 1983. *The intuitive edge: Understanding and developing intuition*. Los Angeles: Jeremy P. Tarcher.

Hammond, K. R., Hamm, R. M., Grassia, J., & Pearson, T. 1987. Direct comparison of the efficacy of intuitive and analytical cognition in expert judgment, *IEEE Transactions on Systems, Man, and Cybernetics*, 17(5): 753–770.

Hayashi, A. M. 2001. When to trust your gut. *Harvard Business Review*, 79: 59–65.

Hill, O. W. 1987. Intuition: Inferential heuristic or epistemic mode? *Imagination, Cognition, and Personality*, 7(2): 137–154.

Kahneman, D., & Klein, G. 2009. Conditions for intuitive expertise: A failure to disagree. *American Psychologist*, 64: 515–526.

Klein, G. 1998. *Sources of power: How people make decisions*. Cambridge, MA: MIT Press.

Klein, G. 2003. *Intuition at work*. New York: Doubleday.

Mintzberg, H., Ahlstrand, B., & Lampel, J. 1998. *Strategy safari: A guided tour through the wilds of strategic management*. New York: Free Press.

Monsay, E. H. 1997. Intuition in the development of scientific theory and practice. In R. Davis-Floyd, & P. S. Arvidson (Eds.), *Intuition: The inside story*: 103–120. New York: Routledge.

Osbeck, L. M. 2001. Direct apprehension and social construction: Revisiting the concept of intuition. *Journal of Theoretical and Philosophical Psychology*, 21(2): 118–131.

Pacini, R., & Epstein, S. 1999. The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology*, 76: 972–987.

Pretz, J. E., & Totz, K. S. 2007. Measuring individual differences in affective, heuristic, and holistic intuition. *Personality and Individual Differences*, 43: 1247–1257.

Reimann, M., & Bechara, A. 2010. The somatic marker framework as a neurological theory of decision-making: Review, conceptual comparisons, and future neuroeconomics research. *Journal of Economic Psychology*, 31(5): 767–776.

Seligman, M. E. P., & Kahana, M. 2009. Unpacking intuition: A conjecture. *Perspectives on Psychological Science*, 4(4): 399–402.

Simon, H. A. 1987. Making management decisions: The role of intuition and emotion. *Academy of Management Executive*, February: 57–64.

Sinclair, M. 2010. Misconceptions about intuition. *Psychological Inquiry*, 21: 1–9.

Sinclair, M. 2011. *Intuitive profile of film makers*. Paper presented at the Academy of Management annual meeting, San Antonio, TX, August, 12–16.

Sinclair, M., & Ashkanasy, N. M. 2005. Intuition: Myth or a decision-making tool. *Management Learning*, 36(3): 353–370.

Sinclair, M., Ashkanasy, N. M., & Chattopadhyay, P. 2010. Affective antecedents of intuitive decision making. *Journal of Management and Organization*, 1: 382–398.

Sinclair, M., Ashkanasy, N. M., Chattopadhyay, P., & Boyle, M. V. 2002. Determinants of intuitive decision-making in management: The moderating role of affect. In N. M. Ashkanasy, W. J. Zerbe, & C. E. J. Härtel (Eds.), *Managing emotions in the workplace*: 143–163. Armonk: M. E. Sharpe.

Sinclair, M., Sadler-Smith, E., & Hodgkinson, G. P. 2009. The role of intuition in strategic decision making. In L. Costanzo & R. B. McKay (Eds.), *The handbook of research on strategy and foresight*: 393–417. Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. 2002. The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment*: 397–420. New York: Cambridge University Press.

Stanovich, K. E., & West, R. F. 2000. Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences*, 23: 645–65.

Vaughan, F. E. 1979. *Awakening intuition*. New York: Doubleday.