The Unexplored Relationship Between Intuition and Innovation

Donald R. Officer, MA

Ottawa, Ontario

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ABSTRACT

Intuition is a difficult concept to define but one that most people recognize as an important factor in thought and judgment. Intuition permits the acceptance of logic and mathematics as both true and valid realities without material evidence. Psychologists have tended to avoid the topic of intuition considering it as just one of many unobservable mental entities scientists are therefore unable to test.

Students of innovation, however, see an interesting connection between innovation and intuition. According to certain philosophies, intuition may even exert a paranormal or magical influence on everything new. Yet no such belief is essential to an understanding of what most people mean by intuition. In *Educating Intuition* Robin Hogarth describes various ways that intuition might be improved or educated. There are two notable impediments to the education of intuition. One is the presence of confusing or "wicked" environments where feedback is unreliable. The other is the limited scope or "domain specific" nature of intuition. Intuition can therefore inhibit innovation because such obstacles exist.

There are also notable examples of regressive or perverse innovation where the intuitive impulse to resist would be only appropriate. Notwithstanding, intuition remains an implicit part of who we are and an extension of what we imagine. As such it is inextricably involved with innovation and personal empowerment.

***Key Words*:** Intuition, understanding, tacit knowledge, creativity, reasoning, judgment.

Introduction

Intuition is an idea we often take for granted without considering what we mean by it. Like twilight for instance, intuition is experienced routinely yet lacks a clear, precise demarcation in time or quality. Whether we're inclined to trust what we call intuition or not, we accept that it is somehow part of our judgment process. We tend to justify our more public and accountable decisions by listing explicit factors and crisp reasoning behind them. However, everyone knows these same decisions are underpinned by unstated, implicit beliefs that range from vague hunches to startling insights. Most people lump these beliefs into the category of intuition.

Intuitive Knowledge

From one perspective knowledge that is self-referring such as logical propositions, mathematical equations, geometric theorems and so forth looks to be hard-core truth. Such statements are totally unassailable offering no room for contradictory evidence to be introduced. From another perspective we see that this kind of iron clad certainty needs to be qualified at least as far as its range of reference is concerned. Statements of this kind may be made about concrete objects, but also about unicorns and mermaids.

The grammar and logic of our brains appears to be innate or hard-wired. This fits quite handily with the self-contained quality of this kind of understanding. Once we understand the form of a syllogism we realize its truth. And so, we often refer to this kind of "a priori" knowledge as intuitive. No reference to outside experience is needed. Our perceptions of what is real about external reality are, of course, much less certain and we wisely remain more skeptical. The intuition we inherit is a gift of our biological and neural endowment. The intuition of nurture (the acquisition of experience) is a matter of trial and error – at best a form of education.

Of course the question also has to be asked: "Is that unflinching acceptance of our innate understanding of what is logical in some way externally verifiable or is it just a mysterious byproduct of instinct?" Before this line of inquiry becomes totally mired in navel-obsessed self-importance let's agree on one observation. The belief in the truth of our thinking process is intuitive. In other words we just have to accept it. Without that acceptance every thought becomes nonsensical, even doubt. Descartes was writing along similar lines when he articulated his famous cogito: "I think, therefore I am." According to his own admission, Descartes more precisely first concluded he thought because he caught himself doubting. The Cartesian sense of intuition may make some of us uneasy. Real perceptions according to Descartes are more clear and distinct than say dreams or delusions. Thus can we tell them apart, he argues. However, although like preschoolers we may want to believe that strong if unsupportable impressions are correct simply because they are strong, unlike preschoolers, we know better (Descartes, 1977).

Of course, logic and analysis can be made transparent. Reasoning is also evident because it is explicable. The context of logic itself may be questionable although if you were questioning that context it's hard to imagine what tools you might use. Again we move towards murky absurdity. Or else we accept the necessity of intuition. This realization may not carry the established authority of Descartes' cogito. However, we might phrase the idea somewhat like this, "Because I think, I must intuit."

In his recent book *Educating Intuition* (2001), Robin Hogarth observes that historically, scientific psychologists have frowned on exploring the idea of intuition. Hogarth looks at what we might call inductive intuition – beliefs that relate to the evidence of the world around us. This perspective on intuition falls within the domain of psychology. The form of intuition we've been considering in the preceding paragraphs might be called deductive intuition. Deductive intuition is more properly a branch of philosophy, logic and linguistics. Eager to gain respectability among physical scientists pioneer psychologists avoided hypotheses that would posit "mental entities" preferring to check out observable behavioral indicators. However, with the development of cognitive psychology late in the last century and more recently with the linkage between neural science and cognitive processes, intuition is now a topic deemed deserving of a new look.

The Connection between Intuition and Innovation

Intuitively we know there is a meaningful connection between intuition and innovation. Creativity theories simply do not work without the intervention of intuition. For example, we might examine the creativity stimulus theory of Roger von Oech. In his popular books *A Whack on the Side of the Head, 1990* and *A Kick in the Seat of the Pants, 1986* this trainer-facilitator suggests that would-be innovators regard problems and opportunities from four distinct, apparently inconsistent perspectives. Whether the creativity student indulges his or her inner explorer, artist, judge or warrior, intuitive judgment is eventually needed to winnow the wheat from the chaff. Where more systemic approaches fail presumably intuition can pull together inconsistencies and compromises pointing the way to sound decisions. Otherwise it would only be disturbing to try to see all sides of a complex question.

Of course, premature judgment, i.e. prejudice, is the enemy of both the creative process and the practical solution. It would be self-defeating to generate spontaneous responses only to subject them to the application of a rigid decision grid that cherry picks the gems from the tailings. The innovator is looking for uncommon sense and merely mechanical processes tend to screen that out. Once again intuition must somehow keep the student on track. There's no easy way to express this application. We must resort to interjections to articulate such insightful interventions: Euclid's apocryphal "Eureka!" or the oft cited "Ah ha!" come to mind.

How Indispensable is Tacit Knowledge?

In recent years the problem of corporate memory has emerged as a vexatious if not critical concern among senior managers. The promise of reengineering was hoist in part to rally resources against the steady loss of undocumented and undocumentable tacit knowledge to retirement or other forms of attrition. The reasoning, I assume, was twofold: first, freshly minted processes don't require long corporate memories to retain their meanings; second, technology itself provides memory-jogging mnemonics like decision support systems or on-line manuals to keep essential knowledge in focus.

Unfortunately, system designers can no more impart real wisdom to such automated crutches than the spaceship designers could furnish ethics for Hal the computer in Stanley Kubrick's movie, *2001: A Space Odyssey*. Robert Frost once said that poetry was what was lost in the translation. Wisdom it seems is what is lost in the articulation. Likewise, no realizable prospects appear on the horizon that might allow us to download good judgment from living human beings. The technology of the MRI may pinpoint intellectual activity in the brain, even help classify it, but it won't likely identify what we'd call intellectual content, let alone evaluate it. With time this may change, although it's hard to see how.

The necessity for intuition is grounded in the ineffability of tacit knowledge – we know this at least intuitively. In earlier times many equated intuition with some kind of magic or witchcraft. That would have been an unfortunate association from several "acceptable" perspectives. Indeed, that inauspicious link probably accounts for much of the persistent scientific disdain. From a knowledge management viewpoint we need not be so mysterious. The shear volume of bytes and pixels that would be required to render the tacit explicit would prove virtually insurmountable even if it could be done technically. Speed is another unforgiving dimension if utility is considered. Granted, the machines often have the edge over us when the

variables are few and precision is everything. But when the scenario is ambiguous or multifarious, human intuition is as good as it gets.

Parapsychological phenomena may or may not exist as trace, quasi-reliable processes. Intuition is sometimes associated with the paranormal and that does not help its reputation in scientific circles either. Perhaps if we only understood intuition objectively, that is, if we could describe it more explicitly, we might be able to explain away telepathy or clairvoyance as the operation of a complex systematic approach reminiscent of Sherlock Holmes' perception of evidence invisible to mere mortals. Rupert Sheldrake provides a fairly plausible account of how this might be in his recent book, *The Sense of Being Stared at* (2003). Sheldrake documents evidence for his hypothesis that mind may extend beyond brain and inhabit a perceptual field that physically encodes the world it intersects with. As yet anyway, this is a tendentious concept. However, explanations of this kind are plausible and leave sufficient room for a legitimated intuitive sense. If Sheldrake is on to something, parapsychology might be revealed as neither myth nor fraud but as evidence of a code discernible so far only in flashes released from the subconscious mind. We might even crack that code if only we better understood the subtle subliminal patterns and details that intuition picks up (Hogarth, 2001).

That intuition in its several guises is critical to understanding and decision-making appears to be a sound if also intuitive conclusion. Superior intuition brings perception and imagination into balance. The intuitively informed are quicker, sharper and more successful. Athletes, business people, artists and scientists whose intuition is firing rapidly on all cylinders refer to an optimum zone or state of awareness known as "flow". Obviously, flow requires deliberate conscious awareness as well, but powerful intuitive undercurrents must underpin the rapid-fire accuracy of this optimal highly productive state that can also be experienced as a group phenomenon (Csikszentmihali, 1991).

Educating Intuition

Intuition may be essential and at its best extraordinarily powerful, but it is not infallible. In voting, citizens are required to scan vast amounts of information in highly indigestible forms and come up with singular definitive decisions with unknown consequences. Even astute voters must gloss over what they confront and accept as glosses much of what is foist upon them. Our system would collapse if that process were not generally effective. Democracy like the judicial system operates on the premise that citizen intuition will steer the ship of state around the shoals and away from powerful dangerous currents. But does it always? Science and technology likewise continue to evolve, but do they always progress? Social interactions are informed by a heritage of astoundingly sensitive personal communications skills and finely tuned conventions, but what is the track record for most relationships? Intuition is an amazing aid, but not even remotely perfect.

Innovation is sometimes the lifeline we rely on to haul us out of the maelstrom of failed intuition but let us not forget that lifeline is itself also intuition based. How are we then to improve on the past? On this point Robin Hogarth offers his best insight. Intuition may be non deliberate, but it can be deliberately improved. Intuition is educable. His prescription is not astounding – at least at first glance. He suggests we use the same observation and testing process we apply in formal scientific theory to informal situations where practical intuition and everyday response must fill the bill (Hogarth, 2001).

How important is social environment or culture in improving intuition? Culture is critical which Hogarth explains. Learning conditions or "learning structures" as he describes them may be placed along a continuum from *kind* to *wicked*. A kind environment in this sense is one where feedback is relevant and tasks are neither too lenient nor too exacting. Intuitions learned in kind environments are likely to be good, that is dependably predictive within a reasonable range of tolerance. Bad intuitions flow from wicked environments where input is a poor or delayed predictor of output and tasks are either too demanding or lacking in challenge – or worst of all, a mélange of both (Hogarth, 2001).

My own suspicion is that we might consider dogma of any kind a monkey wrench in the works of the intuitive process. Any unquestioned preemptive belief may block the exploration of what our minds are trying to tell us at this moment. Any rigid position whether it concerns the shape of the earth or human consciousness has the potential to shut down intuitive insight. Rigid conviction is therefore often a symptom of a wicked environment. Conversely, kind environments tend to be forgiving and promote openness.

Hogarth offers the training schedule of a professional tennis player as an example of a kind learning environment. Here coaching and practice regimens are selected for appropriateness in feedback and challenge, as the entire program is tailor made for the individual athlete. A hospital emergency room furnishes an example of a wicked learning environment. Staff members rarely see the outcomes of treatment and can only rely on short-term results. If the emergency is overwhelming, emergency room doctors fail without really knowing why. Minor conditions are briskly referred on to the patients' own physicians and unknown ultimate outcomes. Serious cases move on to the care of specialists elsewhere in the hospital. There is little opportunity to learn by experiment or accumulate experience. Much of the distress experienced by emergency room hospital professionals likely stems from this unsatisfying environment (Hogarth, 2001).

Which type of learning environment favours innovation? The question is almost rhetorical. Only in a kind learning environment do individuals usually feel safe enough to discuss and attempt innovation. Sometimes the desperation induced by a wicked environment will lead to reckless experimentation, but that is likely to be more of a blind gamble than a product of either reason or imagination. Some very courageous and tough- minded souls do make huge innovative leaps under duress. Psychologists and historians usually attribute their courage and not infrequent success to much earlier encouraging experiences in much kinder environments (Hogarth, 2001).

It does not require a huge intuitive leap to see the connection between optimum intuitive and innovative conditions. Are the skills associated with intuition also likely to prompt innovation? Hogarth identifies the following skills or practices demonstrated by the intuitively gifted:

- The capacity for visualization
- The ability to acknowledge emotions and learn from them
- The willingness to speculate and consider alternatives
- The habit of testing perceptions, emotions and speculations

Would these skills promote innovation? They might have been lifted from a text on the subject (Hogarth, 2001).

Intuition and Intelligence

Hogarth also considers the relationship between intuition and intelligence. Clearly intuition is a problem-solving aptitude like intelligence, but it tends to be area or domain specific, that is not necessarily transferable like general intelligence from one discipline to another. The question is further complicated, although in an intriguing sense by the appreciation that there are several independent forms of intelligence as Howard Gardner has described at length. These would include linguistic, logical-mathematical, spatial, musical, kinesthetic (physical coordination), interpersonal (social) and intrapersonal (self-awareness). These intelligences like intuitions are associated with specific domains but derive from inherited aptitudes whereas intuitions are developed and honed through experience (Gardner, 1993).

Emotional intelligence as conceived by Daniel Goleman represents another set of inherited aptitudes that may be enhanced by intuition. In Goleman's framework there appears to be some overlap with Gardner's interpersonal and intrapersonal intelligences. Intuition in dealing with others is also another powerful tool in the arsenal of the successful innovator (Goleman, 1995).

Finally, Hogarth examines the idea of practical intelligence as described by Robert Sternberg – in brief, how-to intelligence versus factually based understanding. He does not specifically discuss the process of applying how-to knowledge to intuition except to note rather significantly that the tacit knowledge base of the practical resembles the in-depth mental skill sets of intuitive capacity. However, proponents claim that practical intelligence is more a form of common sense than intuition, tending to cross particular domains rather than being closely associated with particular areas of knowing (Hogarth, 2001 and Sternberg, 1997).

The Various Meanings of Intuition

To summarize, ideas about intuition appear to derive from several possible sources:

1. Some forms of intuitive knowledge may be self explanatory, but unobtainable or unverifiable by external reference; for example, logical syllogisms or mathematical formulas. This would be close to Descartes' philosophical notion.

2. Intuition may be regarded as the indefinable catalyst that connects creativity to practical results – that which turns creativity into discovery, not mere imaginative expression. Creativity theorists like Van Oech and de Bono lean this way.

3. Intuition may be synonymous with tacit knowledge: the essential but unexpressed knowledge needed to execute intricate tasks or skills. Knowledge management theorists and Hogarth as well tend to hold this view in some regard.

4. Intuition may be associated with magic, the paranormal or the unconscious depending upon one's understanding of knowledge and reality. Although there are contemporary adherents, this is a traditional folkloric or tribal conception.

The Innovation Connection

After reading *Educating Intuition* I could see that, like many abstract concepts, intuition is sometimes referred to in an off hand and sometimes in an esoteric way. If it is to be a useful idea,

probably we need to abandon both senses of the word. Intuition like dreaming is a subjective process familiar to everyone but impossible to represent objectively. Nevertheless, we can appreciate the impact by reviewing successful execution of complex tasks, quick understanding of ambiguous circumstances and the breakthroughs of discovery or innovation (Hogarth, 2001).

One further cautionary, but potentially very useful conclusion may also be drawn from Hogarth's study of intuition. As intuition tends to be domain or area specific, we have a tendency to narrow our interests to the areas where our intuition and therefore our performance in general are most competent. A figure skater who tried to switch to football in mid career would be entering a world of frustration if not a world of pain. However this also means we are unlikely to apply the insights intuition might otherwise deliver if we were inclined to transfer them to other domains and the wide world in general (Hogarth, 2001).

I saw a textbook example of this insular effect recently. On a Myers-Briggs test the participants in the room would have scored far above average on the intuitive scale. At this workshop issues and solutions to the problems of employees within organizations were being addressed. I asked if it was possible to create an internally "kind" and accommodating environment for the staff while simultaneously exerting a "wicked" external influence through socially irresponsible policies. "Yes." I was told without hesitation. Not a single participant saw this admission as a concern or even a significant inconsistency. This collocation of high intuitives saw no need to be concerned with or even interested in any parallel issues outside the inward facing culture to which they were truly committed. Their non-reaction to the ethical dimension struck me as counter intuitive until I recalled the domain specific nature of intuition.

As change managers have learned from hard experience, there is a reversal effect that ultimately turns the smooth relationship between intuition and innovation on its head. Facilitators and experts in organizational dynamics work hard to foster the "kind" working environments that develop intuitive capacity. This in turn leads to welcome efficiencies and promotes innovation within the environment. But when the level of innovation, whether internally generated or introduced from outside, accelerates to a level of perceived chaos, the environment ceases to be kind.

In fact, it becomes "wicked" and workers lose their confidence in their ability to respond appropriately. This dysfunction strikes particularly hard at the intuitive level. Resistance to change mounts and panicking management responds with carrots then sticks. Accelerated demand won't wait for intuition or simple acclimatization. I'm reminded of KGB agents urging Soviet World War II recruits to either charge the German machine guns or take a bullet in the back of the head. To make matters worse (and less just), innovators and their bosses are often shielded from the less than lovely experience of chaotic innovation.

Conclusion

The current state of Canadian and Western society is actually more fragile than our leaders acknowledge because of either ignorance or willful disregard of the fundamental intuition- innovation relationship. Globalization has created a brutal international economic order while systematically dissolving and destroying local social economies on all continents. This

process pits innovation against intuition in innumerable workforces and communities, devaluing social capital by creating an untenable "wicked" environment for everyone but the very privileged. Sadly, innovation in this mode ends by subverting its only justifiable purpose – to create a sustainable human society.

If we are interested in fostering and improving the success rate of innovation we need to reverse the present vicious circle. We must recognize that intuition is not simply a curious indefinable accompaniment to the process. Intuition is not pixie dust or the cartoon light bulb above a comic strip character's head. Successful innovation depends on a combination of experimentation and efficiency. Intuition can facilitate this synergy by easing the drudgery of the routine while triggering awareness of the unusual. Furthermore, we all like the "eurekas" and "ah has" that intuition occasionally delivers. We naturally enjoy the state of flow especially when intuition is firing on all cylinders. Intuition plays an important role in innovation as it does in discovery of all kinds.

Nevertheless, intuitive processes also sustain blind tradition, superstitious skepticism and reflexive reaction to the unfamiliar. Just as devoted followers of differing faiths have similar claims to mutually exclusive beliefs, so do individuals with quite different intuitive pictures of reality bring equally powerful but irreconcilable tacit knowledge bases to the same situations. Because intuitive understanding is implicit, it is very difficult either to acknowledge or refute it. Viewed from this angle, intuition sometimes resembles religion. When intuition becomes excessively focused or directive, it starts to depend on blind faith rather than observed experience. Ironically, in this mode it detaches from its sources. Hogarth shows that we need not use our intuition this way. If we are mindful of its input we can correct partial impressions. Furthermore, intuition is also a creative engine to generate numerous (divergent) alternatives for testing and selecting through a rational (convergent) process (Hogarth, 2001).

Fortunately, intuition like other thought processes can be "fine tuned." Referring to Ellen Langer's work, Hogarth distinguishes between "mindless" mechanical thinking and "mindful" more imaginative or intellectually aware cognition. In the darker annals of bureaucracy mindless thought processes clearly predominate. Hogarth goes on to relate the drift towards mindlessness in constricted situations and conflict avoidance strategies among policy makers (Hogarth, 2001).

I would expect the editors of a journal on innovation to be inclined to promote innovation as a general principle. However, in retrospect some innovations would have best remained unimplemented. We need only consider certain appalling developments in military tactics and authoritarian social policy or on a lesser scale, mass marketing, post industrial capitalism and contemporary youth culture. Perhaps greater collective trust in skeptical intuition would have forestalled the worst consequences.

Intuition in tune with innovation is often a catalyst instrumental in prompting the very best inspiration. Who knows how much more advanced our civilization might be if a less inhibited intuition had urged more creative thinkers to follow their hunches to ultimate success? I would likewise suggest that a somewhat justified fear of uneducated intuition is a major source of much of the excessive repression that stifles productive, progressive innovation everywhere. Explicit knowledge is institutionally controllable by the censors and therefore safer. Our only realistic choices are after all to trust only the explicit or to refine the reliability of the implicit – to

educate intuition. That way we learn to change what must be changed but also to recognize what should not be.

About the Author:

Donald Officer is an Ottawa consultant, trainer, student of psychology and writer. For many years he has been interested in the subject of intuition intrigued by the mystique society accords this universal capacity while simultaneously appearing convinced it's just imaginary. As a teacher, he observed untutored intuition creating classroom tension within and between students. What could the role of intuition be in the curriculum today? Recently, he began to study the role of applied neuroscience in learning, encountering new literature scoping intuition as a brain function. Donald Officer is currently exploring intuition in group dynamics and plans to incorporate all his discoveries into a longer work in progress on the changing nature of education. He currently teaches business communications in the professional programs division of the Sprott School of Business at Carleton University. He can be reached at: donald.officer@gmail.com

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