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# INTUITION IN NURSING PRACTICE

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**Abstract:** Traditionally in nursing intuition has been linked to experience, typifying the expert practitioner. In the current health service climate, which demands measurable evidence based care, the involvement of intuition as an element of judgment is often denigrated. However, research evidence would suggest that intuition occurs in response to knowledge and is an important component of clinical decision making. The authors therefore argue that the essential nature of intuition cannot be ignored in the practice, management, education and research of nursing. Intuitive practice evolves from the merger of knowledge, skill and practice

and, therefore, encompasses the broadest of knowledge bases. It can be a useful tool contributing to best evidence in nursing practice. Some of the benefits derived from intuition in practice is enhanced clinical judgment, effective decision making and crisis aversion. Denying the value of intuition devalues an important part of experience-based nursing practice.

**Key words:** intuition, expert, nursing, nurses, judgment, hunch, education, knowledge, decision

## INTRODUCTION

Many years ago, through the fascinating world of literature, I read about the little Prince of Antoine de Saint Exupery. The Prince of Antoine de Saint Exupery, while sat outside in his garden, listened to his fox whispering into his mind that, only by the eyes of the heart he could feel and understand the world and that, only what we see with these eyes is the truth. Many years later, when I became a nurse I realised that in nursing, more than in any other profession, the “*eyes of the heart*”, the perception without any rules of linear logic, was often performed by nurses in order to meet their patients’ needs.

In 1964, Chenault wrote about the “*scientific façade*” and suggested that we may assume that the student with the soul of a poet has less to offer. Yet, “*the less literal minded student who is uncomfortable with the boundaries of rules and who resists directional prescriptions may have an equal contribution to the profession in sensitivity and rebellion*” [Chenault, 1964;p.33]. Thus nursing and its core of caring is more than a stagnant linear notion. On the contrary, nurses are taught little about intuition and more emphasis is placed on

sensory perception. This, “*has screened out much of what is or could be legitimate for study in how they care for patients. The existence of these intuitions was not studied because they did not fit easily into the nursing process*” [Chenault J. The scientific facade. Nurs Outlook. 1964;12(10),p.33].

Nurses often refer to intuitive knowing as having an “*uneasy, gut feeling*” about a patient. They might expect a patient to “*go off*”, as soon as he walked in the door. This type of intuition allows the nurse to anticipate what may happen and plan ahead and get help before a crisis occurs. Namely, intuition in nursing practice involves the recognition of previously experienced patterns and the detection of subtle clinical changes [Benner & Tanner, 1987].

Recognition of the use of intuition in clinical nursing practice has risen in prominence over the last 20 years. The roots of understanding of intuition in nursing were initially identified by Carper [1978], who drew from the earlier works of Dewey [1958] and Polanyi [1962]. Carper [1978], identified the fundamental importance of intuition in ways of knowing in nursing. All these intentions and thoughts render intuition a justifiable reason to start a

fascinating journey through the nurse's way of knowing and perceiving.

## Intuition

The concept of intuition is well documented in current nursing literature and several authors have sought to identify the defining attributes of intuition (King & Appleton, 1997; Effken, 2001; Truman, 2003; Ruth-Sahd, 2003). Intuition has been identified as a useful tool that needs to be recognised in nursing (Agor, 1991; McCutcheon & Pincombe, 2001). Schraeder and Fischer (1986) suggested that intuitive perception in nursing practice is the ability to experience the elements of a clinical situation as a whole, to solve a problem or reach a decision with limited concrete information. Rew (1986) outlined intuition more clearly by describing it as "*knowledge of a fact or truth, as a whole; immediate possession of knowledge; and knowledge independent of the linear reasoning process*". Dreyfus and Dreyfus (1986) examined the characteristics of intuitive judgement in depth and outlined six key aspects as "pattern recognition, similarity recognition, commonsense understanding, skilled know-how, sense of salience and deliberative rationality".

In clinical nursing practice, attending to salient information, and understanding and responding to the patient's issues or concerns, often takes place without any conscious deliberation at all. This ability of nurses to immediately perceive a situation and to respond independently to a linear reasoning process was firstly identified by Carper (1978), who referred to the fundamental importance of intuition as a way of gaining knowledge and guide decisions in nursing practice.

Unfortunately, as the literature reveals intuition is often described as a sixth sense, instinct, common sense, or hunch. (Burnard, 1989; King & Appleton, 1997). However, such attempts to define intuition in such terms, disoriented the exploration of the concept of intuition as a way of knowing to an association with mysticism and finally to a denigration of the legitimacy of the role of intuition in clinical judgement (English, 1993). In 1987, Gerrity defines intuition as "*the sudden perception of a pattern in a seemingly unrelated series of events... Beyond what is visible to the senses*" (Gerrity, 1987 p. 65). In view of this definition, which also refers to the description of the "AHA phenomenon" of Gestalt psychology, the concept of nurse's intuition will be explored as a mental process that connects irrelevant points (events) into wholeness.

Gerrity (1987) undertook a postal survey of 3103 qualified nurses between 1979 and 1984 in which the Myers-Briggs psychometric questionnaire was utilized to identify the judgement processes used by the nurses (Briggs & Myers, 1976). Gerrity (1987) considers "sensing" as information received by the five senses during the current experience. The data indicated that while 56% of the nurses valued sensing as their preferred way of perceiving, only 21% had intuition as their dominant function and 23% had intuition as their auxiliary function. Gerrity tries to explain these results by suggesting that nurse education has emphasized sensory perception at the expense of intuitive perception.

Benner and Tanner (1987), building on Dreyfus and Dreyfus (1986), provided a definition of intuition as "understanding without a rationale" and in 1993 Tanner refined this definition to incorporate "judgement without a rationale". Knowing the patient or client and being involved with his/her care are also key elements which strengthen the nurses' intuition. Intuition in nursing can be defined as the integration of forms of knowing in a sudden realization. This then precipitates an analytical process which facilitates action in patient/client care.

One may ask just how do nurses collect information and how do they transform this information through intuition into decision making and action? In order to find an answer or at least to achieve a clearer understanding to that question, an exemplar from clinical nurse practice in an A&E department is utilised in the following section as a useful means of exploration.

## Exemplar

The following incident took place in a late shift in an accident and emergency department in a general hospital located in the southern part of Greece in the island of Crete. A 50-year-old male patient walked through the front double door entrance. The porter on duty went to fetch a wheelchair for the patient, but the patient kindly refused to sit in the wheelchair. He claimed he was fine. However, he seemed to be very pale and he was sweating a lot. The Sister helped him to lie on the examination bed and asked him how he felt and what symptoms he had been experiencing. He told her that he had had a strong stomach pain since that morning, but he had thought that it could be food poisoning. As the hours went on and the pain had not improved, he got worried and decided to come to the hospital. The Sister performed a 12-lead ECG and connected him to the cardiac monitor. Although his vital signs were stable and his heart rhythm was normal, she picked

up the phone and called the cardiac arrest team. She knew that he was about to arrest, and indeed he did. A few hours later, when I asked her how she could have known this, she was unable to give an explanation. She only said, "*I just knew it*".

## Discussion

In the aforementioned exemplar, the nurse anticipated the patient's situation before there was any objective evidence of his condition. Analysing the incident by a rational model way of thinking one may assume that recognition of clinical states requires a mental checklist and a conscious rational calculation in order to distinguish normal from abnormal findings, and to analyse the data derived from a diagnosis (Benner *et al*, 1996). Nevertheless, in that particular exemplar, the nurse's judgement process includes more than an analysis of elements as it seems that no particular aspects of the situation claims the nurse's attention in order to have a clear clinical picture.

In this situation, many aspects seemed irrelevant. The information received by nurse derived from the brief narrative of the patient and from the medical equipment, which did not show any abnormal findings. Through experience, she knows what to expect in this particular situation, developing a perception of the immediate future given the current clinical situation. Additionally, and most important of all, these close linkages between understanding, decision making, action, and outcomes were derived also, from the unconscious notice of qualitative parameters of patient's condition. Gestures, expressions, the tone of his voice, and colour of his skin helped her to perceive the patient's level of emotional and physical disturbance (Schaefer & Fischer, 1987).

Pyles and Stern's (1983) grounded theory study examined clinical decision-making amongst critical care nurses and was one of the first to consider the intuitive component of the "gut-feelings" of their subjects. In this study, they simply sensed that something was going to happen. Pyles and Stern (1983) also identified the importance of clinical experience in the development of gut feelings and suggested that intuition was an integral part of comprehensive patient care. Nurses link together all these irrelevant points with past knowledge of a similar situation, experience, patient cues and gut feelings in a matrix named by them, "*nursing gestalt*". They defined gut feelings as recognition of the patient's "*falling out of the pattern, patient's intuition and nurse's intuition*". (Pyles *et al*, 1983 p. 52). As in the exemplar above, these subtle cues provided the nurses with a feeling trigger about

improvement or deterioration in the patient's condition. No attempt was made to differentiate between the nurses on education or clinical experience grounds. Pyles and Stern, highlighted the difficulty which nursing staff can experience in communicating these intuitive feelings to medical staff.

However, one may question the criteria which play a particular role for nurses in order to immediately perceive the whole picture as "*the process is independent of linear analysis*" (Rew, 1986). For instance, why didn't the nurse rely on the monitor's evidence but "*intuitively*" relied on her intuition and patient's observation cues for a quick understanding and an immediate correct response to the situation? According to cognitive theory: "*of the many stimuli that are registered by the receptors each day, only a certain selection goes through to the level of awareness*". Quinn suggests, that "*the criteria for selection will normally include new or unusual stimuli, changing stimuli, very high - intensity stimuli and motives or needs-related stimuli*" (Quinn, 1988 p. 14).

In relation to the exemplar, one may consider that the nurse instantly and unconsciously, compared the new stimuli of the patient's changing situation and correlated that with previous experience of similar situations. She ignored the values on the monitor as unreliable because her motivation and primary concern was primarily influenced by the patient's condition and complaints. On a secondary level, her understanding was influence by previous experiences of hers in similar situations in the past; not always do monitors demonstrate the reality of a patient's severity of illness. In that exemplar, the nurse's intuitive judgement based on her ability to care for people about whom she knew nothing obtained as a result of the particular setting within she was practising.

According to Cook (1996), "*More than in any other speciality, A&E nurses seem to refine the skill of 'just knowing' whether the patient's problem is serious*" (1996). However, research into intuition in nursing practice is unable to explain the exact way in which this procedure takes place. Rew & Barrow (1987) referred to Gestalt intuition and pointed out some explanations of the characteristics of intuition from a cognitive aspect. It is suggested, that Gestalt intuition "*is a judgement instance where gaps, missing pieces, or hidden relationships are detected within the patterned pressures of the whole display of perceptual information*" (Rew & Barrow, 1987).

Benner (1982, 1984) was the first researcher to explore intuition within clinical expertise in nursing and applied the four aspects of skilled performance

found within the Dreyfus and Dreyfus model of skill acquisition. Dreyfus & Dreyfus (1986) examined the characteristics of intuitive judgement and they proposed six key aspects of intuition (Appendix 1 ). Then, building in Dreyfus & Dreyfus (1986) characteristics of intuitive judgement, Benner & Tanner (1987) carried out a pilot study to identify the nature of intuition in the expert's clinical practice. Using an ethnographic approach, twenty-one expert nurses with at least 5 years of experience in a single clinical area were identified by their peers as experts. From the interview data they identified examples of the six key aspects of intuition judgement, highlighted the importance of knowing the patient as a human being with his own dignity and personality, and the importance of being involved into the patient's concerns and feelings.

Benner's & Tanner's work empowered and influenced nursing practice. Nurse education moved forward by highlighting the value of clinical practice knowledge; it opened new pathways for the understanding of how nurses' perception and knowledge develops and sustains. However, Benner's persistence to accept intuition as a privilege characteristic of expert nurses was contradicted by findings of other studies suggested that intuition is not an inclusive characteristic of expert's nursing practice (McCormarck, 1993; English, 1993).

The model of skill acquisition identified the movement from analytical thinking to intuitive decision-making, which appears to develop as a practitioner reaches the expert level of expertise. Benner found that expert nurses did indeed have an intuitive grasp of patients' situations. Benner (1992) explicated this model further within the field of critical care nursing and again endorsed this fundamental principle of skilled performance. Benner *et al* (1996) state that expert practice is characterised by increased intuitive links between seeing the salient issues in the situation and ways of responding to them. The sample within the study included 105 nurses practising in adult, paediatric and neonatal ITU and the method used in this study involved focus group interviews of four to six nurses who were gathered together by years of experience and expected level of expertise. The nurses were asked to give narrative accounts of incidents from their practice and then some of the nurses were observed in clinical practice.

Rew carried out a study describing nurses, experience of intuition in the stages of clinical process and their behaviours following these experiences (1988). A sample of 56 nurses was recruited from five home health agencies, five hospital critical care units and a university student

health centre. Interviews were conducted and analysed using the Ethnograph computer software package for emergent themes. Throughout the data collected by interviews, Rew, identified three different descriptions of intuition, which included cognitive inference, gestalt intuition and precognitive function. According to the analysis, nurses described their experience as an unconscious sudden analysis of cues, as gaps of data filled into complete pattern or as a perception of a situation before it occurs. A reflective period often follows, within which the nurse remains open to additional information and validates her intuitive feelings against objective data.

Rew's (1988) findings provided further evidence, that nurses recognize intuition as a valuable component of decision-making which may be an important basis for action in nursing. Rew and Barrow (1989) built on this study and extended their earlier review to postulate that the steps of the nursing process were only part of the decision making pathway. They concluded that nurses apply personal and intuitive knowledge gained from experience to enhance the linear analytical approach of the nursing process.

In the aforementioned research, from a cognitive perspective, one may clearly identify this sudden perception of the whole as the AHA phenomenon. Gestaltists support, that this "*insight*" does not result from separate responses to a series of separate stimuli; it is actually a complex reaction to a situation in its entirety, a perception of a previously unrecognised but fundamental unity (Curzon, 1990). Although Rew did not manage to clearly relate her findings with the cognitivist's theory, her study revealed some strong evidence-based results which can be used to support the cognitivist's approach that intuition is a mental process of knowing.

Two years later, Rew (1990) published a complementary research of her previous work in intuition. The research was carried out in critical care settings and information was gathered by means of a demographic information sheet and a structured interview schedule. Analysis of the data indicated that each nurse was able to clearly describe intuitive experiences in his or her clinical practice. The nurses experienced intuition as knowing, gut feeling, sixth sense, perception and ability to anticipate situations. The nurses experienced intuition mostly during the assessment and implementation stages of nursing process. Additionally, she pointed out that a systematic research must be carried out in order to examine how nurses can document and report subjective findings together with their objective data concerning the patient's health condition. This study is a valid piece of research for the teaching process,

as it offers a deeper understanding in the way that intuition is integrated into the stages of nursing process and nursing practice.

Several other authors have also sought to identify the elements of intuitive judgement in order to gain a more clear understanding of the way of intuition's function (Schraeder & Fischer, 1987; Young, 1987; Polge, 1995; McCutcheon & Pincombe, 2001; King & Macleod, 2002). Schraeder and Fischer (1987) carried out an ethnographic study of nurses working in one neonatal intensive care unit. The aim of the study was to describe the experiences, actions, rationales and consequences when ITU nurses acted on their feelings that neonates did not look well. In this study, the most technically skilled nurses used intuitive thinking. Further characteristics included the nurses' ability to perceive qualitative distinctions in the individual infant's cues, which included subtleties such as colour, activity level, tone and posture. Whilst these intuitive feelings were clearly experienced by the nurses they were ambivalent about sharing them with their colleagues.

Are there any conditions or characteristics that influence nurses' perception and performance in different levels of intensity concerning intuitive feelings? Young's grounded theory study (1987) identified such conditions that facilitated and encouraged intuition. Analysing the data of 75 descriptive incidents, Young asserted that characteristics as direct patient contact, self-receptivity, experience, energy and self confidence may improve nurse's intuitive perception and judgement. Nurses who were highly intuitive recalled feelings from within themselves and from the patients during direct contact. Self-receptivity is the ability of the nurse to be open, to receive information, having "a desire to tune in" and being potentially vulnerable. Experience was found to provide the information from previous nurse-patient relationships and clinical judgements that are the basis of nursing intuition. The ability to reflect on previous decisions was found to improve the nurses' intuitive judgement. However, intuition was at the same time challenged and devalued as a result of an essentially technological and rationally oriented health care environment.

Polge's (1995) quantitative study of 500 critical care nurses demonstrated that the use of intuition in clinical decision-making increased across the four levels of expertise, with experts using it most. A further study of 20 less and more experienced nurse practitioners (Offredy, 1998) found that intuition and hypothetico-deductive reasoning was commonly used but intuition was more often associated with more experienced nurse practitioners.

King & Macleod (2002) studied intuition and the development of expertise in surgical ward and intensive care nurses. In this qualitative study, specific findings highlighted refinement in nurses' use of intuitive and analytical elements of decision-making across the four identified levels of expertise. Intuitive awareness appeared to become an increasingly powerful aspect in some of these nurses' decision-making. It appeared to act as a trigger, sparking an analytical process that involved the nurses in a conscious search to acquire data that would confirm their sense of change in the patient's status. From competent to expert level these skills were developed by nurses who became increasingly effective at recognizing the importance of their intuitive feelings, searching for and identifying salient clinical signs and considering them to make judgements about the complexity of the patient's situation. The difference between expert and non-expert decision making appeared to lie not in the presence or absence of intuition, but rather in the expert's ability to use intuition much more skilfully and effectively. In addition, it was the depth of the knowledge base of expert practitioners that made their use of intuition in judgement so skilful.

Benner & Tanner (1987) had concluded that intuition was not valued as it was attributed to pattern recognition which was based on background understanding and skilled clinical observation. They considered that formal cognitive models of judgement replaced the human sense of salience with standard assessment tools and checklists. In Benner's *et al* (1996) study of expertise in nursing practice, it was supported that this kind of conscious rational calculation is required in novice's clinical practice. However the expert nurse does not require it as it prevents his/her ability to be flexible to collect and interpret intuitively patient information.

Accordingly, our way of knowing as a result of the positivistic and rational way of conscious analytical reasoning devalued intuition and nurses have often felt disadvantaged when they lacked persuasive evidence based on hard data collection and reasoning analysis (Benner & Tanner, 1987). This devaluation of intuitive judgement may create feelings of guilt for the nurses who choose to trust their intuition in clinical practice as a complementary tool of their way of perception and knowing. Thus, even nurse experts themselves were found to devalue their intuitive judgements or to be ambivalent about sharing their intuitive feelings with their colleagues (Benner & Tanner, 1987; Schraeder & Fischer, 1987).

Moreover, this denigration of intuition is underpinned by an educational system, which prizes rationality

highly (Rew & Barrow, 1987), and by a culture, which tends to replace intuitive judgement with rational calculation. Additionally, as Burnard (1989) highlights, there is the assumption that intuition is a feminine trait and therefore inferior to the rationality of the masculine approach.

In general, barriers to intuitions being considered a legitimate way of knowing relate to educators' beliefs about intuition (Rew, 1989; Allen, 1999) and our society's demand for scientific, linear, rational decision-making (Burnard, 1989). Some researchers see intuition as the exclusive province of expert practitioners (Benner, 1984). Moreover, the nature of the clinical environment demands a clear documentation of intuitive feelings, thoughts and judgements and an accountability which in this way of knowing simply does not exist. As Walsh (1997) stated *"if the nurse is to justify his or her action to the UKCC, the employer, the criminal law and the patient in civil law is it enough to say: 'I did it my way'?"*

King and Appleton's (1997) comprehensive research review lends support to many of these studies. The authors conclude that intuitive aspects exist in student, non expert and expert nurses' decision-making, that is, across all levels of developing expertise. Intuitive aspects of decision-making may commence in nurses at an early point in their career and strengthen or lessen with time depending on their experiences and developing expertise. The weight of this research evidence also damages the argument that using intuitive and analytical thought processes somehow denigrates nurses' decision-making (Buckingham & Adams, 2000).

Cioffi (1997) suggests that intuitive knowing involves drawing on experience, feelings of knowing, sensing subtle qualitative changes, and linking perceptions from the past with an anticipated future. Perceptual awareness and knowledge enable the experienced nurse to rapidly identify relevant information. They also enable him or her to understand a situation as a whole, rather than as a series of tasks, without the need for incremental, deliberate analysis of isolated pieces of information.

White (1996) links personal intuition with research and practice, suggesting they result in the intuition of expert clinical practice enabling practitioners to offer the very best to those they care for. White defines personal intuition as subjective knowing from subjective experience. This suggests that the intuition of the expert clinical practitioner uses evidence of the highest order, incorporating knowledge from a wide range of sources. Intuition, it would seem, involves a sudden realisation following

rapid integration of information, linked to speed decision making, enabling action with an appropriate response to the patient's needs.

Experienced nurses are quick to detect and respond to an unexpected patient response to an intervention (Effken, 2001). It is particularly significant in emergency situations where rapid information processing and appropriate response is most significant - perhaps one of the reasons why initial investigations into intuition focused on critical care nursing. Schraeder and Fischer's (1987) study of neonatal intensive care found that nurses acted on intuitive assessments of infants that *"did not look themselves"*, with the most technically skilled nurses using intuition most frequently.

There are studies supporting and refuting the link between intuition and expertise. McCutcheon and Pincombe (2001) explored the use of intuition as a tool in nursing and found that intuition is not something that just happens. Rather it results from a complex interaction of attributes involving experience, expertise and knowledge, and the presence or absence of a nurse-client relationship. This study also revealed that many experienced nurses did not consider novice nurses to be intuitive despite the fact that novices felt they did experience episodes of intuition.

## Conclusion

Intuition in practice has been linked to enhanced clinical judgement, effective decision making (McCutcheon & Pincombe, 2001) and crisis aversion (Cioffi, 1997). It could be argued that in this era of evidence-based practice nurses can no longer ignore the growing body of empirical research which requires nurses to recognize intuition and utilize it effectively in nursing practice. Intuition occurs in response to knowledge and is a trigger for nursing action and reflection. Subsequently, it has a direct bearing on analytical processes in patient care. If intuition continues to be ignored it will be at the peril of the nursing profession. Practitioners will become entrenched in standardized procedures and routines of care and there will be little opportunity for the flare and skill of nursing judgement to flourish.

Notably, nursing expertise had become a popular topic of investigation, stimulated by Benner's (1984) phenomenological study of clinical expertise. Expert practice is characterized by a specific mode of thinking evolved from the merger of knowledge, skill and experience (Benner & Tanner 1987, Field 1987). Intuitive knowing has been defined as the immediate knowledge about a fact, or truth, as a whole and the awareness of past, present, or future events without the conscious use of such processes

as linear reasoning, rationality, or analytics (Rew & Barrow, 1987; King & Appleton, 1997). Intuition enables an individual to have insight into a situation without having all the details or facts (Rew, 2000). The relationship between intuition and cognitive processes in clinical judgement needs to be examined in more depth.

Intuition in nursing appears in the literature to be concerned with different concepts. This depends on the different theoretical approaches used to explore its elements. However, whether the findings are similar or different, they highlight the importance of intuition as an integral part of the decision-making process in nursing. This paper attempts to explore intuition not because it is “*right*” or because it is “*new*” but because it is a concept, which arises strong debates and fascinates nurses. This growing body of knowledge on intuition suggests the need for more studies, which explore the nature and the use of intuition in each level and in every setting of clinical nursing practice. Additionally, there is a need to implement intuition in teaching practice, supporting students in the use of intuition in clinical judgement (Orme & Maggs 1993).

It could be suggested that it is essential, that teachers start seeing themselves as facilitators in a workplace that includes different types of learners and not as rigid teachers of an inflexible teaching model without considering the needs of each individual who participate in the learning process. Understanding that all these people may have different types of perception will help teachers to develop the appropriate facilitation skills in order to meet individual's education needs. There is a need for educationalists to consider the issue of teaching and supporting students in the use of intuition in clinical judgement within pre and post-registration education (Orme & Maggs, 1993).

However, it is not suggested, that logical and rational thought should be abandoned, as intuition can not stand on its own but it can be used and it is an essential element of our way of understanding. If one achieves to understand how intuition emerges, he might succeed in passing on this expertise of gaining knowledge and guide decisions through the process teaching. There is a need for nurse educators to teach students how to use intuition in clinical decision making (Orme & Maggs, 1993) so that intuition can be developed through education and extensive mentored practice (Effken, 2001).

The challenge to understand our own perception of the world is best illustrated through the words of Dreyfus:

*“Whatever it is that enables human beings to zero in on the relevant facts without definitively excluding others is so hard to describe that it has only recently become a clearly focussed problem for philosophers...Human beings are somehow already situated in such a way that what they need in order to cope with things is not packed away like a trunk full of objects, or even carefully indexed in a filing cabinet. When we are at home in the world, the meaningful objects embedded in their context of references among which we live are not a model of the world stored in our mind or brain; they are the world itself”* (Dreyfus, 1992; cited in Darbyshire, 1994 p. 760).

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## Appendix 1

### Dreyfus & Dreyfus Characteristics of Intuitive Judgment\*

\* Dreyfus H.L. & Dreyfus S.E. (1986) Mind over Machine. The Power of Human Intuition and Expertise in the Era of the Computer. Blackwell Science, Oxford.

<b>Pattern recognition</b>	as recognition of patient's responses.
<b>Similarity recognition</b>	as comparison of patient condition with similar or dissimilar past patient's conditions.
<b>Common-sense understanding</b>	as understanding irrelevant information concerning patient's condition.
<b>Skilled know-how</b>	as consideration of different techniques or a treatments for the patient
<b>Sense of salience</b>	as identification of the most essential clues concerning the patient's condition
<b>Deliberate rationality</b>	as the selection of particular aspects- events in relation to others.

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